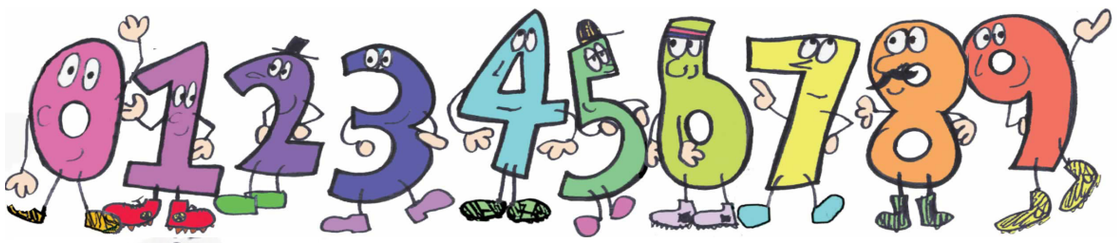
MisterNumbers Pattern Play Math Playsheets



Exciting time for Pattern Play Math expanding in two directions

The idea of playing with numbers goes against the serious nature of most math teaching, but it is actually much more effective than grind memorization. Kids get excited, have fun, generate a positive attitude about math, develop curiosity and learn to see and look for underlying patterns everywhere: the basis for learning for a lifetime.

SQUARES

This is an exciting time for Pattern Play Math expanding in two directions. The revolutionary video on Squaring any Number Mentally just came out and is below. There is much more on using the system for finding Square Roots, creating the 20x20 Times Table, and multiplying numbers mentally.

Squares go right through the biggest numbers on the times tables and make it easy to multiply the larger numbers together, which is where students tend to struggle most.
And it is all done with addition, not multiplication.

ADDITION ON THE NUMBER WHEEL

But I am also excited about the other direction: New Patterns for Basic Addition on Number Wheels. I found many high school students struggle with basic addition and found some fascinating and powerful images using number wheels that could help pre-school through 2nd graders have fun memorizing addition/subtraction facts. This is great because when they come to multiplication/division, they are already comfortable with the simple number wheels.

Additon direction came AFTER squares. Creating Squares is a ADDITION process, and creating the multiplication tables or individual math facts both also involve addition. As I worked with students, even Calculus students, I found that many of them struggled with basic addition. Relying on cell phones as calculators may be one reason basic math is suffering.

The two tools using Number Wheels for anchoring addition are ways to add 5 to any number, and Number Wheels that show the cool patterns of numbers that add up (in the Ones) to 10-9-8-7-6-5-4-3-2-1. The Ten-Adds are Horizontal parallel lines and Five-Adds are Vertical parallel lines. ALL ADDITION is within 2 of these lines. If a student can “see” the numbers on the wheel and their relative position, they can “see” the Ones part of the answer.

MisterNumbers Pattern Play Math Playsheets

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Inservice

Tom Biesanz M.S.
a.k.a. MisterNumbers
Taking the "numb" out of numbers
www.PatternPlayMath.com

Inservice for Schools and School Districts

PRESENTATION: Learning on the Fun, Visual, and Effective *Pattern Play Math* Path

Tom Biesanz, MisterNumbers on Youtube (with 2 million 5-star views) and author of Right Brain Math and more. He has over 14,000 subscribers.

Do your students struggle with math or have a negative attitude about it, or themselves? Do your kids and teachers suffer in the learning process?
Experience Tom Biesanz, MisterNumbers, and discover cool tools that will amaze your teachers (and you) while they learn powerful ways to present math. Your teachers will encourage students to learn how to learn by playing with patterns.

Here is what your teachers will learn:

- ✓ This Pattern Play Math approach is visual, playful, right-brained, and students get physically involved and have fun
- ✓ Uses simple techniques that makes numbers twice as easy and makes kids comfortable.
- ✓ Uses fascinating patterns like Number Wheels, the EZ Times Table, and Tic-Tac-Toe Squares with comes with worksheets that students enjoy.
- ✓ Ways for students to quickly and easily master the Eights times table, literally almost as easy as learning the Twos.
- ✓ How teachers can lead students to follow the patterns they see, which will reveal their learning style while improving attitude about school and themselves.

Math doesn't have to feel like a 4-letter word. Confidence and competence are so important to our students' school experience, and has lasting effects throughout their lives.

www.PatternPlayMath.com/ Tom@PatternPlayMath.com call toll-free 805-967-0469

MisterNumbers Pattern Play MAT#
A right-brain Path to Math

Introducing Tom Biesanz

Creator of Pattern Play Math, Tom Biesanz is changing math into a more fun and easy activity, with a WOW factor. Curriculum Review magazine says it "*does* make math fun! ... a revolutionary visual and auditory introduction to math – a welcome resource in a time when U.S.math scores are falling behind other countries."

He has done Inservice work with individual schools and school districts.

As MisterNumbers on Youtube, he has freely shared his lessons with 2 million Youtube viewers. Many of his videos are animated and are rated 5 stars. He generated that many views because dozens of reputable websites like Encyclopedia.com, HomeSchoolNews.com, WorldNews.com, WatchKnow.com share his videos as valuable teaching tools.

Tom is the author of Right Brain Math and Amazing Calendar Math Magic. He created the MisterNumbers Companion DVD for the Right Brain Math book and also 5 fascinating iphone math apps that are free.

Many math teachers have given rave reviews to his presentations at several California Math Council conventions.

Parents and teachers, as well as students, enjoy Tom's approach. He is an inspiring presenter with 7 years of Toastmaster experience and was selected as "Toastmaster of the Year" in 2011 by his club.

Education is a deep love for Tom. His mother was a teacher and five of his brothers and sisters also have been teachers. His personal connection to fun learning also includes his five grandkids

Parent Tiffany Hart says: "LOVE IT, LOVE IT, LOVE IT, LOVE IT.....I have a third grader and this is working like a charm. I, myself have learned the times tables better. I'm going to send this information to my daughter's school. Thank you so very much."

Parent Jenny Adams says, *"Thank you! No tears doing homework tonight! I have the hardest time trying to explain math to my child because she thinks so much differently than I do, and teachers just send home drill-and-practice worksheets that are pure torture for us. She totally got these patterns and had FUN doing it!"*

Tom is the expert who can assist you in helping your kids love and understand math. They will appreciate what you are sharing with them

Square Deal on Numbers

Value of Being Able to Square Numbers easily in your Head

Why learn to square numbers even if it is easy? Another benefit to squaring number include estimating multiplying two numbers together. Say you want to estimate 27 x 25. If you mentally square the number in the middle (26 x 26= 676) You know that will be very close.
AND using the patterns learned in the 20x20 Chart (see the first chart and following instructions), you can know that 27 x 25 is accurately 26 squared -1 or 675. The pattern is not limited by the chart. Using the patterns learned in the 20x20 chart allows a third grade student who easily learned the squares 1-20 in a day, to create most of the 20x20 Times Table facts in their head. In the 20x20 chart you can see that the squares give answers to the toughest multiplication facts, and all multiplication facts near them.

Table showing how the Tens jump when you are finding squares of a number

Squares Pattern in Tens goes up by the nearest number ending in 0 or 5, divided by 5
This allows you to jump in anywhere to square any number. An example would be 32, nearest 0 or 5 is 30. 30/5 = 6. See chart below.

Nearest 0 or 5	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Goes up or down	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

So the tens would start at 90 (30x30 = 900 and the tens would be 90 and the Ones would be 0). Add two sixes to get to 90+12= 102
Remember numbers ending in 3 or 7 can go from 0 or 5, and you get the right answer either way. Most kids prefer to start at a zero.

Square a number ending in 0

Let us square 50 as an example. 50x50= ?
We square the tens digits first. Tens digit is 5 so 5x5= 25. Easy.
Second we add the two zeros at the end. 25 00 or 2500 or 2,500.

So 30 squared would be 30x30= ? 3x3= 9 and add two zeros. 900. 30x30 = 900.
40 squared would be 40x40=? 4x4=16 and add two zeros. 1600 40x40 = 1600 or 1,600.

Square a number ending in 5

To square a number like 15, 25, 35, 45, 55, 65, 75, 85, 95, 105, etc., use a cool trick.
Take the Tens number in front of the five, call it T. Multiply T x (T+1) and write 25 after it. That is your answer.
Example: 25 squared. Take T (here is 2) x (T+1) 3. 2x3= 6 and write 25 after it. 625. 25x25 = 625
Example: 35 squared. Take T (here is 3) x (T+1) 4. 3x4= 12 and write 25 after it. 1225. 35x35 = 1225
Example: 95 squared. Take T (here is 9) x (T+1) 10. 9x10= 90 and write 25 after it. 9025. 95x95= 9025

Writing out the Squares of 1 to 50 EASILY

Watch how to make the Squares on MisterNumbers video at: https://goo.gl/wUIDs0
This is a fun and effective way to create the squares. You create the ONES (right) and TENS (left) with different patterns. Do this on a 1-50 or the 20x20 Times Table sheet (yellow squares). No multiplying and no carrying, yet this easy pattern with adding numbers up to 10 is fun, fascinating, and effective.

ONES:

#	TENS	ONES	Directions
1		1	1-2-3-4 squared are 1-4-9-16, and may already done for you. Notice the ONES pattern of 1-4-9-6 on the right, because it is like magic, and will repeat after each zero. Just remember 1, 2, 3, 4 squared is 1-4-9-6 in the ONES. Any number like 10 squared will end in zero, so go ahead and put a 0 in the ONES column after 10-20-30-40-50, and then repeat the 1-4-9-6 below each 0 on the right. Now for more magic: Start at 50 and go up the ONES with 1-4-9-6. You can see that it is true from 1-10 on the left. The only ONES that are not filled in are squaring a number ending in 5, and 5x5 is 25 so the ONES will always be 5. Fill in these 5s and you have completed the ONES column. You are half-way done.
2		4	
3		9	
4	1	6	
5	2	5	
6	3	6	
7	4	9	
8	6	4	
9	8	1	
10	10	0	

TENS:

The TENS are a really cool pattern. Notice that each 9 in the ONES has a DARK LINE under it. If not, put a line under each 9 in the Ones. Squaring numbers ending in 3 and 7 create 9s and the lines are where the pattern changes for the Tens on the left.
Complete the squares down to 10x10=100. Look for patterns in the TENS between the lines.
The pattern is 1-2-3-4 and then (starting with the 4) 4-6-8-10. You are not at the dark line yet, so what do you think will complete the pattern?
Yup. The first pattern was going up by 1: 1-2-3-4. The second pattern goes up by 2: 4-6-8-10-12-14-16.
Now you are at another dark line and the pattern changes. What do you think the new pattern will be?
If you guessed the new pattern will go up by 3, you are right! (starting with 16): 16-19-22-25-28.
And yes the TENS pattern goes up by 1 after each dark line. By 1-2-3-4-5-6-7-8-9-10.
Continue down creating the TENS, so at 50, the TENS are going up by 10.
The last four TENS are 220-230-240-250. It is that simple.
I HOPE YOU HAVE COMPLETED THE SQUARES FROM 1-50 EASILY.
You may notice that 50 is the tenth multiple of 5 (50/5=10).
And each number on the left ending with 5 or 0 divided by 5 IS the number that the TENS are going up. This is an easy way to square any single number from 1-50 (or higher) by starting from the closest 5.
But that is another page.

#	TENS	ONES
1		1
2		4
3		9
4	1	6
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Directions for creating Squares of numbers 1-50

Watch how to make the Squares on MisterNumbers video at: https://goo.gl/wUIDs0

This is a fun and effective way to create the squares.

You create the ONES (right) and TENS (left) with different patterns.

No multiplying and no carrying, yet this easy pattern with adding numbers up to 10 is fun, fascinating, and effective.

ONES:

1-2-3-4 are already done for you. Notice the ONES pattern of 1-4-9-6 on the right, because it is like magic, and will repeat after each zero. Just remember 1, 2, 3, 4 squared is 1-4-9-6.

Any number like 10 squared will end in zero, so go ahead and put a 0 in the ONES column after 10-20-30-40-50, and then repeat the 1-4-9-6 below each 0 on the right.

Now for more magic: Start at 50 and go up the ONES with 1-4-9-6. You will later see that it is true.

The only ONES that are not filled in are squaring a number ending in 5, and 5x5 is 25 so the ONES will always be 5. Fill in these 5s and you have completed the ONES column. You are half-way done.

TENS:

The TENS are a really cool pattern. Notice that each 9 in the ONES has a DARK LINE under it. Squaring numbers ending in 3 and 7 create 9s and the dark lines are where the pattern changes for the Tens on the left.

Complete the squares down to 10x10=100. Look for patterns in the TENS between the lines.

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#	TENS	ONES
1		1
2		4
3		9
4	1	6
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#	TENS	ONES
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MisterNumbers Squares Playsheet: a fun adventure!

To create the Ones-Digits: Copy 0's and 5's to right of line. **See video: http://goo.gl/h8l1XH** Put 1-4-9-6 below each zero to right of line. Put 1-4-9-6 above each zero going UP. Draw Lines under Nines **(done).** Number the sections between lines starting with 0. (write 0-1-2-3-4-5-6-7-8-9-10 etc.)
To create the Tens-Digits: Tens go up by 1 after each line starting at 0. They start with (up by 0): 0-0-0-0, (up by ones): 1-2-3-4, (up by twos): 6-8-10-12-14-16, (up by threes): 19-22-25-28, etc.

About: Thanks to Kelly Enser for the original ideal. Squares are created quickly with simple patterns and simple addition. **This can be done on a blank sheet.** The pattern holds no matter how high you go. Many Patterns show up. How many can you see? "Adding by 7" and "Adding by 12" sections are split. Do have fun and let me know what you think and how fast you are: MisterNumbers@RightBrainMath.com

0	Harder: Squares to 60	Challenge: Squares to 90
1	31	61
2	32	62
3	33	63
4	34	64
5	35	65
6	36	66
7	37	67
8	38	68
9	39	69
10	40	70
11	41	71
12	42	72
13	43	73
14	44	74
15	45	75
16	46	76
17	47	77
18	48	78
19	49	79
20	50	80
21	51	81
22	52	82
23	53	83
24	54	84
25	55	85
26	56	86
27	57	87
28	58	88
29	59	89
30	60	90

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Square Deal Play on a 20x20 Times Table & Multiplication

Using SQUARES to find most hard Multiplication Facts

The Squares take us down the biggest numbers in the times tables. Working from there helps us find (or confirm) hard multiplication facts **using addition.**

The other helpful part is that you **only need to use the SN (smaller number)** when you know how far apart the pair of numbers are. The hardest part of the 12x12 times table for students is the 6-12 numbers and these are easily figured out.
If Numbers are equal. They are a Square. Use and learn the Squares
http://youtu.be/J6AKMvLzYwo **Learning the Squares makes this all possible.**

1) Numbers are one apart: $SN^{2+}SN$ (example is 3x4= 3x3+3=12

2) Numbers are two apart: Square the number between them and subtract 1. $(SN+1)^2$ -1 (example 3x5 = 4^2 -1).

3) Numbers are three apart: Use formula for two apart +SN. $(SN+1)^2$ -1 +SN. (example 6x9= 7^2 -1+6).

4) Numbers are four apart: $(SN+2)^2$ -4. (example 4x8= 6^2-4).

5) Numbers are five apart: Use formula for four apart +SN. $(SN+2)^2$ -4 +SN. (example 4x9= 6^2 -4+4).

6) Numbers are six apart: $(SN+3)^2$ -9. (example 6x12= 9^2 -9). Thinking of -9 as minus 10+1 may be easier.

7) Numbers are seven apart: Use formula for six apart +SN. $(SN+3)^2$ -9 +SN. (example 3x10= 6^2 -9+3 = 30.

8) Numbers are eight apart: $(SN+4)^2$ -16. (example= 4x12= 8^2 -16 Thinking of -16 as minus 20+4 may be easier.

9) Numbers that are nine apart: Use formula for eight apart +SN. (example= 4x13= 8^2 -16 +4).

10) Numbers are ten apart: $(SN+5)^2$ -25. (example= 5x15= 10^2 -25).

You can continue this as far as your mental capacity allows. Eleven apart would be same formula as 10 apart +SN, Twelve apart would be SN+6-36. Etc.

This is based on:
$(x+1)(x-1) = x^2-1$ (example 5x7: (x=6) = 6^2 -1) = 36-1 =35
$(x+2)(x-2) = x^2-4$ (example 5x9: (x=7) = 7^2 -4) = 48-4 =45
$(x+3)(x-3) = x^2-9$ (example 5x11: (x=8) = 8^2 -9) = 64-9 =55
$(x+4)(x-4) = x^2-16$ (example 6x14: (x=10) = 10^2 -16) = 100-16 =84

Creating the 20x20 Times Tables with Directions

17	Playfully Creating the 20x20 Times Tables with Directions
18	Full 20x20 Times Table with Diagonal Colors
19	An Earlier Version on the Times Table
20	How to Fill out the 20x20 Times Table with Diagonals
21	The Blank Times Table (with Ones and Twos filled in)
22	Empty Table with dotted lines on Squares for Ones and Tens
23	Ones of Squares filled in on right of dotted lines: 0-1-4-9-6-5
24	Ones and Tens of Squares filled in
25	Squares in Yellow Diagonal in Place
26	Squares Mirror Image on two sides of the Times Table
27	Multiplying Numbers One Apart with Stars
28	Multiplying Numbers One Apart in Place
29	Multiplying Numbers Two Apart with Arrows from Squares
30	Multiplying Numbers Two Apart Alone
31	Multiplying Numbers One and Two Apart
32	Multiplying Numbers Three Apart
33	Multiplying Numbers Four Apart with Arrows
34	Multiplying Numbers Four Apart
35	Multiplying Numbers Five Apart
36	Multiplying Numbers Six Apart
37	Multiplying Numbers Seven Apart
38	Multiplying Numbers Eight Apart
39	Multiplying Numbers Nine Apart
40	Multiplying Numbers Ten Apart
41	20x20 Times Table with Diagonals All numbers in place

Playfully Creating the 20x20 Times Table Using Squares

Patterns are powerful. To see and use patterns in numbers make a student powerful and helps them enjoy math. Looking for patterns is a game, a puzzle, and it has long term benefits in math and elsewhere because all deep learning is learning to look at underlying patterns.

Let the student discover as many of the patterns as possible. They may well find some that you have never seen, even if working with this table. Refrain from showing them the patterns, and let them find them on their own.

There are a couple ways to look at each set of numbers. Where are they on the Table? How far apart are they? What color is the box? What are the values of the diagonals in both directions?

This structure is based on the Squares of the numbers 1-20, which are designated by the yellow boxes from the top left (1x1=1) to the bottom right 20x20=400. The cool aspect of starting with the squares is that they go right at the biggest (hardest) numbers for kids: 6x6, 7x7, 8x8, 9x9, 10x10, 11x11, 12x12, etc

Diagonals are cool patterns. It becomes like a game. The clues are in the different ways to identify any set of numbers.
Half of the boxes are colored by diagonals.
What are the diagonal patterns in each direction?
What are the up and down patterns?
What are the right and left patterns?
Find any array (rectangle of boxes) starting from top left and what do you find?

Calculating in your head, using squares and adding or subtracting (not multiplying).
Numbers that are even numbers apart are based on squaring the middle number.

Have them fill in as many as they know of the Squares, and look for patterns in the Ones and Tens of the Squares.

Have them fill in as many as they know about the white boxes next to, and below the Squares.
What are these numbers?
How many apart are they?
Is there any pattern they can find to move from the square to that white box?
What is the difference between diagonal white boxes right to left.

There is a series of Times Tables with the Squares filled in, then the one apart numbers filled in, then two apart, three apart, four apart, etc.

Students get a sense of accomplishment as they create the Times Tables. The are CREATING MATH. From patterns.

If you don't have a colored printer, this still works. The diagonals are clear, and it is easy to identify the squares and the two apart, four apart, six apart diagonals.

CREATING THE TIMES TABLE USING SQUARES: All Facts in Place

Create on the Diagonals from Squares and watch for Patterns

SQ	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
3	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60
4	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80
5	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
6	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	119	119	119	120
7	7	14	21	28	35	42	49	56	63	70	77	84	91	98	105	112	119	119	119	140
8	8	16	24	32	40	48	56	64	72	80	88	99	104	112	120	128	136	144	119	160
9	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135	144	153	162	171	180
10	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200
11	11	22	33	44	55	66	77	88	99	110	121	132	143	154	165	176	187	198	209	220
12	12	24	33	48	60	72	84	99	108	120	132	144	156	168	180	192	204	216	228	240
13	13	26	39	52	65	78	91	104	117	130	143	156	169	182	195	208	221	234	247	260
14	14	28	42	56	70	84	98	112	126	140	154	168	182	196	210	224	238	252	266	280
15	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300
16	16	32	48	64	80	96	112	128	144	160	176	192	208	224	240	256	272	288	304	320
17	17	34	51	68	85	102	119	136	153	170	187	204	221	238	255	272	289	306	323	340
18	18	36	54	72	90	108	126	144	162	180	198	216	234	252	270	288	306	324	342	360
19	19	38	57	76	95	114	133	152	171	190	209	228	247	266	285	304	323	342	361	380
20	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400

Look for patterns in eight directions from each box

CREATING THE TIMES TABLE USING SQUARES and plus and minus

20 x 20 Times Table Practice worksheet: fill it out or find any multiplication fact

It is fun. No multiplication needed. First: Easily learn the squares of 1-20 at https://goo.gl/wUIDs0 Subtract any two numbers you want to multiply *and follow the rules below.* ***You only use the SN (smaller number) and +&-****. The formula is based on the fact that if numbers are 1-4-9-16-25 less than the middle square if they are 2-4-6-8-10 apart. Odd number apart? Use SN, find lower even number, and add SN. If you learn the squares you can you can figure out or confirm any multiplication fact. Half of boxes in the chart below are even numbers apart and colored. Find these and add SN for next clear box (odd apart).*

1) Create the Squares to 20x20 (see MisterNumbers video https://goo.gl/wUIDs0 YELLOW middle diagonal
2) Create **2X row and column** by adding each number to itself (**double 1st number**).
3) Create numbers **1 apart** by **adding SN** (Smaller Number) **to square** of SN.
4) Create numbers **2 apart (blue)** by **add 1 to SN, square that, (square middle number) minus 1 (BLUE)**
5) Create numbers **3 apart** by **adding 1 to SN, square that, minus 1 plus SN**
6) Create numbers **4 apart (green)** by **adding 2 to SN, squaring that, minus 4 (GREEN)**
7) Create numbers **5 apart** by adding 2 to SN, squaring that, minus 4, **plus SN**
8) Create numbers **6 apart (pink)** by **adding 3 to SN, squaring that, minus 9 (PINK)**
9) Create numbers **7 apart** by adding 3 to SN, squaring that, minus 9, **plus SN**
10) Create numbers **8 apart (yellow)** by **adding 4 to SN, squaring that, minus 16** (NEXT YELLOW)
11) Create numbers **9 apart** by adding 4 to SN, squaring that, minus 16, **plus SN**
12) Create numbers **10 apart (blue)** by **adding 5 to SN, squaring that, minus 25 (NEXT BLUE)**

Based on $(x+1)(x-1) = x^2-1$, $(x+2)(x-2) = x^2-4$, $(x+3)(x-3) = x^2-9$, *etc.*

SQ	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
3	3	6	9																	
4	4	8		16																
5	5	10			25															
6	6	12				36														
7	7	14					49													
8	8	16						64												
9	9	18							81											
10	10	20								100										
11	11	22									121									
12	12	24										144								
13	13	26											169							
14	14	28												196						
15	15	30													225					
16	16	32														256				
17	17	34															289			
18	18	36																324		
19	19	38																	361	
20	20	40																		400

Middle Yellow diagonal = squares
Touching Blue diagonals = Squares -1
Touching Green diagonals = Squares -4
Touching Pink diagonals = Squares -9 (may be helpful to subtract 10 and add 1)
Touching Yellow diagonals = Squares -16 (may be helpful to subtract 20 and add 4)
Touching Blue diagonals = Squares – 25 **etc. Add SN to get the white squares (odd numbers apart)**
Multiplying 20 x 20 tables mentally: This system fills in all the big facts. Use multiplication for smaller facts.
Remember: you only need to know the SN and how far apart they are. Can be expanded to 50 x 50! Enjoy! -MisterNumbers

20 x 20 Times Table Practice worksheet: fill it out or find any multiplication fact

It is fun. No multiplication needed. First: Easily learn the squares of 1-20 at https://goo.gl/wUIDs0 Playsheets for creating the squares to 50 are available. Notice the arrays that are numbered by boxes.

Create the squares down the middle yellow in the 20 x 20 Times Table Chart. The Ones and Twos are fairly easy and done in both directions. See that the Squares take you right down the middle, away from the safe shore. Yet creating the squares or finding one square is easy using the videos.

Notice the Purple diagonal boxes on both sides touching the squares. See the purple boxes that are filled in and add 3x5 is 15 and 6x4 is 24 on both sides. What do you notice about the touching purple boxes and yellow squares? Do you see any pattern?

Next check out the Green boxes that touch the purple boxes. Add 3x7= 21 and 8x4= 32 on both sides. What pattern do you notice between the green and the yellow squares? Between the Purple and Green boxes?

Hopefully you are seeing some cool patterns show up. Try the red boxes. What patterns do you see between the red boxes and the yellow squares? The Purple and the Red boxes? The Green and the Red?

Add some values to the white boxes. Notice about half of the squares are colored and half are white. What is the relationship between the colored and the White below or to the right?

If you need help or get stuck: Check below, but figure out as much as you can. It is really cool.

Middle Yellow diagonal = squares
Touching Blue/Purple diagonals = Squares -1
Touching Green diagonals = Squares -4
Touching Pink/red diagonals = Squares -9 (may be helpful to subtract 10 and add 1)
Touching Yellow diagonals = Squares -16 (may be helpful to subtract 20 and add 4)
Touching Blue/Purple diagonals = Squares – 25 **etc.**

White Squares?: Add the SN (smaller number of the two) to the colored squares above or to the left (completes the table).

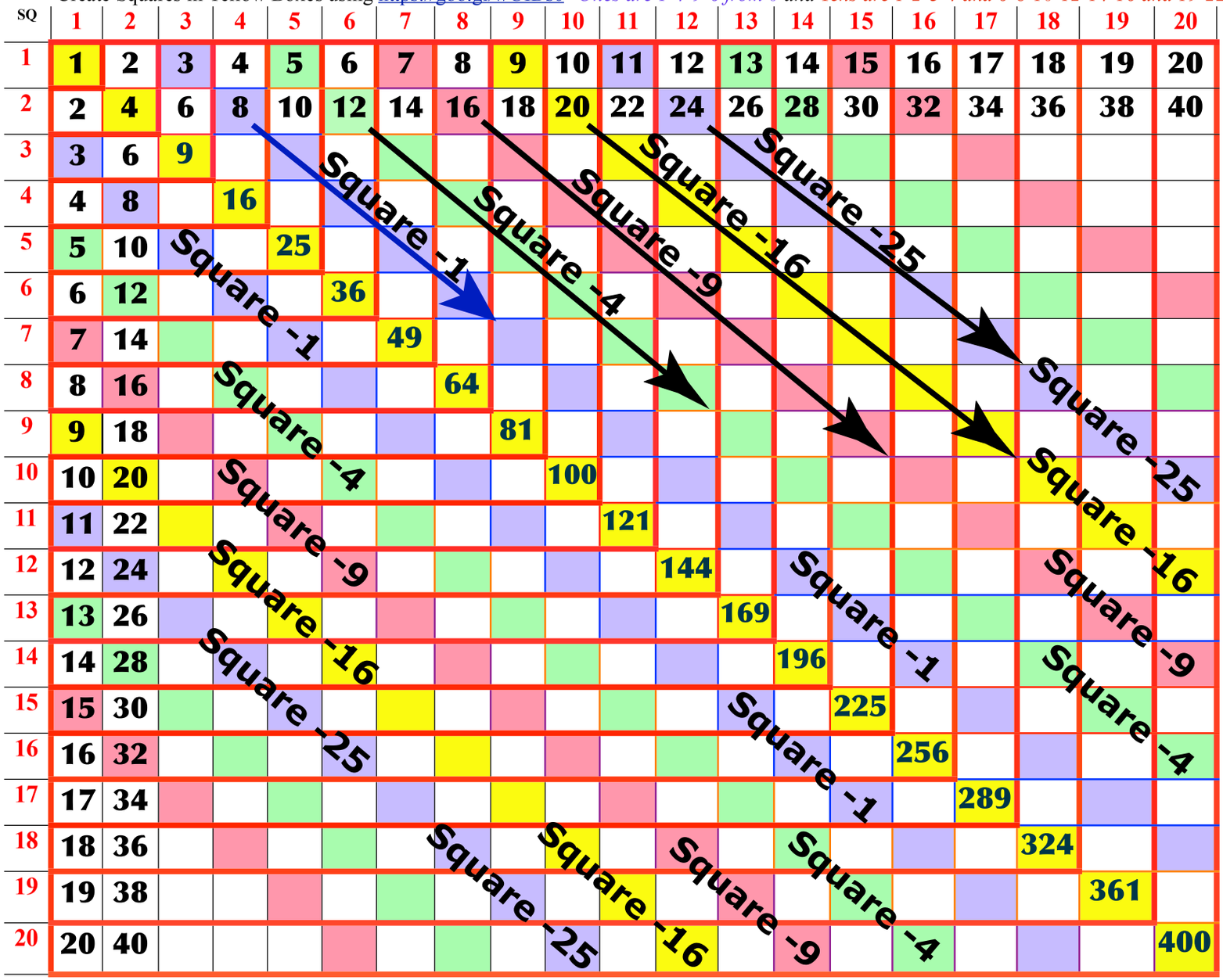
***Multiply Any Two numbers: Subtract any two numbers you want to multiply** and follow the rules below. **You only use the SN (smaller number) and +&-**. The formula is based on the fact that if numbers are 1-4-9-16-25 less than the middle square if they are 2-4-6-8-10 apart. Odd number apart? Use SN, find lower even number, and add SN.*
If you learn the squares you can you can figure out or confirm any multiplication fact. Half of boxes in the chart below are even numbers apart and colored. Find these and add SN for next clear box (odd apart).

1) Create the Squares to 20x20 (see MisterNumbers video https://goo.gl/wUIDs0 YELLOW middle diagonal
2) Create **2X row and column** by adding each number to itself (**double 1st number**).
3) Create numbers **1 apart** by **adding SN** (Smaller Number) **to square** of SN.
4) Create numbers **2 apart (blue)** by **add 1 to SN, square that, (square middle number) minus 1 (BLUE)**
5) Create numbers **3 apart** by **adding 1 to SN, square that, minus 1 plus SN**
6) Create numbers **4 apart (green)** by **adding 2 to SN, squaring that, minus 4 (GREEN)**
7) Create numbers **5 apart** by adding 2 to SN, squaring that, minus 4, **plus SN**
8) Create numbers **6 apart (pink)** by **adding 3 to SN, squaring that, minus 9 (PINK)**
9) Create numbers **7 apart** by adding 3 to SN, squaring that, minus 9, **plus SN**
10) Create numbers **8 apart (yellow)** by **adding 4 to SN, squaring that, minus 16** (NEXT YELLOW)
11) Create numbers **9 apart** by adding 4 to SN, squaring that, minus 16, **plus SN**
12) Create numbers **10 apart (blue)** by **adding 5 to SN, squaring that, minus 25 (NEXT BLUE)**

Multiplying 20 x 20 tables mentally: This system fills in all the big facts. Use multiplication for smaller facts. Remember: you only need to know the SN and how far apart they are. Can be expanded to 50 x 50! Enjoy! - MisterNumbers

CREATING THE TIMES TABLE USING SQUARES: Colored Diagonals -1, 14, -9, -16, -25

Create Squares in Yellow Boxes using https://goo.gl/wUIDs0 *Ones are 1-4-9-6 from 0 and Tens are 1-2-3-4 and 6-8-10-12-14-16 and 19-22-25-28*



Yellow Boxes from top left are Squares. How would you find the numbers in the next white boxes?

CREATING THE TIMES TABLE USING SQUARES: Adding Yellow Squares (ex: 8x8)

Create Squares in Yellow Boxes using https://goo.gl/wUIDs0 *Ones are 1-4-9-6 from 0 and Tens are 1-2-3-4 and 6-8-10-12-14-16 and 19-22-25-28*

SQ	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
3	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60
4	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80
5	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
6	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120
7	7	14	21	28	35	42	49	56	63	70	77	84	91	98	105	112	119	126	133	140
8	8	16	24	32	40	48	56	64	72	80	88	96	104	112	120	128	136	144	152	160
9	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135	144	153	162	171	180
10	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200
11	11	22	33	44	55	66	77	88	99	110	121	132	143	154	165	176	187	198	209	220
12	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228	240
13	13	26	39	52	65	78	91	104	117	130	143	156	169	182	195	208	221	234	247	260
14	14	28	42	56	70	84	98	112	126	140	154	168	182	196	210	224	238	252	266	280
15	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300
16	16	32	48	64	80	96	112	128	144	160	176	192	208	224	240	256	272	288	304	320
17	17	34	51	68	85	102	119	136	153	170	187	204	221	238	255	272	289	306	323	340
18	18	36	54	72	90	108	126	144	162	180	198	216	234	252	270	288	306	324	342	360
19	19	38	57	76	95	114	133	152	171	190	209	228	247	266	285	304	323	342	361	380
20	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400

Yellow Boxes from top left are Squares. How would you find the numbers in the next white boxes?

CREATING THE TIMES TABLE USING SQUARES: Adding Ones of Squares 1-4-9-6-5

Create Squares in Yellow Boxes using https://goo.gl/wUIDs0 *Ones are 1-4-9-6 from 0 and Tens are 1-2-3-4 and 6-8-10-12-14-16 and 19-22-25-28*

SQ	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
3	3	6	9																	
4	4	8		6																
5	5	10			5															
6	6	12				6														
7	7	14					9													
8	8	16						4												
9	9	18							1											
10	10	20								0										
11	11	22									1									
12	12	24										4								
13	13	26											9							
14	14	28												6						
15	15	30													5					
16	16	32														6				
17	17	34															9			
18	18	36																4		
19	19	38																	1	
20	20	40																		0

Yellow Boxes from top left are Squares. How would you find the numbers in the next white boxes?

CREATING THE TIMES TABLE USING SQUARES: Adding Yellow Squares (ex: 8x8)

Create Squares in Yellow Boxes using https://goo.gl/wUIDs0 *Ones are 1-4-9-6 from 0 and Tens are 1-2-3-4 and 6-8-10-12-14-16 and 19-22-25-28*

SQ	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
3	3	6	9																	
4	4	8		16																
5	5	10			25															
6	6	12				36														
7	7	14					49													
8	8	16						64												
9	9	18							81											
10	10	20								100										
11	11	22									121									
12	12	24										144								
13	13	26											169							
14	14	28												196						
15	15	30													225					
16	16	32														256				
17	17	34															289			
18	18	36																324		
19	19	38																	361	
20	20	40																		400

Yellow Boxes from top left are Squares. How would you find the numbers in the next white boxes?

CREATING THE TIMES TABLE USING SQUARES: Adding Yellow Squares (ex: 8x8)

Create Squares in Yellow Boxes using https://goo.gl/wUIDs0 *Ones are 1-4-9-6 from 0* and *Tens are 1-2-3-4 and 6-8-10-12-14-16 and 19-22-25-2*

SQ	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
3	3	6	9																	
4	4	8		16																
5	5	10			25															
6	6	12				36														
7	7	14					49													
8	8	16						64												
9	9	18							81											
10	10	20								100										
11	11	22									121									
12	12	24										144								
13	13	26											169							
14	14	28												196						
15	15	30													225					
16	16	32														256				
17	17	34															289			
18	18	36																324		
19	19	38																	361	
20	20	40																		400

Yellow Boxes from top left are Squares. How would you find the numbers in the next white boxes?

CREATING THE TIMES TABLE USING SQUARES: Mirror Image around Squares

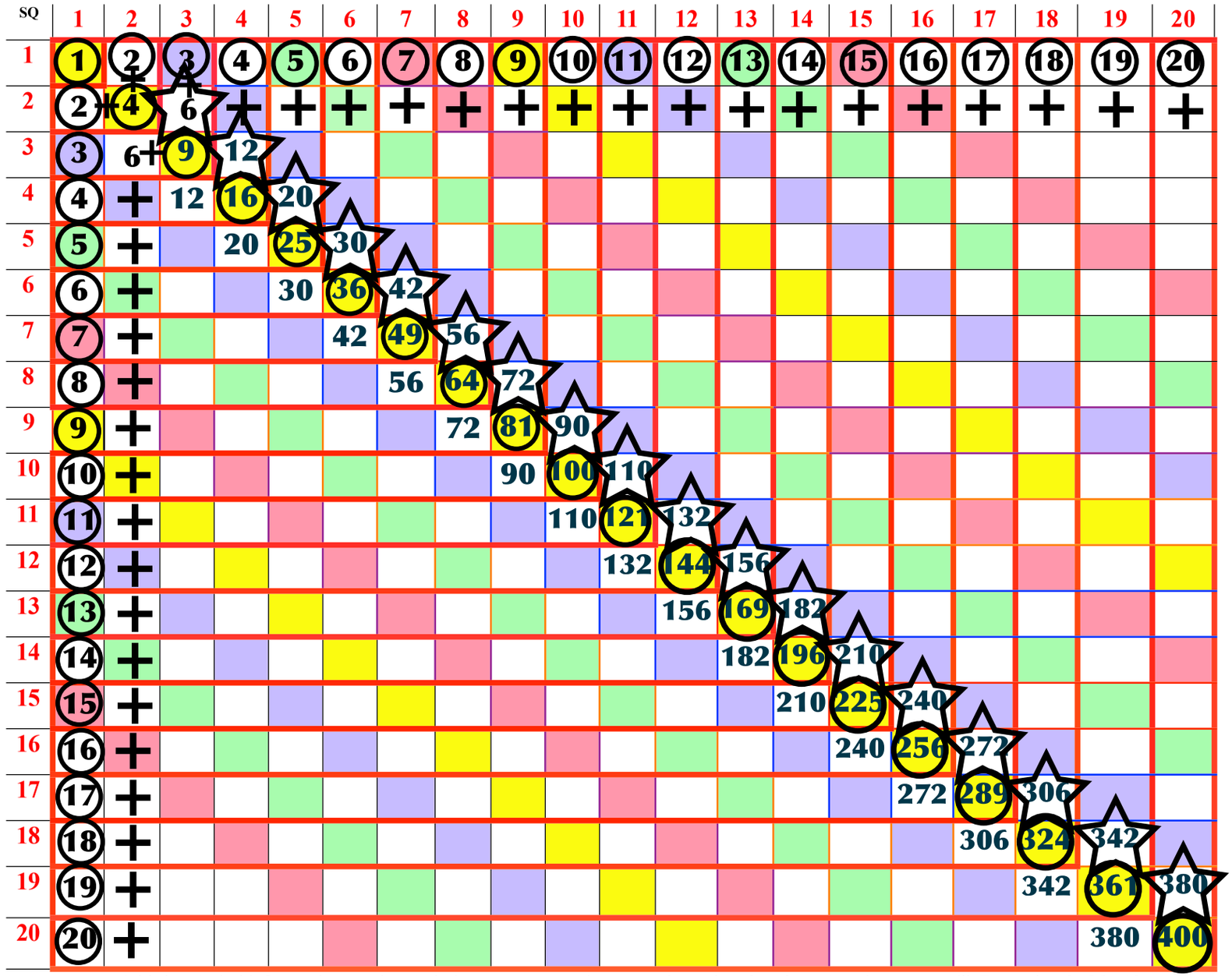
All Numbers are the same on both sides of the Squares

SQ	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
3	3	6	9	12	15	18	21	24	27	30	33									
4	4	8	12	16	20	24	28	32	36	40	44	48								
5	5	10	15	20	25	30					55	60	65							
6	6	12	18	24	30	36		48	54	60		72	78	84						
7	7	14	21	28	35		49	56	63	70	77		91	98	105					
8	8	16	24	32	40	48	56	64	72	80	88	99	104	112	120	128				
9	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135	144	153			
10	10	20	30	40	50	60	70	80	90	100	33	120	130	140	150	160	170	180		
11	11	22	33	44	55	66	77	88	99	110	121	132	143	154	165	176	187	198	209	
12	12	24		48	60	72	84	99	108	120	132	144	156	168	180	192	204	216	228	240
13	13	26			65	78	91	104	117	130	143	156	169	182	195	208	221	234	247	260
14	14	28				84	98	112	126	140	154	168	182	196	210	224	238	252	266	280
15	15	30					105	120	135	150	165	180	195	210	225	240	255	270	285	300
16	16	32						128	144	160	176	192	208	224	240	256	272	288	304	320
17	17	34							153	170	187	204	221	238	255	272	289	306	323	340
18	18	36								180	198	216	234	252	270	288	306	324	342	360
19	19	38									209	228	247	266	285	304	323	342	361	380
20	20	40										240	260	280	300	320	340	360	380	400

Numbers 8 apart: Yellow Box = Diagonal Square (middle number) - 16. How would you find the numbers in the next white boxes?

CREATING THE TIMES TABLE USING SQUARES, Multipying Numbers one apart

SN = Smaller Number $SN^2 + SN$ (example 3x4 = 32 +3) © MisterNumbers Pattern Play Math 2015



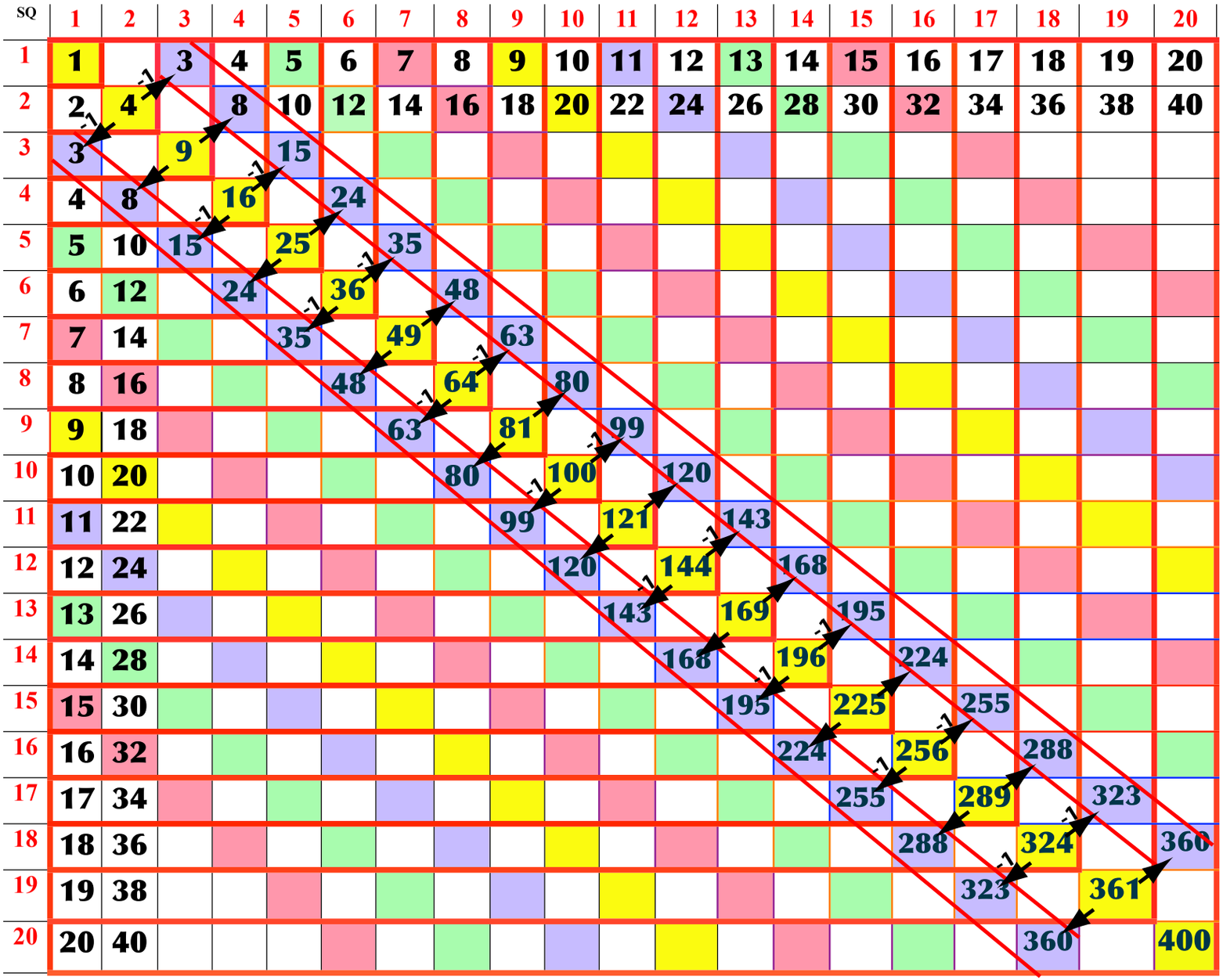
Add the circled left number to the circled square to get the starred number (works going down as well) Example: 6+36=42

CREATING THE TIMES TABLE USING SQUARES and plus and minus

SQ	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
3	3	6	9	12																
4	4	8	12	16	20															
5	5	10		20	25	30														
6	6	12			30	36	42													
7	7	14				42	49	56												
8	8	16					56	64	72											
9	9	18						72	81	90										
10	10	20							90	100	110									
11	11	22								110	121	132								
12	12	24									132	144	156							
13	13	26										156	169	182						
14	14	28											182	196	210					
15	15	30												210	225	240				
16	16	32													240	256	272			
17	17	34														272	289	306		
18	18	36															306	324	342	
19	19	38																342	361	380
20	20	40																	380	400

CREATING THE TIMES TABLE USING SQUARES: Purple Diagonals = Squares Minus one

Multiply numbers two apart? (ex: 6x8 = 7^2 -1) = 48 = Square middle number -1 ☺ SN = Smaller Number ☺ middle number is SN+1 ☺ $(SN+1)^2$ -1



Purple Boxes are one less than Yellow Squares they touch. How would you find the numbers in the next white boxes?

CREATING THE TIMES TABLE USING SQUARES: Adding numbers two apart (ex: 6x8)

Purple boxes are one less than touching squares (ex: $6x8 = 7^2 - 1) = 48$ ☺ SN = Smaller Number ☺ middle number is SN+1 ☺ $(SN+1)^2 - 1$

SQ	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2	2	4		8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
3	3		9		15															
4	4	8		16		24														
5	5	10	15		25		35													
6	6	12		24		36		48												
7	7	14			35		49		63											
8	8	16				48		64		80										
9	9	18					63		81		99									
10	10	20						80		100		120								
11	11	22							99		121		143							
12	12	24								120		144		168						
13	13	26									143		169		195					
14	14	28										168		196		224				
15	15	30											195		225		255			
16	16	32												224		256		288		
17	17	34													255		289		323	
18	18	36														288		324		360
19	19	38															323		361	
20	20	40																360		400

Purple Boxes are one less than Yellow Squares they touch. How would you find the numbers in the next white boxes?

CREATING THE TIMES TABLE USING SQUARES: Adding numbers two apart (ex: 6x8)

Purple boxes are one less than touching squares (ex: 6x8 = 7^2 -1) = 48 ☺ SN = Smaller Number ☺ middle number is SN+1 ☺ $(SN+1)^2$ -1

SQ	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
3	3	6	9	12	15															
4	4	8	12	16	20	24														
5	5	10	15	20	25	30	35													
6	6	12		24	30	36	42	48												
7	7	14			35	42	49	56	63											
8	8	16				48	56	64	72	80										
9	9	18					63	72	81	90	99									
10	10	20						80	90	100	110	120								
11	11	22							99	110	121	132	143							
12	12	24								120	132	144	156	168						
13	13	26									143	156	169	182	195					
14	14	28										168	182	196	210	224				
15	15	30											195	210	225	240	255			
16	16	32												224	240	256	272	288		
17	17	34													255	272	289	306	323	
18	18	36														288	306	324	342	360
19	19	38															323	342	361	380
20	20	40																360	380	400

Purple Boxes are one less than Yellow Squares they touch. How would you find the numbers in the next white boxes?

CREATING THE TIMES TABLE USING SQUARES: Adding numbers three apart (ex: 3x6)

SN = Smaller Number $(SN+1)^2 + SN - 1$ ex: $3x6 = 4^2 + 2 = 18$

SQ	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
3	3	6	9	12	15	18														
4	4	8	12	16	20	24	28													
5	5	10	15	20	25	30	35	40												
6	6	12	18	24	30	36	42	48	54											
7	7	14		28	35	42	49	56	63	70										
8	8	16			40	48	56	64	72	80	88									
9	9	18				54	63	72	81	90	99	108								
10	10	20					70	80	90	100	110	120	130							
11	11	22						88	99	110	121	132	143	154						
12	12	24							108	120	132	144	156	168	180					
13	13	26								130	143	156	169	182	195	208				
14	14	28									154	168	182	196	210	224	238			
15	15	30										180	195	210	225	240	255	270		
16	16	32											208	224	240	256	272	288	304	
17	17	34												238	255	272	289	306	323	340
18	18	36													270	288	306	324	342	360
19	19	38														304	323	342	361	380
20	20	40															340	360	380	400

Numbers 3 apart: Find Purple Box (Square -1) and add SN How would you find the numbers in the next green boxes?

CREATING THE TIMES TABLE USING SQUARES: 4 Apart = Squares - 4

SN = Smaller Number $(SN+2)^2 - 4$ ex: $2x6 = 4^2 - 4 = 12$

SQ	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2	2	4	6		10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
3	3	6	9	12		18	21													
4	4		12	16	20		28	32												
5	5	10		20	25	30		40	45											
6	6	12	18		30	36	42		54	60										
7	7	14	21	28		42	49	56		70	77									
8	8	16		32	40		56	64	72		88	96								
9	9	18			45	54		72	81	90		108	117							
10	10	20				60	70		90	100	110		130	140						
11	11	22					77	88		110	121	132		154	165					
12	12	24						96	108		132	144	156		180	192				
13	13	26							117	130		156	169	182		208	221			
14	14	28								140	154		182	196	210		238	252		
15	15	30									165	180		210	225	240		270	285	
16	16	32										192	208		240	256	272		304	320
17	17	34											221	238		272	289	306		340
18	18	36												252	270		306	324	342	
19	19	38													285	304		342	361	380
20	20	40														320	340		380	400

Numbers 4 apart: Find Green Box on diagonal (Square -4) How would you find the numbers in the next white boxes?

CREATING THE TIMES TABLE USING SQUARES: Adding numbers four apart (ex: 2x6)

SN = Smaller Number $(SN+2)^2 - 4$ ex: $2x6 = 4^2 - 4 = 12$

SQ	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
3	3	6	9	12	15	18	21													
4	4	8	12	16	20	24	28	32												
5	5	10	15	20	25	30	35	40	45											
6	6	12	18	24	30	36	42	48	54	60										
7	7	14	21	28	35	42	49	56	63	70	77									
8	8	16		32	40	48	56	64	72	80	88	96								
9	9	18			45	54	63	72	81	90	99	108	117							
10	10	20				60	70	80	90	100	110	120	130	140						
11	11	22					77	88	99	110	121	132	143	154	165					
12	12	24						96	108	120	132	144	156	168	180	192				
13	13	26							117	130	143	156	169	182	195	208	221			
14	14	28								140	154	168	182	196	210	224	238	252		
15	15	30									165	180	195	210	225	240	255	270	285	
16	16	32										192	208	224	240	256	272	288	304	320
17	17	34											221	238	255	272	289	306	323	340
18	18	36												252	270	288	306	324	342	360
19	19	38													285	304	323	342	361	380
20	20	40														320	340	360	380	400

Numbers 4 apart: Find Green Box on diagonal (Square -4) How would you find the numbers in the next white boxes?

CREATING THE TIMES TABLE USING SQUARES: Adding numbers five apart (ex: 2x7)

SN = Smaller Number $(SN+2)^2 - 4 + SN$ ex: $2x7 = 4^2 - 4 + 2 = 14$

SQ	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
3	3	6	9	12	15	18	21	24												
4	4	8	12	16	20	24	28	32	36											
5	5	10	15	20	25	30	35	40	45	50										
6	6	12	18	24	30	36	42	48	54	60	66									
7	7	14	21	28	35	42	49	56	63	70	77	84								
8	8	16	24	32	40	48	56	64	72	80	88	96	104							
9	9	18		36	45	54	63	72	81	90	99	108	117	126						
10	10	20			50	60	70	80	90	100	110	120	130	140	150					
11	11	22				66	77	88	99	110	121	132	143	154	165	176				
12	12	24					84	96	108	120	132	144	156	168	180	192	204			
13	13	26						104	117	130	143	156	169	182	195	208	221	234		
14	14	28							126	140	154	168	182	196	210	224	238	252	266	
15	15	30								150	165	180	195	210	225	240	255	270	285	300
16	16	32									176	192	208	224	240	256	272	288	304	320
17	17	34										204	221	238	255	272	289	306	323	340
18	18	36											234	252	270	288	306	324	342	360
19	19	38												266	285	304	323	342	361	380
20	20	40													300	320	340	360	380	400

Numbers 5 apart: Find Green Box on diagonal (Square -4) +SN How would you find the numbers in the next red boxes?

CREATING THE TIMES TABLE USING SQUARES: Adding numbers six apart (ex: 2x8)

SN = Smaller Number $(SN+3)^2 - 9$ ex: $2x8 = 5^2 - 9 = 16$

SQ	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
3	3	6	9	12	15	18	21	24	27											
4	4	8	12	16	20	24	28	32	36	40										
5	5	10	15	20	25	30	35	40	45	50	55									
6	6	12	18	24	30	36	42	48	54	60	66	80								
7	7	14	21	28	35	42	49	56	63	70	77	84	91							
8	8	16	24	32	40	48	56	64	72	80	88	99	104	112						
9	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135					
10	10	20		40	50	60	70	80	90	100	110	120	130	140	150	160				
11	11	22			55	66	77	88	99	110	121	132	143	154	165	176	187			
12	12	24				80	84	99	108	120	132	144	156	168	180	192	204	216		
13	13	26					91	104	117	130	143	156	169	182	195	208	221	234	247	
14	14	28						112	126	140	154	168	182	196	210	224	238	252	266	280
15	15	30							135	150	165	180	195	210	225	240	255	270	285	300
16	16	32								160	176	192	208	224	240	256	272	288	304	320
17	17	34									187	204	221	238	255	272	289	306	323	340
18	18	36										216	234	252	270	288	306	324	342	360
19	19	38											247	266	285	304	323	342	361	380
20	20	40												280	300	320	340	360	380	400

Numbers 6 apart: Red Box = Diagonal Square (middle number) - 9. How would you find the numbers in the next white boxes?

CREATING THE TIMES TABLE USING SQUARES: Adding numbers seven apart (ex: 2x9)

SN = Smaller Number $(SN+3)^2 - 9 + SN$ ex: $2x9 = 5^2 - 9 + 2 = 18$

SQ	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
3	3	6	9	12	15	18	21	24	27	30										
4	4	8	12	16	20	24	28	32	36	40	44									
5	5	10	15	20	25	30	35	40	45	50	55	60								
6	6	12	18	24	30	36	42	48	54	60	66	72	78							
7	7	14	21	28	35	42	49	56	63	70	77	84	91	98						
8	8	16	24	32	40	48	56	64	72	80	88	99	104	112	120					
9	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135	144				
10	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170			
11	11	22		44	55	66	77	88	99	110	121	132	143	154	165	176	187	198		
12	12	24			60	72	84	99	108	120	132	144	156	168	180	192	204	216	228	
13	13	26				78	91	104	117	130	143	156	169	182	195	208	221	234	247	260
14	14	28					98	112	126	140	154	168	182	196	210	224	238	252	266	280
15	15	30						120	135	150	165	180	195	210	225	240	255	270	285	300
16	16	32							144	160	176	192	208	224	240	256	272	288	304	320
17	17	34								170	187	204	221	238	255	272	289	306	323	340
18	18	36									198	216	234	252	270	288	306	324	342	360
19	19	38										228	247	266	285	304	323	342	361	380
20	20	40											260	280	300	320	340	360	380	400

Numbers 7 apart: Red Box = Diagonal Square (middle number) - 9 +SN. How would you find the numbers in the next yellow boxes?

CREATING THE TIMES TABLE USING SQUARES: Adding numbers eight apart (ex: 2x10)

SN = Smaller Number $(SN+4)^2 - 16$ ex: $2 \times 10 = 6^2 - 16 = 20$

SQ	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
3	3	6	9	12	15	18	21	24	27	30	33									
4	4	8	12	16	20	24	28	32	36	40	44	48								
5	5	10	15	20	25	30	35	40	45	50	55	60	65							
6	6	12	18	24	30	36	42	48	54	60	66	72	78	84						
7	7	14	21	28	35	42	49	56	63	70	77	84	91	98	105					
8	8	16	24	32	40	48	56	64	72	80	88	99	104	112	120	128				
9	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135	144	153			
10	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180		
11	11	22	33	44	55	66	77	88	99	110	121	132	143	154	165	176	187	198	209	
12	12	24		48	60	72	84	99	108	120	132	144	156	168	180	192	204	216	228	240
13	13	26			65	78	91	104	117	130	143	156	169	182	195	208	221	234	247	260
14	14	28				84	98	112	126	140	154	168	182	196	210	224	238	252	266	280
15	15	30					105	120	135	150	165	180	195	210	225	240	255	270	285	300
16	16	32						128	144	160	176	192	208	224	240	256	272	288	304	320
17	17	34							153	170	187	204	221	238	255	272	289	306	323	340
18	18	36								180	198	216	234	252	270	288	306	324	342	360
19	19	38									209	228	247	266	285	304	323	342	361	380
20	20	40										240	260	280	300	320	340	360	380	400

Numbers 8 apart: Yellow Box = Diagonal Square (middle number) - 16. How would you find the numbers in the next white boxes?

CREATING THE TIMES TABLE USING SQUARES: Adding numbers Nine apart (ex: 2x11)

SN = Smaller Number $(SN+4)^2 - 16 + SN$ ex: $2x11 = 6^2 - 16 + 2 = 22$

SQ	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
3	3	6	9	12	15	18	21	24	27	30	33	36								
4	4	8	12	16	20	24	28	32	36	40	44	48	52							
5	5	10	15	20	25	30	35	40	45	50	55	60	65	70						
6	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90					
7	7	14	21	28	35	42	49	56	63	70	77	84	91	98	105	112				
8	8	16	24	32	40	48	56	64	72	80	88	99	104	112	120	128	136			
9	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135	144	153	162		
10	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	
11	11	22	33	44	55	66	77	88	99	110	121	132	143	154	165	176	187	198	209	220
12	12	24	33	48	60	72	84	99	108	120	132	144	156	168	180	192	204	216	228	240
13	13	26		52	65	78	91	104	117	130	143	156	169	182	195	208	221	234	247	260
14	14	28			70	84	98	112	126	140	154	168	182	196	210	224	238	252	266	280
15	15	30				90	105	120	135	150	165	180	195	210	225	240	255	270	285	300
16	16	32					112	128	144	160	176	192	208	224	240	256	272	288	304	320
17	17	34						136	153	170	187	204	221	238	255	272	289	306	323	340
18	18	36							162	180	198	216	234	252	270	288	306	324	342	360
19	19	38								190	209	228	247	266	285	304	323	342	361	380
20	20	40									220	240	260	280	300	320	340	360	380	400

Numbers 8 apart: Yellow Box = Diagonal Square (middle number) - 16. How would you find the numbers in the next white boxes?

CREATING THE TIMES TABLE USING SQUARES: Adding numbers Ten apart (ex: 2x12)

SN = Smaller Number $(SN+5)^2 - 25$ ex: $2x12 = 7^2 - 25 = 24$

SQ	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
3	3	6	9	12	15	18	21	24	27	30	33	36	39							
4	4	8	12	16	20	24	28	32	36	40	44	48	52	56						
5	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75					
6	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96				
7	7	14	21	28	35	42	49	56	63	70	77	84	91	98	105	112	119			
8	8	16	24	32	40	48	56	64	72	80	88	99	104	112	120	128	136	144		
9	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135	144	153	162	171	
10	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200
11	11	22	33	44	55	66	77	88	99	110	121	132	143	154	165	176	187	198	209	220
12	12	24	33	48	60	72	84	99	108	120	132	144	156	168	180	192	204	216	228	240
13	13	26	39	52	65	78	91	104	117	130	143	156	169	182	195	208	221	234	247	260
14	14	28		56	70	84	98	112	126	140	154	168	182	196	210	224	238	252	266	280
15	15	30			75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300
16	16	32				96	112	128	144	160	176	192	208	224	240	256	272	288	304	320
17	17	34					119	136	153	170	187	204	221	238	255	272	289	306	323	340
18	18	36						144	162	180	198	216	234	252	270	288	306	324	342	360
19	19	38							171	190	209	228	247	266	285	304	323	342	361	380
20	20	40								200	220	240	260	280	300	320	340	360	380	400

Numbers 10 apart: Purple Box = Diagonal Square - 25 How would you find the numbers in the next white boxes?

CREATING THE TIMES TABLE USING SQUARES: All Facts in Place

Create on the Diagonals from Squares and watch for Patterns

SQ	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
3	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60
4	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80
5	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
6	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	119	119	119	120
7	7	14	21	28	35	42	49	56	63	70	77	84	91	98	105	112	119	119	119	140
8	8	16	24	32	40	48	56	64	72	80	88	99	104	112	120	128	136	144	119	160
9	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135	144	153	162	171	180
10	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200
11	11	22	33	44	55	66	77	88	99	110	121	132	143	154	165	176	187	198	209	220
12	12	24	33	48	60	72	84	99	108	120	132	144	156	168	180	192	204	216	228	240
13	13	26	39	52	65	78	91	104	117	130	143	156	169	182	195	208	221	234	247	260
14	14	28	42	56	70	84	98	112	126	140	154	168	182	196	210	224	238	252	266	280
15	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300
16	16	32	48	64	80	96	112	128	144	160	176	192	208	224	240	256	272	288	304	320
17	17	34	51	68	85	102	119	136	153	170	187	204	221	238	255	272	289	306	323	340
18	18	36	54	72	90	108	126	144	162	180	198	216	234	252	270	288	306	324	342	360
19	19	38	57	76	95	114	133	152	171	190	209	228	247	266	285	304	323	342	361	380
20	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400

Look for patterns in eight directions from each box

Number Wheels

Ten Adds and Multiplication

Ten-Adds (Pairs of numbers that add up to 10)

ALL ADDITION FALLS WITH PLUS OR MINUS 2 OF THE FIVE-ADDS OR TEN-ADDS

Start with the 5 at the bottom of the Ten-Add Number Wheel. It is alone, so double it and it add up to ten. Think of your two hands. You have five fingers on each hand, and ten finger in all. A great way to look at numbers adding up to ten. Have a student look at his hands and hold a ruler between the hands. Still ten fingers, but separated by the ruler into 5 + 5. Move the ruler to divide the fingers into 4+6. Still 10 fingers. 3+7, 2+8, 1+9. 0+10. Then slowly step down to 9+1, 8+2, etc down to 0+10. Keep asking how many fingers they have.

The other way to do this is to use five coins in each hand (pennies or quarters?). This is 5+5=10. Place one coin from the left hand into the right and you have 4+6=10. Still ten coins. Add another coin makes it 3+7=10. Go down to 0+10=10 and then back to 10+0=10. Always ten coins and remembering which numbers go together.

Now look at the Ten-Add Number Wheel and have kids see that the numbers across from each other (making parallel lines) add up to 10. If they can visualize the wheel, they can SEE the Ten-Adds. Give them one number and see if they can SEE the Ten-Add pair. Spend time daily to anchor these Ten-Add pairs.

Give kids numbers that add up to ten, and let them respond with "10". Give them 7+4 and see if they can identify that it is one more than a ten-add, or 11. Give them orally or worksheets that are within one of Ten-adds (pairs of numbers that add up to 9, 10, or 11.)

Stretch this to numbers that add up to 8, 9, 10, 11, or 12 (within 2 of a Ten-Add).

This also includes numbers that add up to 20, 30, 40 etc.

Five-Adds (Pairs of numbers that add up to 5)

Do the same thing with a Five-Add Number Circle. Numbers that add up to 5 or 15 (end in 5) create vertical lines on the number wheel. Use the ruler with one hand and separate the fingers into 1+4=5, 2=3=5, 3+2=5, 4+1=5 and 5+0=5. This is the middle and the right vertical lines on the Number Wheel. Ask students about the number pairs on the left. They all add up to 15. 6+9=15, 7+8=15, 8+7=15, and 9+6=15.

These numbers can also be thought of as "more than 5" add up to 5 that way (6+9 becomes 1+4=5)

Work with students to anchor the numbers that add up to 5 orally or with worksheets.

Expand this to plus or minus 2 (3 to 7).

Nine-Adds (Pairs of numbers that add up to 9)

Nine adds are parallel, and down one from Ten-Adds. Cool. If you say the numbers going around clockwise, they also give you the Nines times tables: 09-18-27-36-45-54-63-72-81-90.

Cube Numbers and Ten Adds

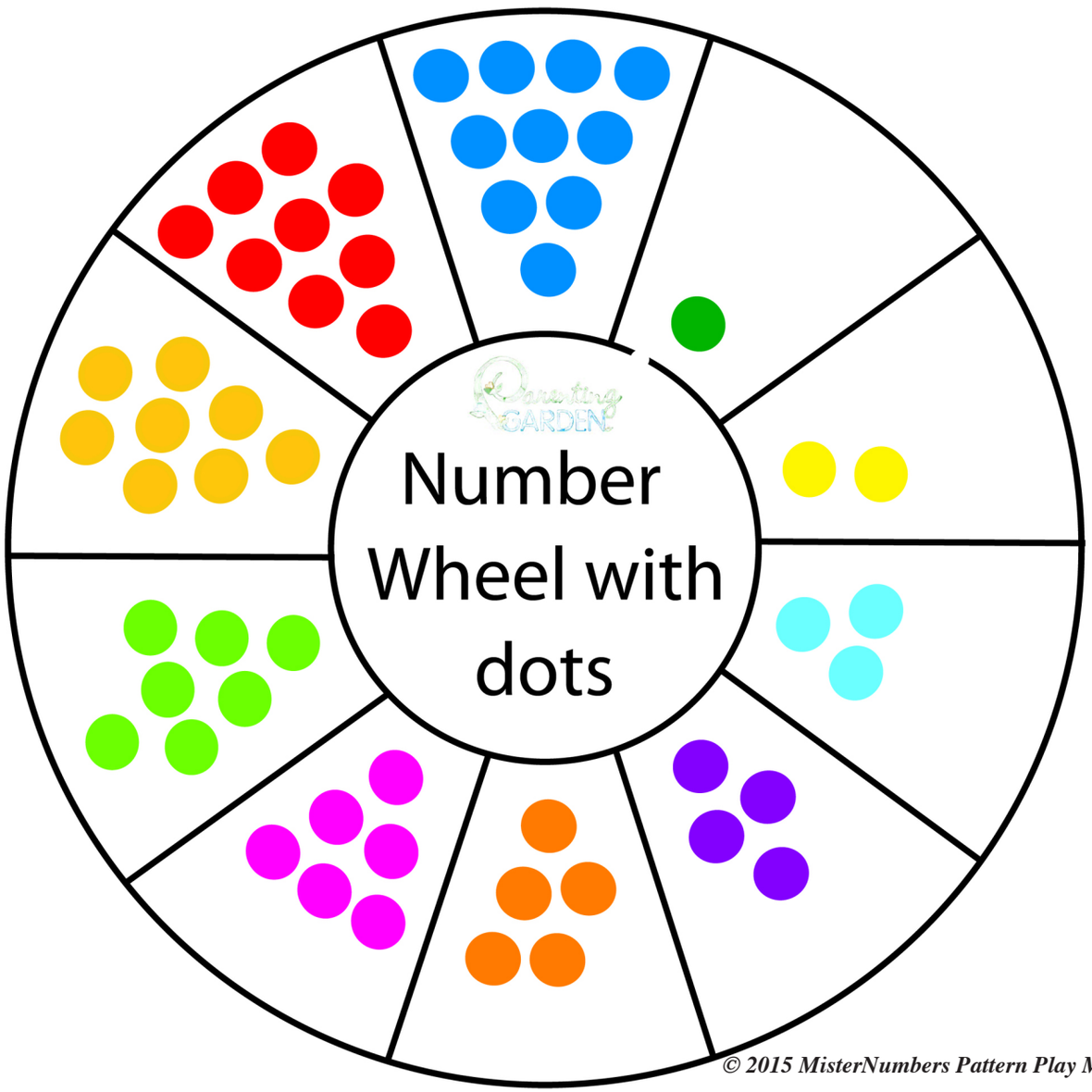
Another place that Ten Adds show happens when any number is cubed.

Numbers ending in:	Cube ends in:
0	**0**
1	**1**
2	**8**
3	**7**
4	**4**
5	**5**
6	**6**
7	**3**
8	**2**
9	**9**

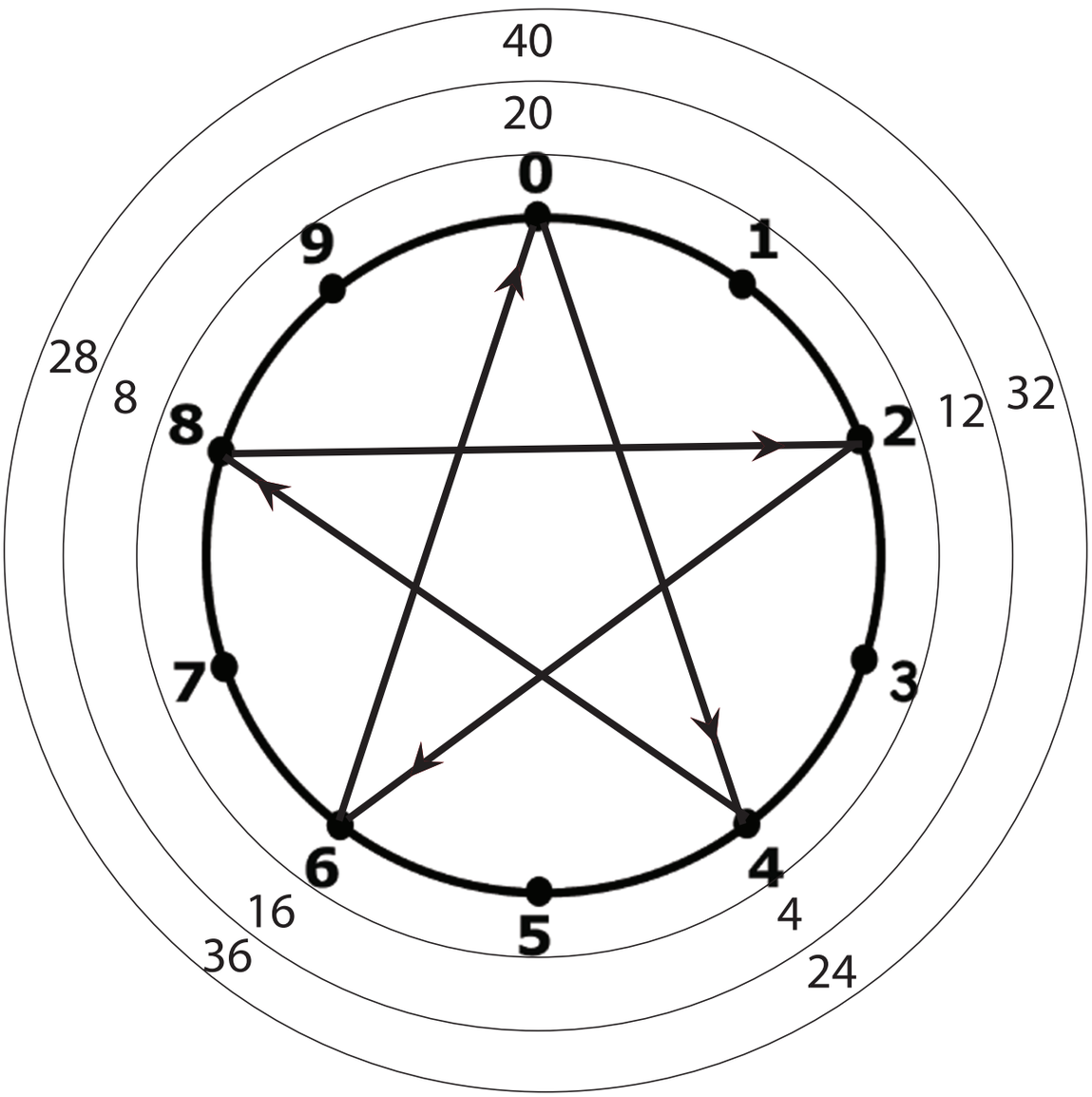
Most cubes end in the same number as the Ones of the root number.

The four exceptions are 2, 3, 7, and 8. All of them end in their Ten-Add pair: 2-8, 3-7, 7-3, and 8-2.

Visualize Number Wheels



Fours on a Number Circle: An Atomic STAR



Go around the numbers 4, 8, 2, 6, and 0 in the circle and make a STAR. Each time you reach 0, jump out one ring and go around again clockwise. The rings keep getting bigger and bigger and contain all the Fours.

Create 2s, 4s, 6s, 8s on these tables

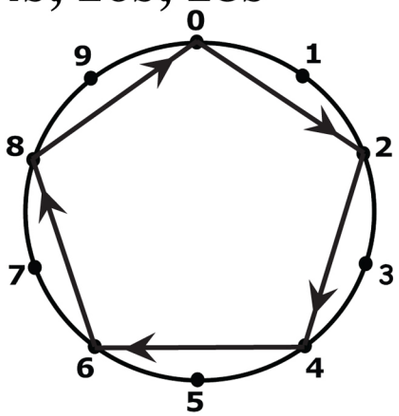
NUMBER WHEEL TABLES ARE IN ROWS OF 5: 5, 10, 15, 20, ETC

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20

Create the 2s, 4s, 6s, 8s, and 12s, 14s, 16s, 18s

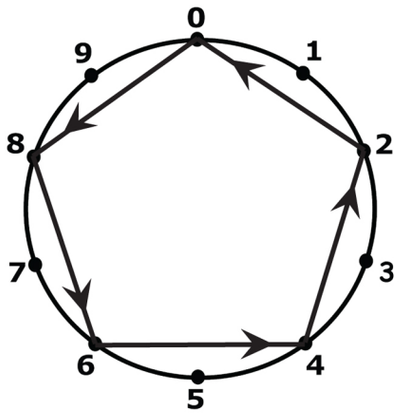
Create your Own Two and Twelves

2	4	6	8	0	x5
2	4	6	8	0	x10
2	4	6	8	0	x15
2	4	6	8	0	x20



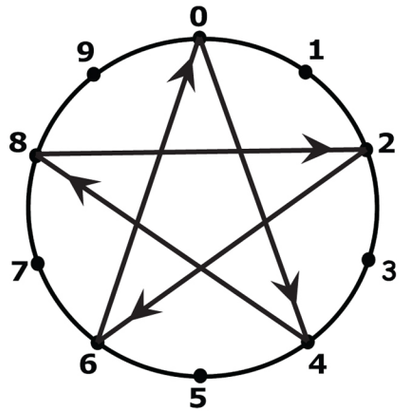
Create your Own Eights and Eighteens

8	6	4	2	0	x5
8	6	4	2	0	x10
8	6	4	2	0	x15
8	6	4	2	0	x20



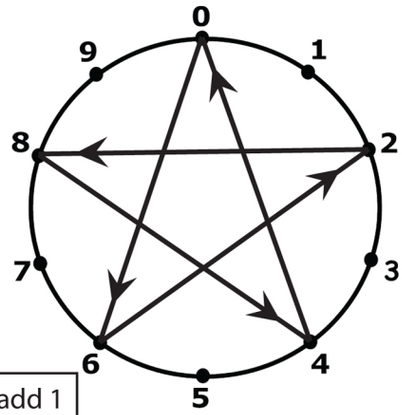
Create your Own Fours and Fourteens

4	8	2	6	0	x5
4	8	2	6	0	x10
4	8	2	6	0	x15
4	8	2	6	0	x20



Create your Own Sixes and Sixteens

6	2	8	4	0	x5
6	2	8	4	0	x10
6	2	8	4	0	x15
6	2	8	4	0	x20



The ones-digits repeat for each factor set. Start the tens-digits with 0 and add 1 each time the column has a smaller number to its left, indicated by an ⬆ above

FREE NUMBER WHEEL Iphone APP BY MISTERNUMBERS

I have FIVE IPHONE APPS and I have temporarily made them all FREE (ENJOY)
This one allows kids to create all numbers on the Number Wheel from 1-9.
Link is
Wheel Math Wheel Fun Iphone App
http://itunes.apple.com/us/app/wheel-math-wheel-fun/id387151566?mt=8

2) TTT †imes Table http://itunes.apple.com/us/app/tic-tac-toe-times-table/id395176671?mt=8

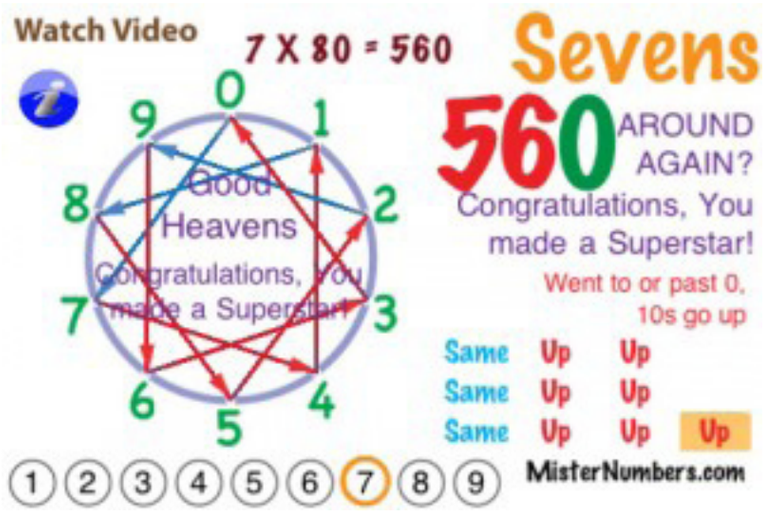
3) Wheel math 4 U http://itunes.apple.com/us/app/wheel-math-4-u/id395487961?mt=8

4) TTT Threes http://itunes.apple.com/us/app/tic-tac-toe-threes/id400623591?mt=8

5) TTT Sevens http://itunes.apple.com/us/app/tic-tac-toe-sevens/id400622245?mt=8

The Wheel Math apps work on iphone, but not on ipads, the other three work on both iphone and ipad.

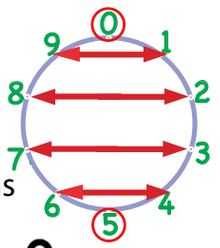
-MisterNumbers

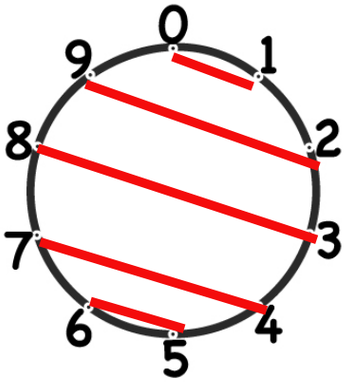


Addition on Number Wheels

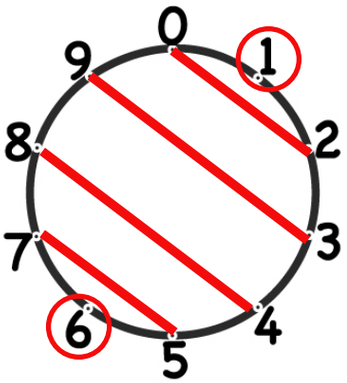
Number Wheels

Adding Numbers that end in:

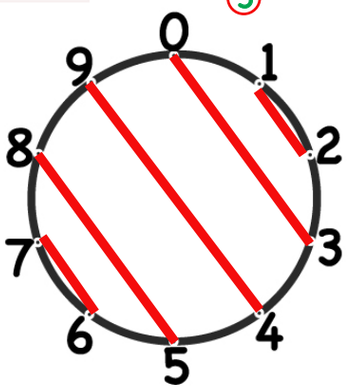




Ones

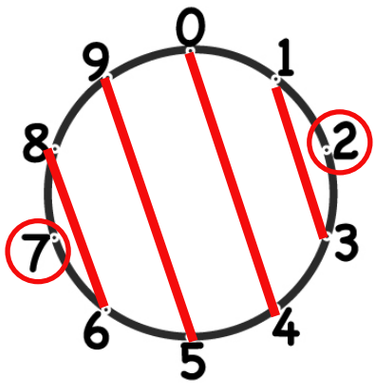


Twos

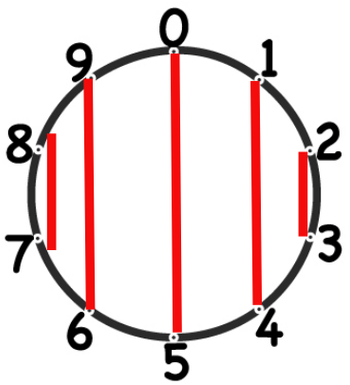


Threes

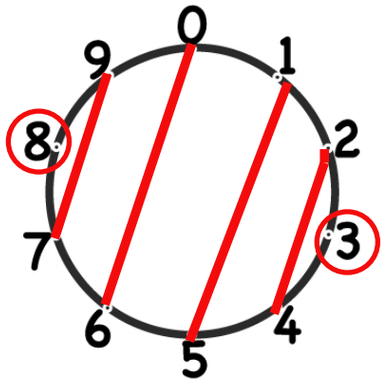
Add circled numbers to themselves (examples 1+1=2 and 6+6=12)



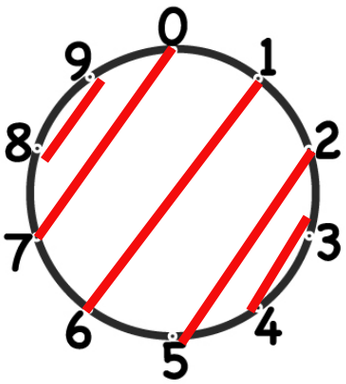
Fours



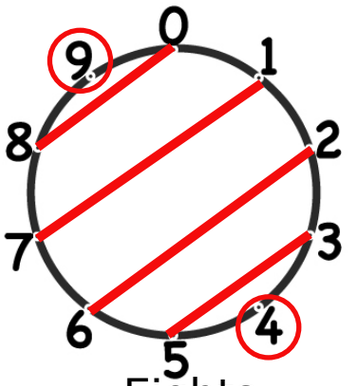
Fives



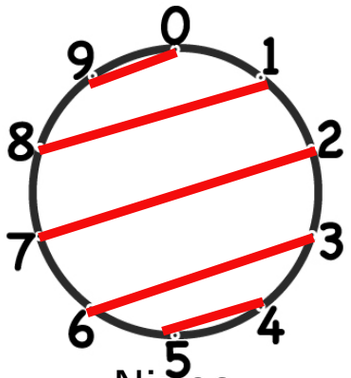
Sixes



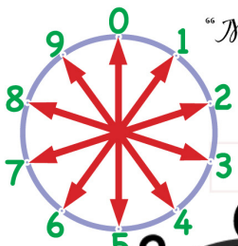
Sevens



Eights

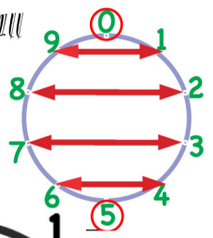


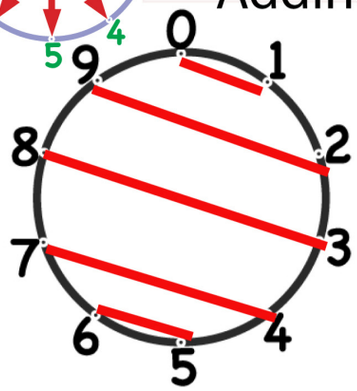
Nines



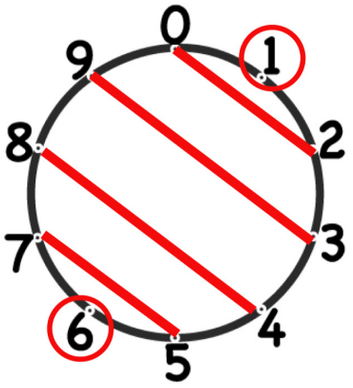
Number Wheels

Adding Numbers that end in:

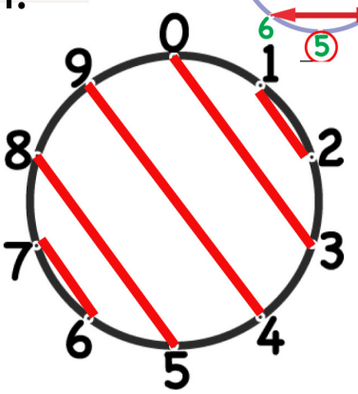




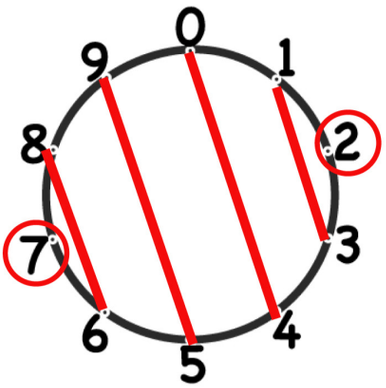
Ones



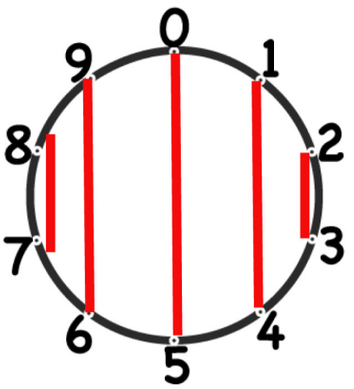
Twos



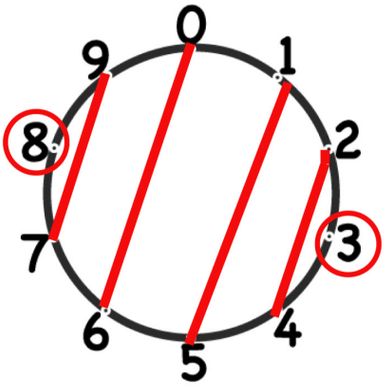
Threes



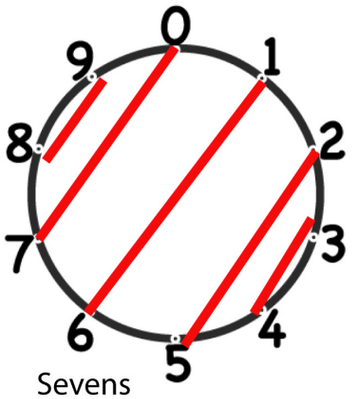
Fours



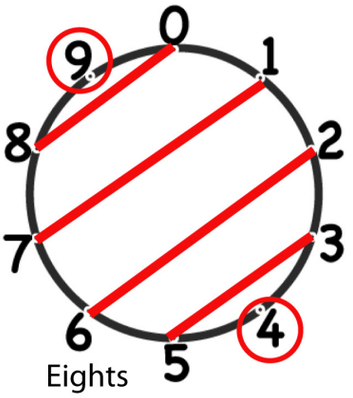
Fives



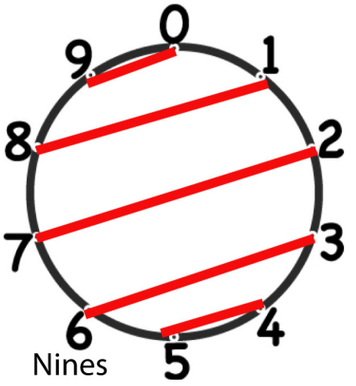
Sixes



Sevens



Eights



Nines

Instructions for Learning Addition on the Number Wheel

Look at any or all of the Addition Number Circles.
Let kids explore these ten number wheels. What do they see? What can they figure out? Let them own it!

Help for you or them if needed:
Let's start with 4: Pairs of Numbers whose sum ends in Four.
Look at the two ends of the arrow
Look at the circled numbers that are left alone
Add any of these two numbers and the sum will end in 4

To visualize this, start with seeing in your head the number wheel with 0 on top and 5 at the bottom.
It will help to make your own
Now see a line from 0 to any other number on the wheel.
Those two numbers will easily add up to the number other than 0, right? Example 0 and 9 = 9

See that all parallel lines add up to that number. Example 8 +1, 7 and 2, 6 and 3, 5 and 4, and their opposites.

With another even number (example 8) 0 and 8 add up to 8.
Also 1 and 7, 2 and 6, 3 and 5.
Even numbers leave two numbers alone on the outside, here the 4 and 9 are on the edge without a paired number.
DOUBLE these numbers: 4 plus 4 = 6 and 9 plus 9 = 18. These numbers also end in 8.
Imagine a parallel line touching the circle starting at the 4 and see in your mind another 4 at the end of that line,
Or a nine at the end of the line from the 9.

This will be true for all even numbers.
Draw 0 to 6 and parallel lines to 1 and 5, 2 and 4, 9 and 7. The sum of these all numbers end in 6.
3 and 8 are alone on the edge. Double 3 and 8 to get numbers ending in 6

Draw 0 to 4 and parallel lines to 1 and 3, 9 and 4, 8 and 6. The sum of these numbers all end in 4.
2 and 7 are alone on the edge. Double 2 and 7 to get numbers ending in 4.

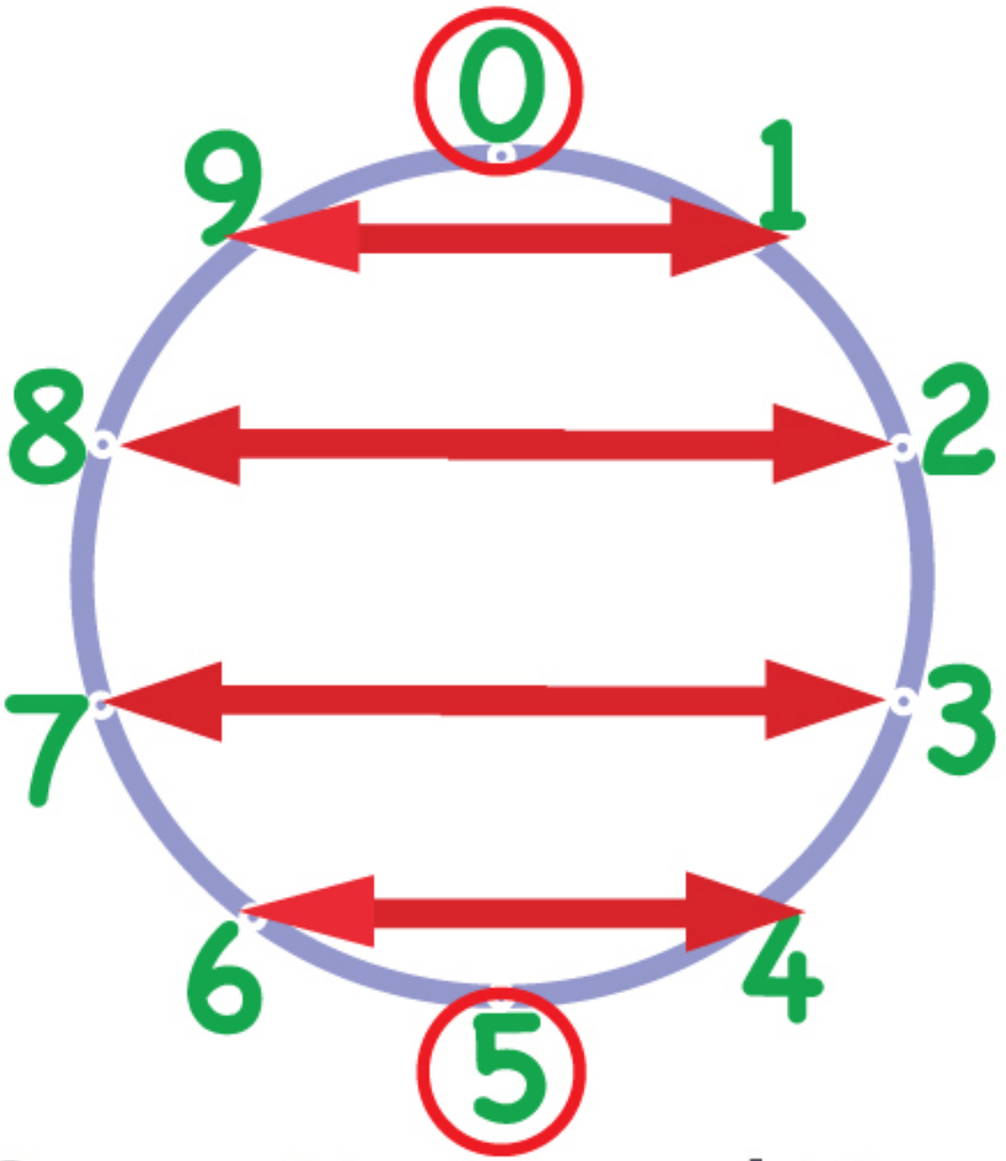
Draw 0 to 2 and parallel lines to 9 and 5, 8 and 4, 7 and 5. The sum of these all numbers end in 2.
1 and 6 are alone on the edge. Double 1 and 6 to get numbers ending in 2

Numbers that add up to ten ending in 0, another even number
You can't draw a (example 0) 0 and 8 add up to 8.
Look at the numbers that add up to ten Start with 5 and 5. Circle the 5.
Imagine 5 pennies in each hand. You have ten pennies, right?
Take one from your right hand and put it in your left hand. You still have 10 pennies! 6 and 4
Put another penny from your right hand and put it in your left hand. You still have 10 pennies! 7 and 3 =10
Put another penny from your right hand and put it in your left hand. You still have 10 pennies! 8 and 2 =10
Put another penny from your right hand and put it in your left hand. You still have 10 pennies! 9 and 1 =10
All these pairs of numbers have created horizontal lines. With 5 on the bottom and 0 on the top alone.
Put another penny from your right hand and put it in your left hand. You still have 10 pennies! 10 and 0 =10

Notice that the arrows from 0 and to the right add up to the number: example is 5: 0 and 5, 1 and 4, 2 and 3 =5
Lines on the left = 15: 6 plus 9 and 7 plus 8.

Plus or Minus 5 is VERY helpful Number Wheel for kids.

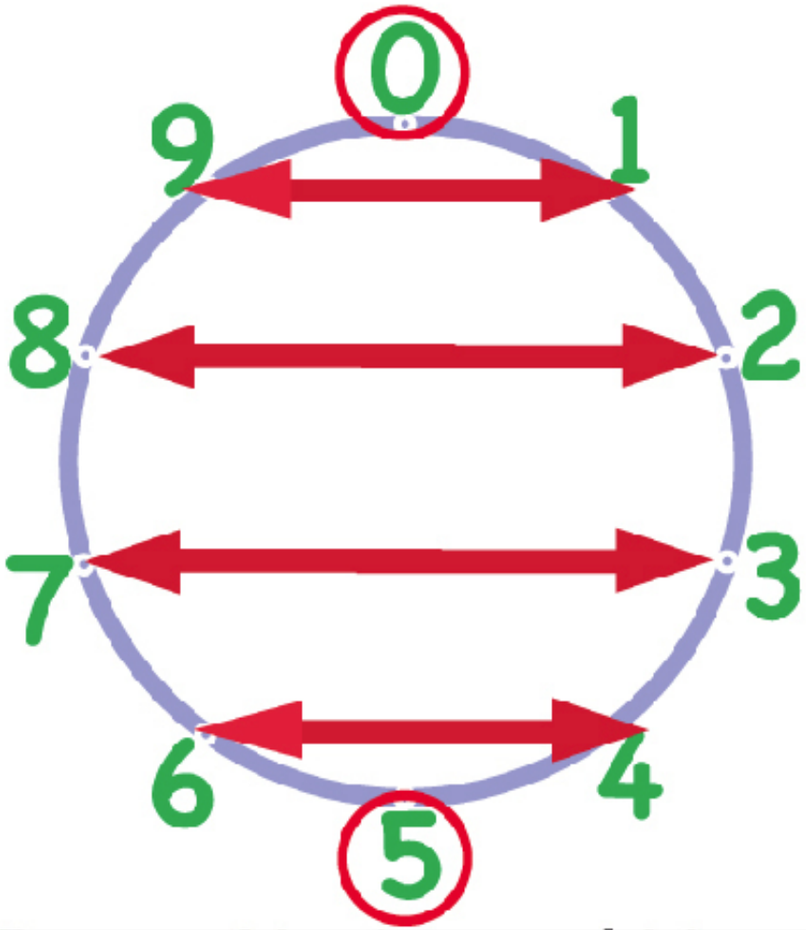
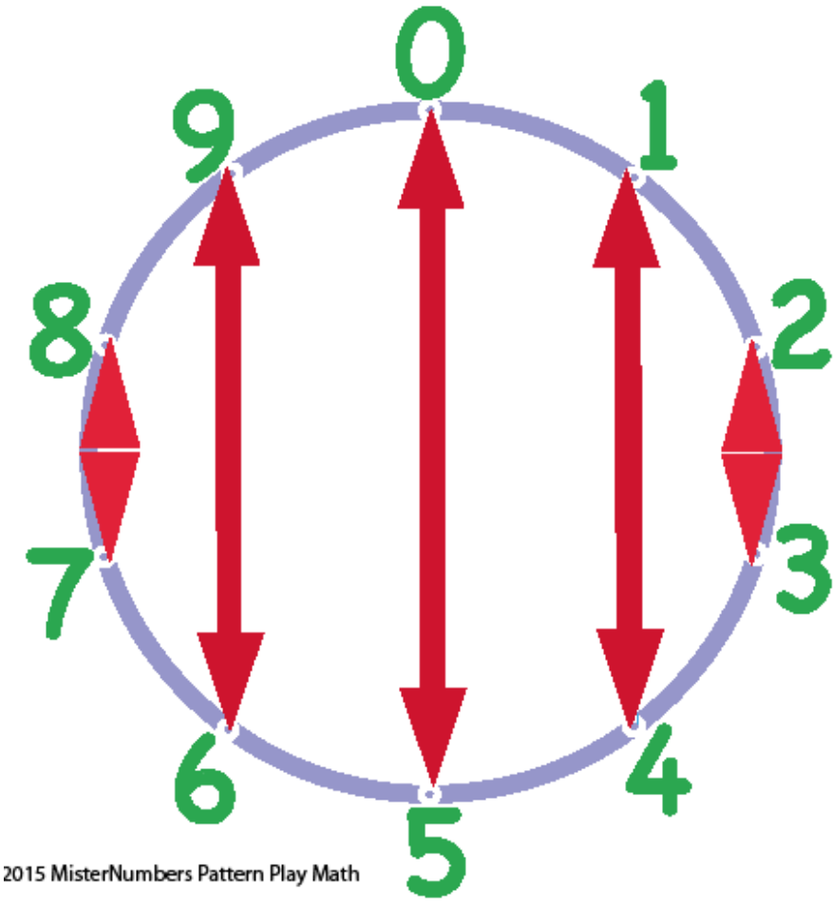
Number Wheel Ten-Adds: Numbers that add up to TEN



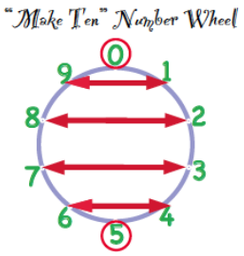
Create Horizontal Lines

Circled numbers too: 0 + 10 and 5 + 5

All Addition (Ones) is within 2 of the 5 and 10 Add Number Circles

Ten-Adds (Numbers that add up to 10	Five-Adds (Numbers that add up to 5
	

Ten Adds and Nine Adds



Importance of students learning Ten Adds

Our number system is ten base so Ten, and the numbers that add up to 10, are very important for kids when learning addition, subtraction and multiplication, They show up on the number wheel in cool ways that can help kids with basic addition. Start with the five at the bottom.

Cube Numbers and Ten Adds

Another place that Ten Adds show happens when any number is cubed.

Numbers ending in:	Cube ends in:
0	**0**
1	**1**
2	**8**
3	**7**
4	**4**
5	**5**
6	**6**
7	**3**
8	**2**
9	**9**

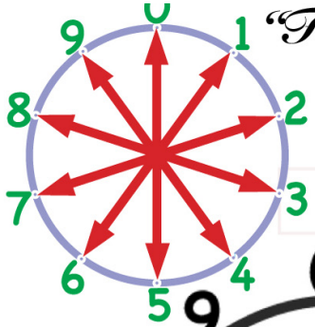
Most cubes end in the same number as the Ones of the root number.
The four exceptions are 2, 3, 7, and 8. All of them end in the Ten Add of the original Ones digit.

Learning Ten Adds on a Number Wheel

Start at the 5 at the bottom of the number wheel. It is all alone there. You can circle (and double an alone number. 5+5 = 10. We have 10 digits (fingers) and 10 digits (numbers) and our number system is ten based BECAUSE humans have 10 fingers.
To be more flexible, have five pennies in each hand. Again 5+5 = 10.
Now put one penny from the right hand into the left hand. We still have 10 pennies, but now 6+4 = 10.
Now put another penny from the right hand into the left hand. We still have 10 pennies, but now 7+3 = 10.
Now put another penny from the right hand into the left hand. We still have 10 pennies, but now 8+2 = 10.
Now put another penny from the right hand into the left hand. We still have 10 pennies, but now 9+1 = 10.
Now put the last penny from the right hand into the left hand. We still have 10 pennies, but now 10+0= 10.
On the number wheel horizontal parallel lines show us the Ten Adds.

Nine Adds

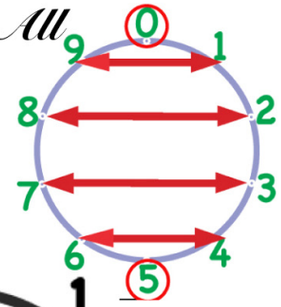
Look at the Ten Adds on a number Wheel. Raise all the right side up one number to create Nine Adds. Again we have parallel lines and the numbers linked not only show all the numbers adding up to 9: 0-9, 1-8, 2-7, 3-6, 4-5, 5-4, 6-3, 7-2, 8-1, 9-0 as we go around, but they also are revealing the Nines times table: 9-18-27-36-45-54-63-72-81-90. See the Nines Add Wheel



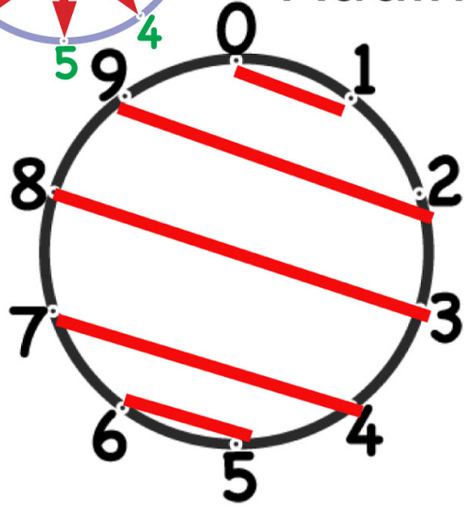
"Five Plus or minus"

Number Wheels

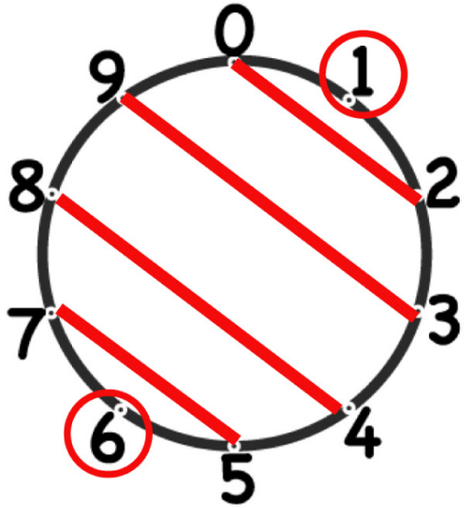
"Make Ten" All



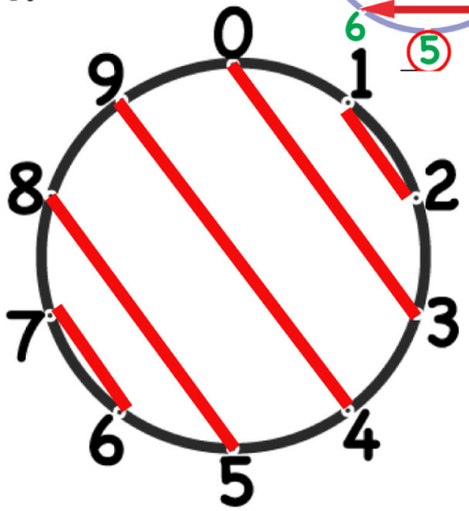
Adding Numbers that end in:



Ones



Twos

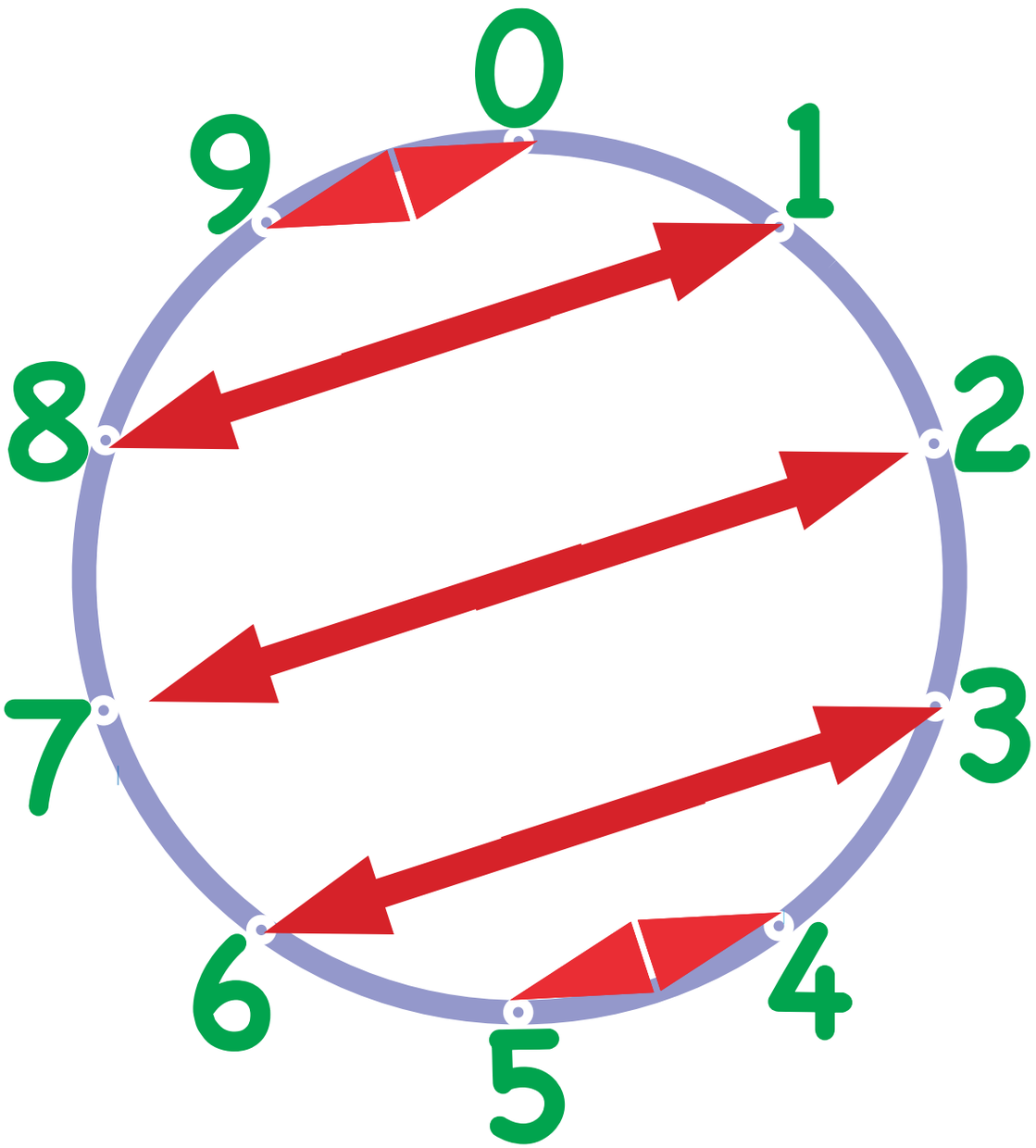


Threes

"Make Five" All

"Make Nines"

Number Wheel

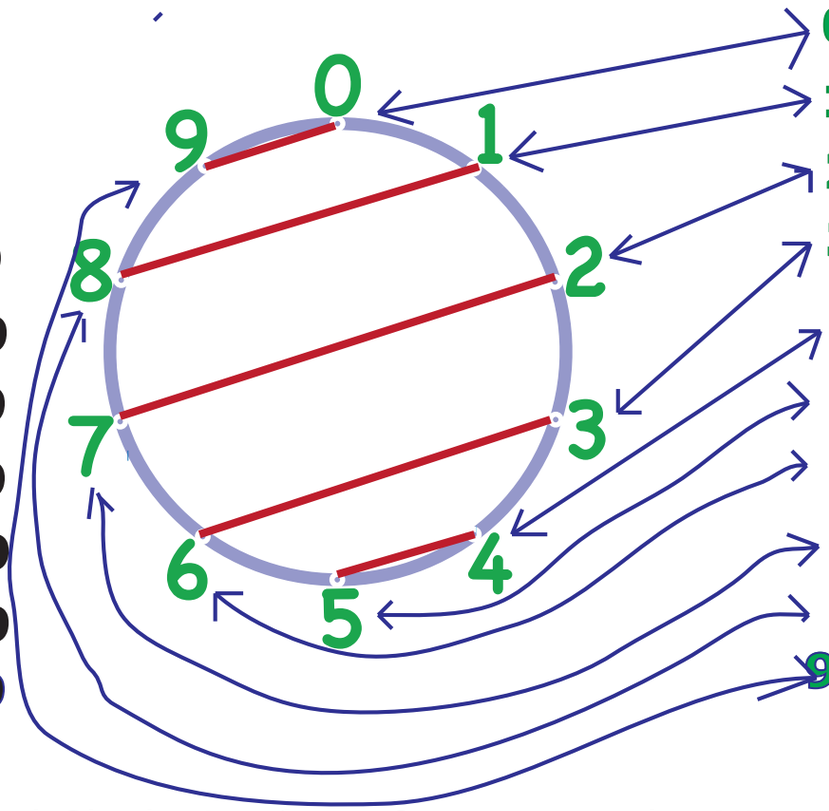


Nine-Adds on a Number Wheel

Playing with numbers that add up to Nine
Close to Ten-Adds (down to left) create the Nines

PatternPlayMath.com

0+9 = 9
1+8 = 9
2+7 = 9
3+6 = 9
4+5 = 9
5+4 = 9
6+3 = 9
7+2 = 9
8+1 = 9
9+0 = 9



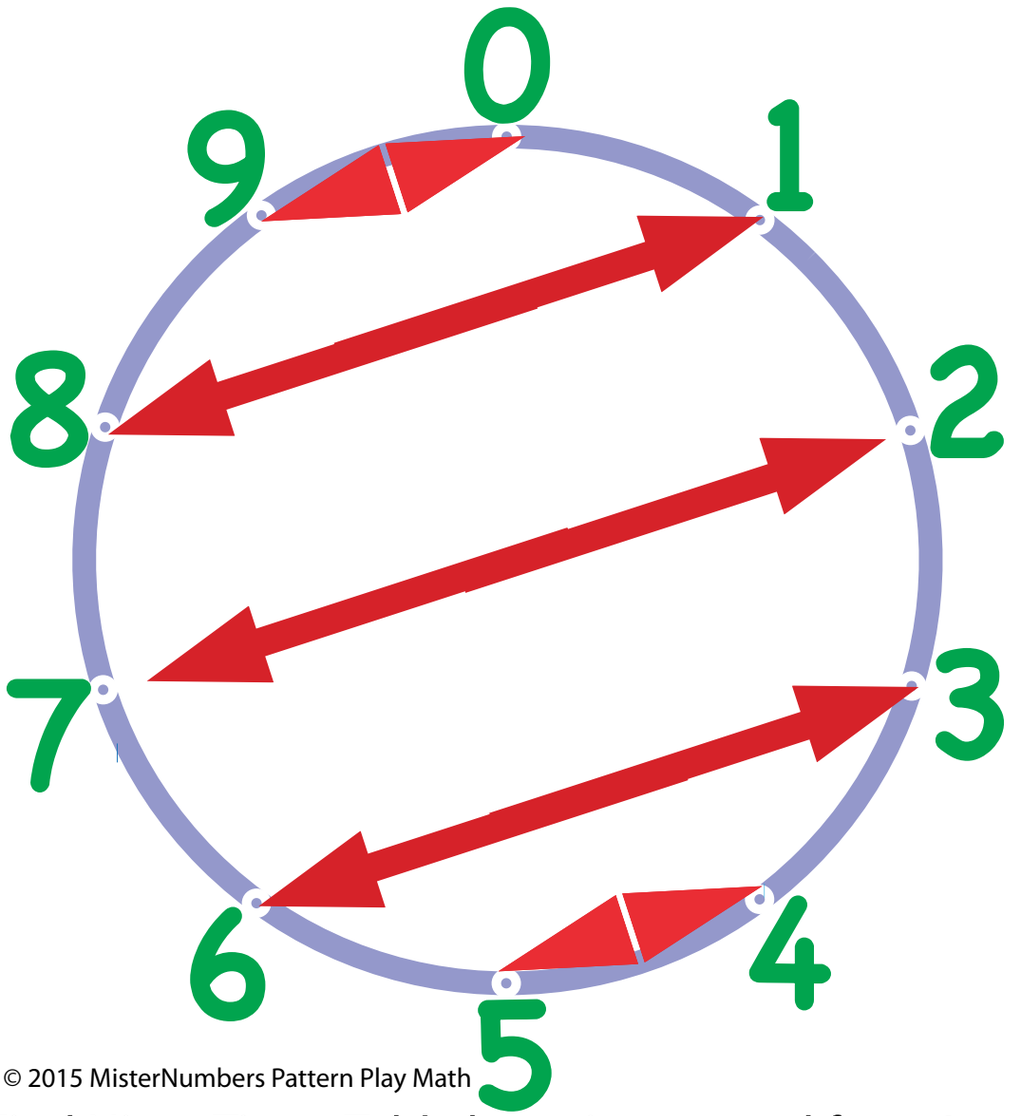
09 = 1 x 9
18 = 2 x 9
27 = 3 x 9
36 = 4 x 9
45 = 5 x 9
54 = 6 x 9
63 = 7 x 9
72 = 8 x 9
81 = 9 x 9
90 = 10 x 9

Go Around Clockwise from 0 to create the Nines Times Table
Start at 0 and follow the line. Then at 1 and follow the line.
Continue around the circle to create the NINES.

Fill in the missing Nines below

18 = _ x 9	_8 = 2 x 9	5_ = 6 x 9	_ _= 6 x 9
_7 = 3 x 9	27 = _ x 9	_3 = 7 x 9	63 = _ x 9
3_ = 4 x 9	_6 = 4 x 9	72 = _ x 9	_2 = 8 x 9
45 = _ x 9	___ = 5 x 9	___ = 9 x 9	81 = _ x 9
_4 = 6 x 9	54 = _ x 9	___ = 10 x 9	90 = ___ x 9

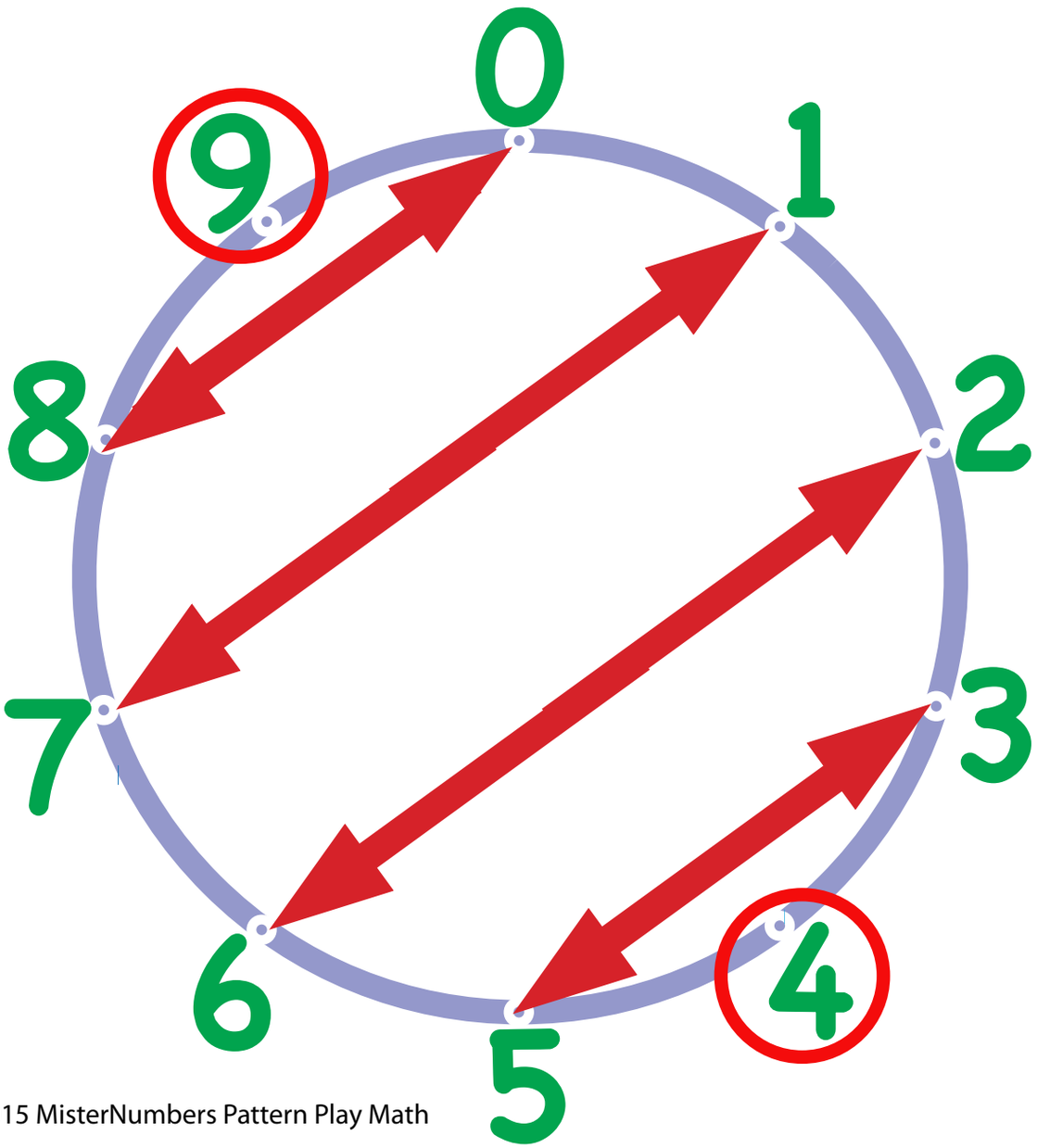
"Make Nines" Number Wheel



09
18
27
36
45
54
63
72
81
90

Find Nines Times Table by going around from 0 on this Wheel

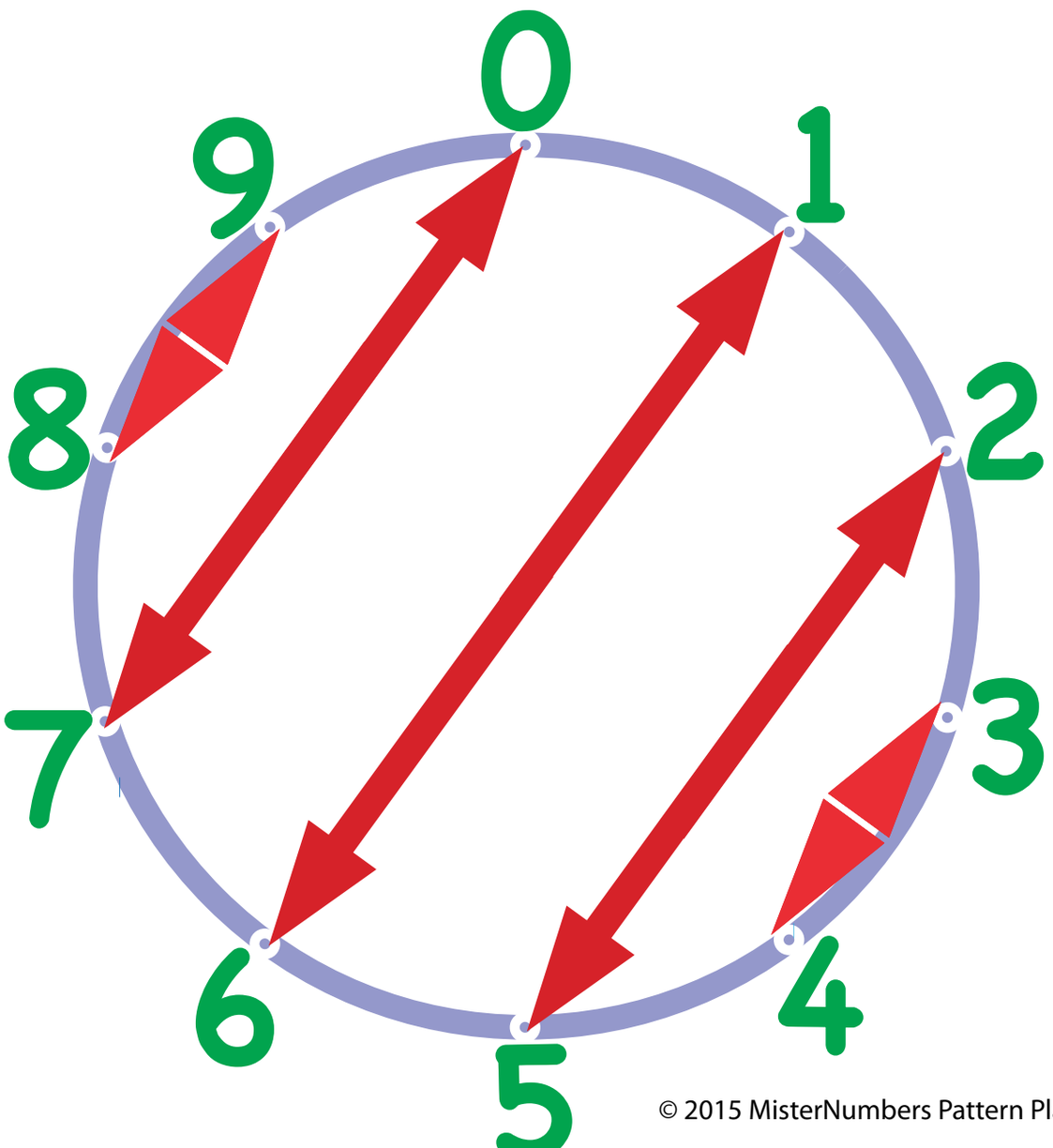
"Make Eights" Number Wheel



Add any of these two numbers and the sum will end in 8

"Make Sevens"

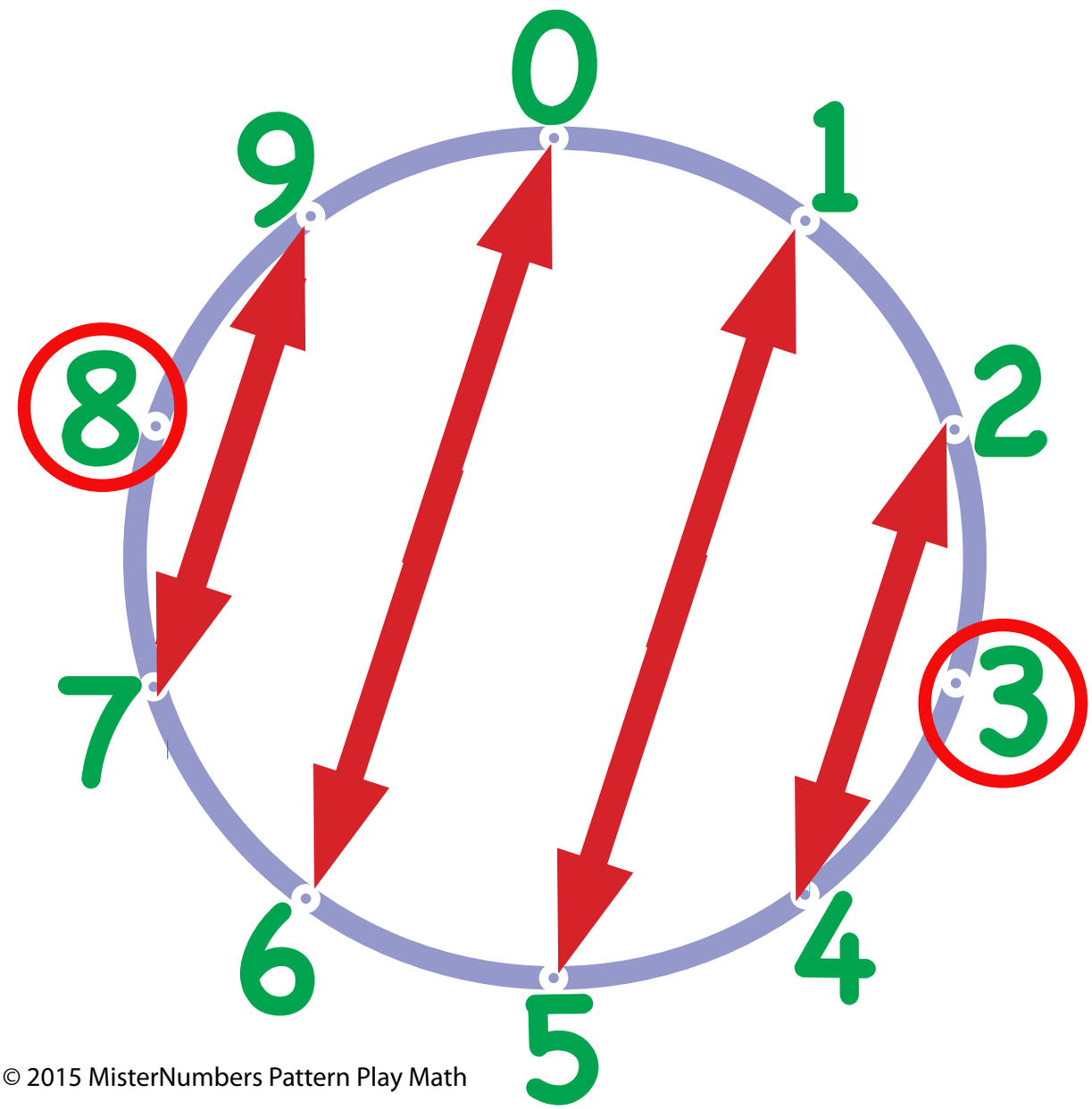
Number Wheel



Add any of these two numbers and the sum will end in 7

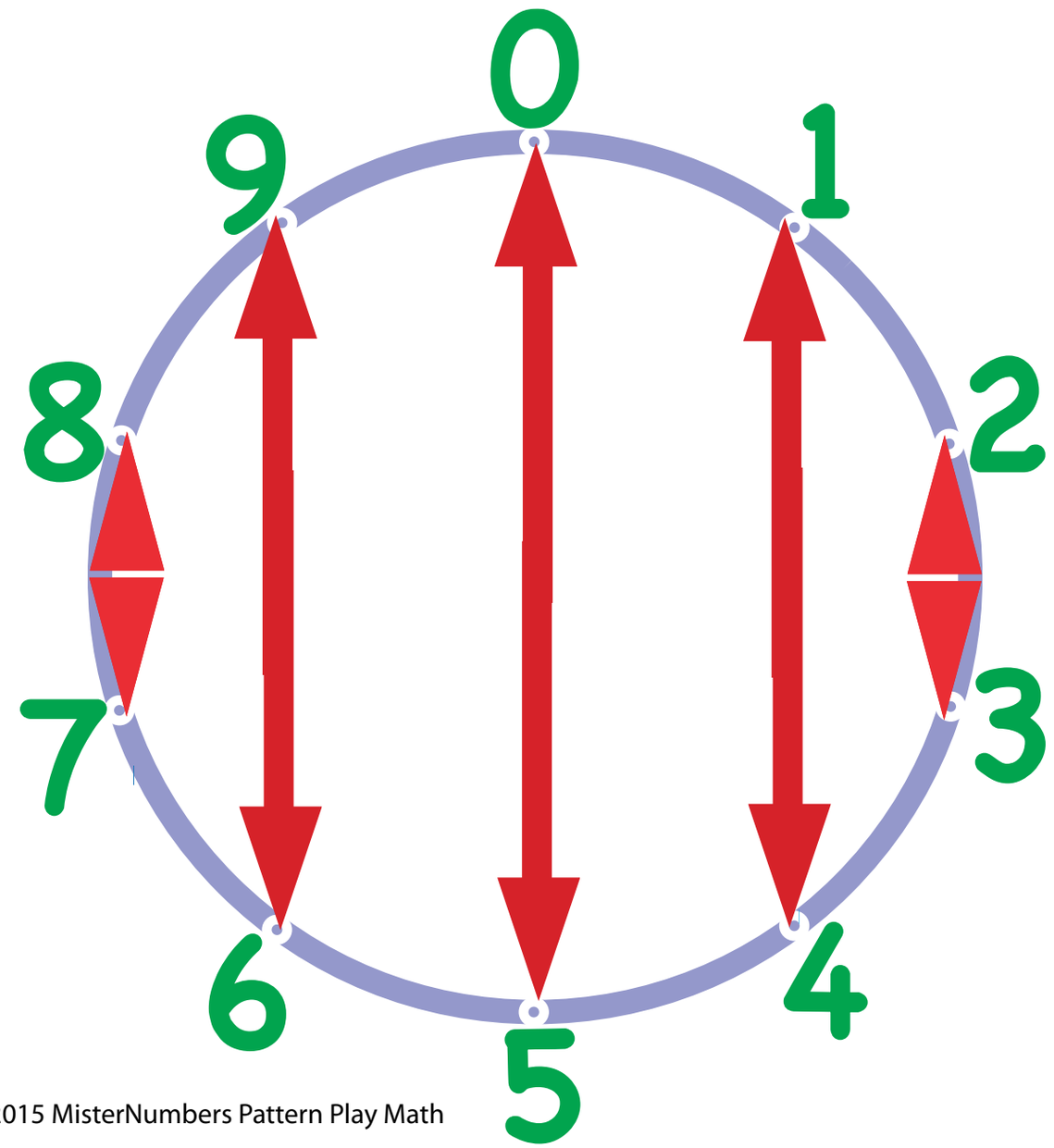
"Make Sixes"

Number Wheel



Add any of these two numbers and the sum will end in 4

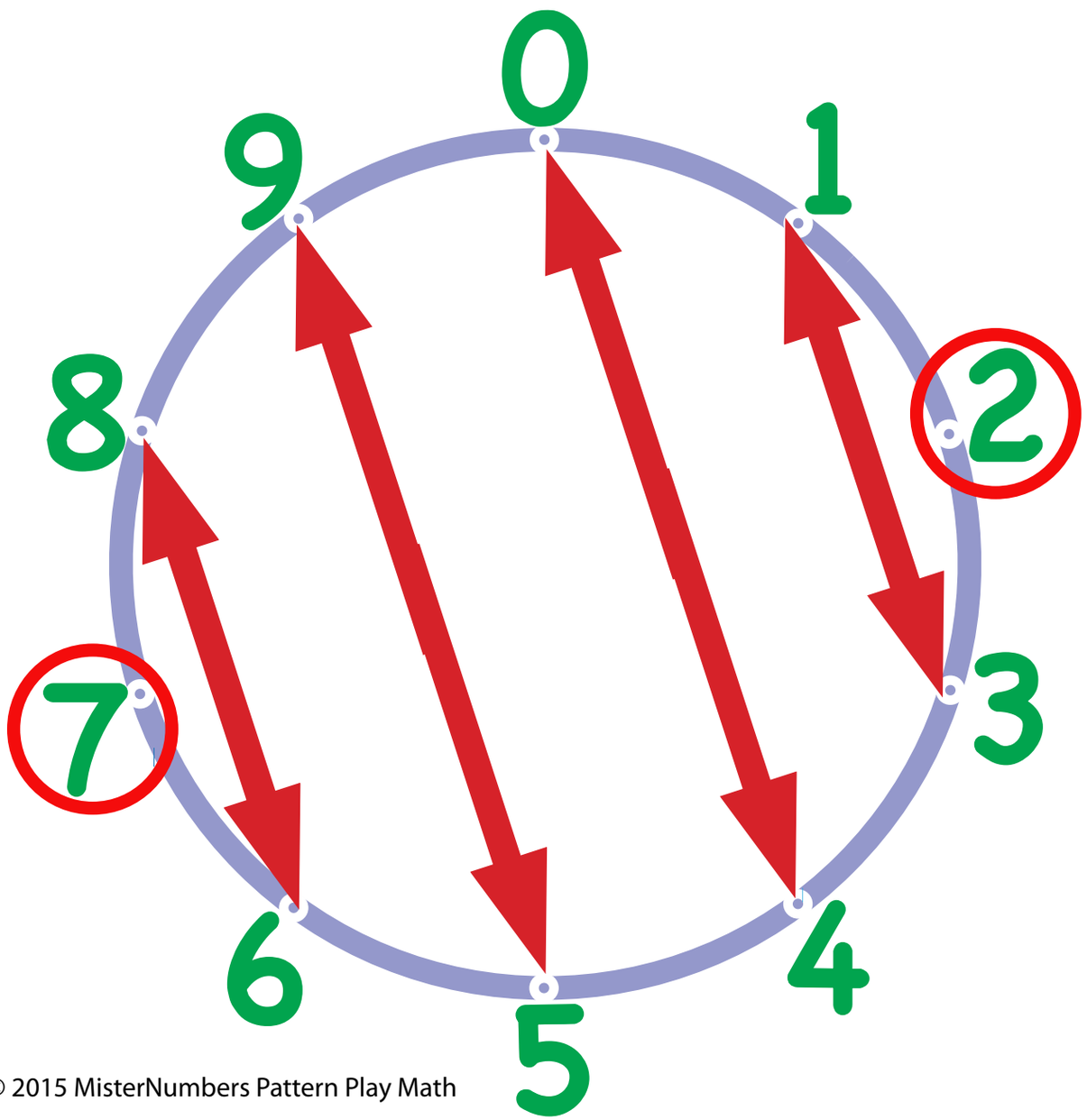
"Make Fives" Number Wheel



Add any of these two numbers and the sum will end in 5

"Make Fours"

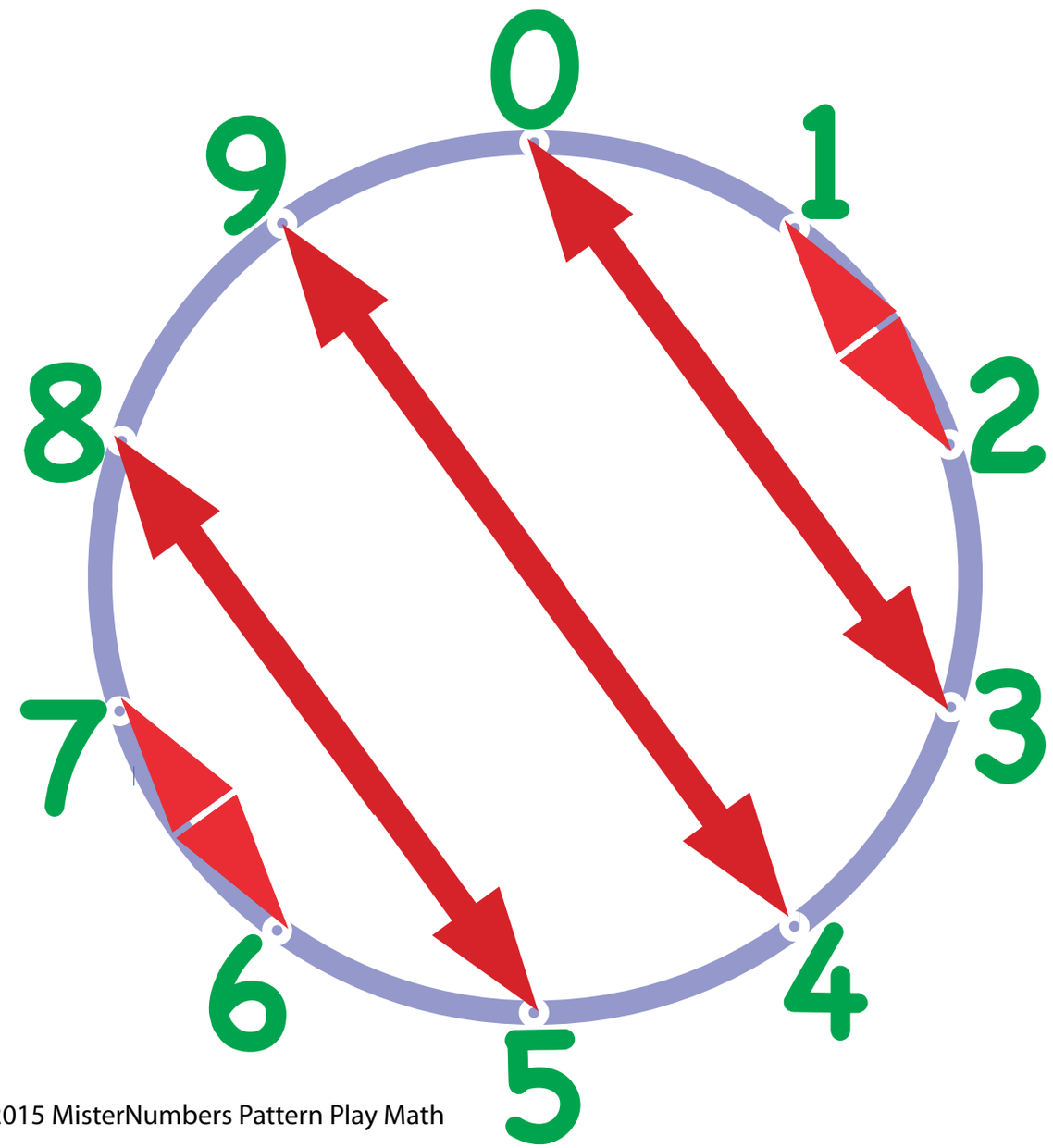
Number Wheel



Add any of these two numbers and the sum will end in 4

"Make Threes"

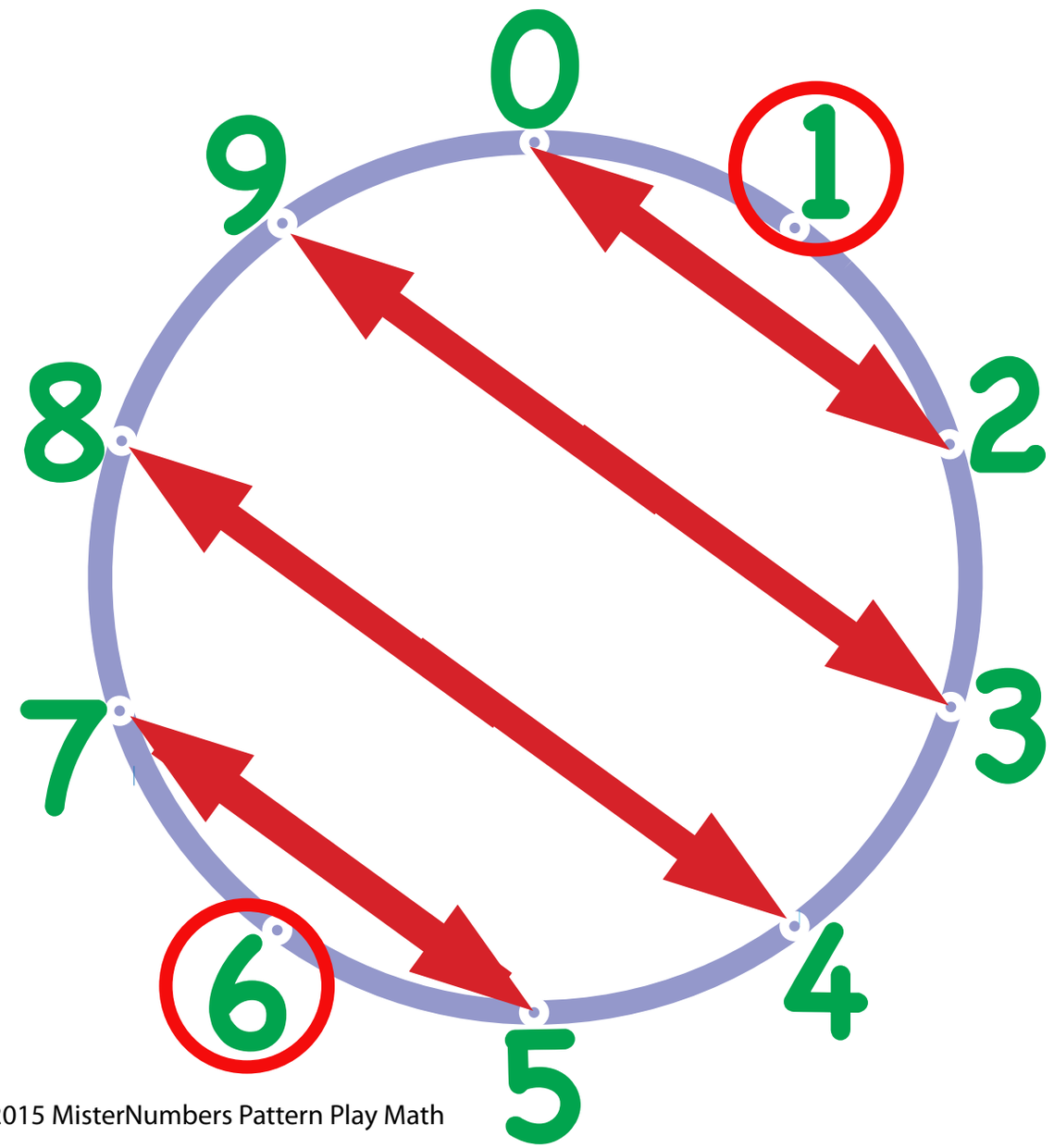
Number Wheel



Add any of these two numbers and the sum will end in 3

"Make Twos"

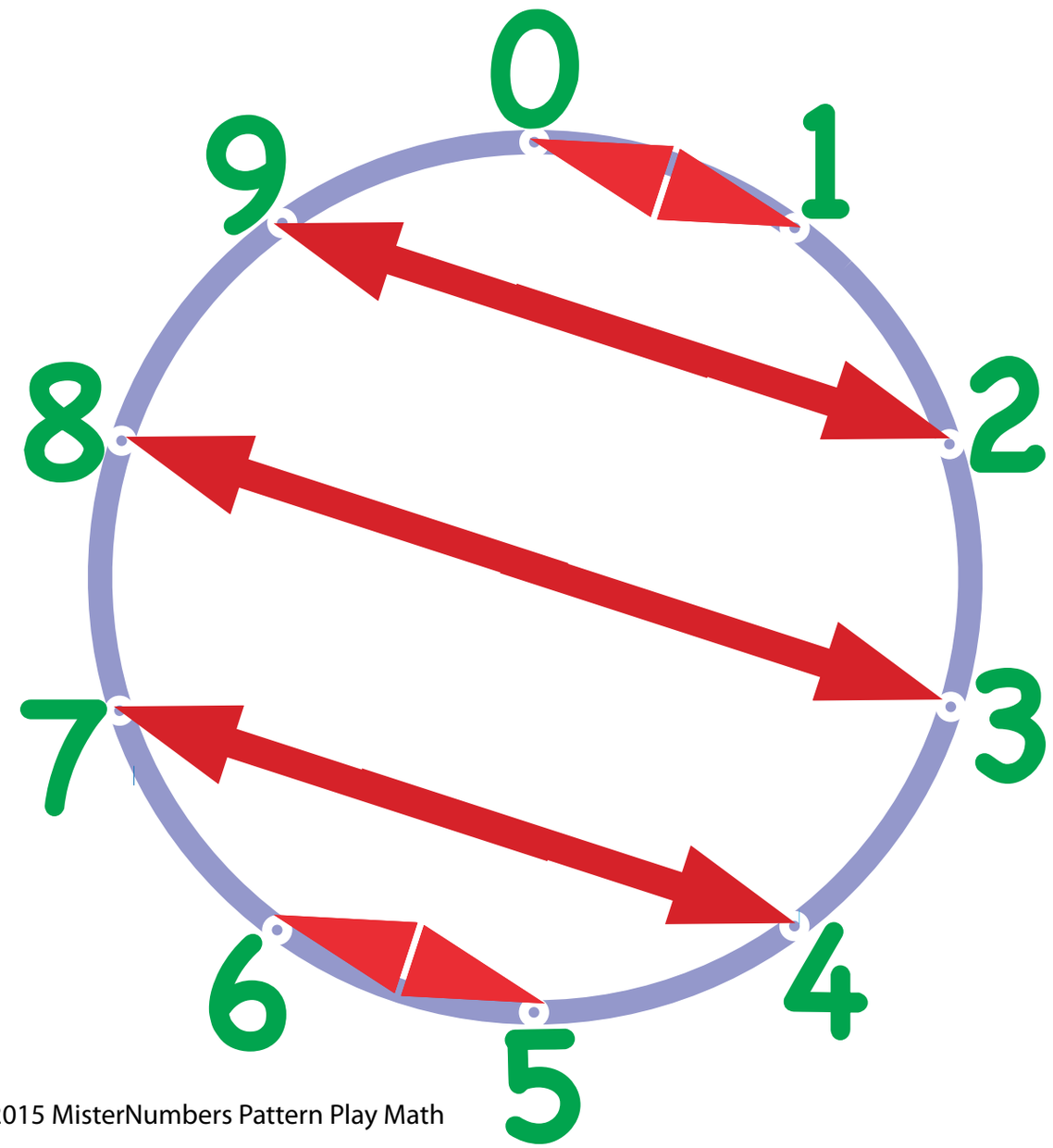
Number Wheel



Add any of these two numbers and the sum will end in 2

"Make Ones"

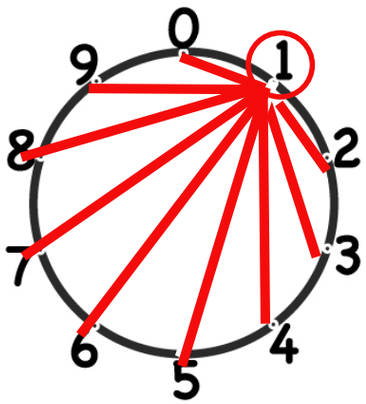
Number Wheel



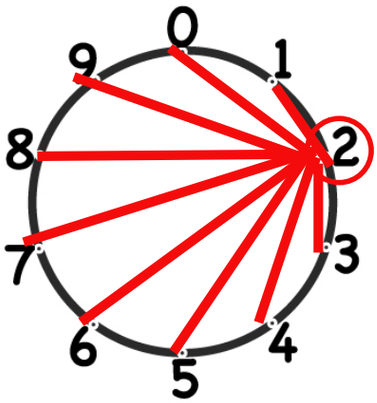
Add any of these two numbers and the sum will end in 1

Number Wheels

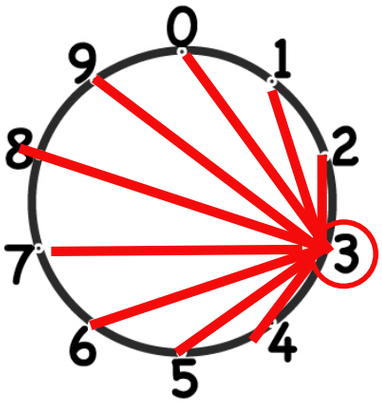
Practice Number Wheels for any Numbers



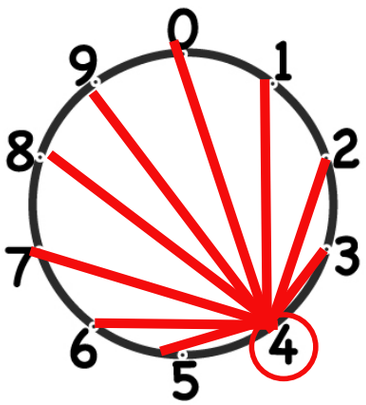
Ones



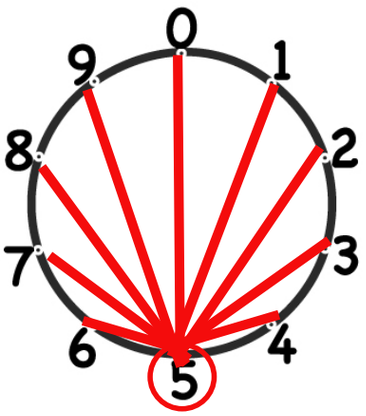
Twos



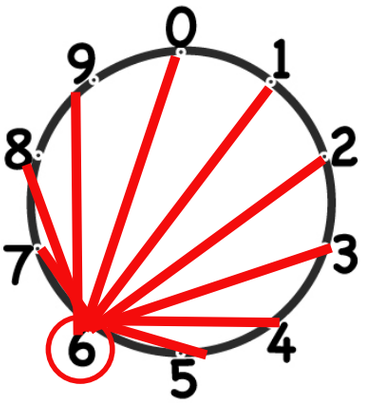
Threes



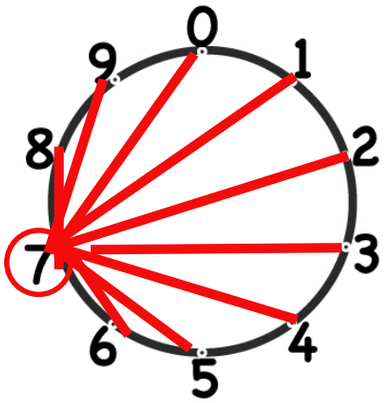
Fours



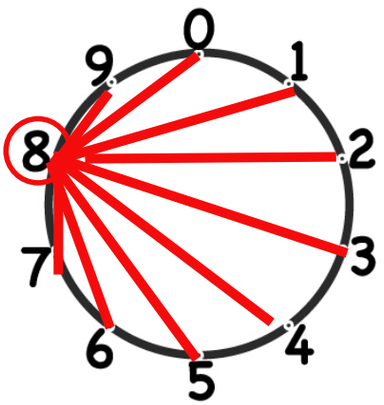
Fives



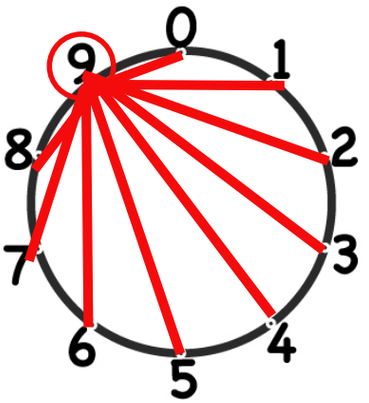
Sixes



Sevens



Eights



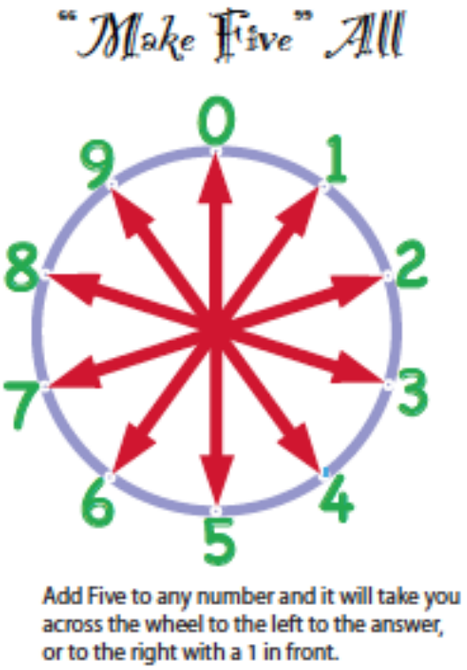
Nines

RightBrainMath.com

"Plus or Minus 5" Number Wheels

Plus or Minus 5 Number Wheel

See the Plus or Minus 5 Number Wheel.



Start at 0 and add 5. You go half way around the wheel to 5. Add another 5 and go half way around back to 10 (0). The number wheel only plays with the Ones and so 10 shows up as 0.

Again add 5 and go half way around (down to 5) to 15. Then back up to 20 (up to zero). This is like a yo-yo going up and down 5-10-15-20-25-30-35-40-45-50, and so forth.

We can also start at any number and subtract 5 by going half way around.

We can also add 5 from any other number. Start at 1 and add 5 (go half way around to 6). Add five again and go back to 1 (or 11). Add 5 again to go to 16. This is great fun because kids see it is just going back and forth from 1 to 6 to 1 to 6, whether you are adding or subtracting.

The same thing applies for 2 and 7, 3 and 8, and 4 and 9, and of course the reverse numbers.
Really fun.

Plus or Minus 5 is VERY helpful Number Wheel for kids.

Many kids end up counting on their fingers. When they play with these Number Wheels, they find it much quicker and easier..Look at any or all of the Plus or MinusAddition Number Circles.
Let kids explore these number wheels. What do they see? What can they figure out? Let them own it!

Help for you or them if needed:
Start with 0 and add by fives: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50. Almost all kids can do this easily and maybe even sing it with a “Here I come, Ready or Not”

But it works from any number.

P.s. they can go one more or one less than 5, to add 4 or 6 to any number. Just add or subtract 1.
Or to add 3 or 7. Just add or subtract 2. Still easy.

A great tool is to go back to their fingers, but use them to jump 5 or subtract 5.
Hold out both hands with fingers up. Turn one hand so both thumbs are on the left.
Count from 1 to 10 starting from the left. Great.

Now notice that 1 and 6 are both thumbs
Wiggle each thumb as you count from 1 (left thumb) to 6 (right thumb) to 11 (left thumb) to 16 (right thumb).
Continue to 21 (left thumb) to 26 (right thumb) to 31 (left thumb) to 36 (right thumb). How high can you go?

Wiggle each thumb as you count from down from 36 (right thumb to 31 (left thumb) to 26 (right thumb).
Coninue to 21 (left thumb) to 16 (right thumb), to 11 (left thumb) to 6 (right thumb) to 1 (left thumb).

Now do it from 2, your pointer finger on your left hand, to 7, wiggle your pointer finger on your right hand.
Continue to 12 (wiggle left pointer) to 17 (wiggle right pointer) to 22 (wiggle left pointer) to 27 (wiggle left pointer).
Go as high as you like and then subtract Fives. To up or down five from any 2 or 7.

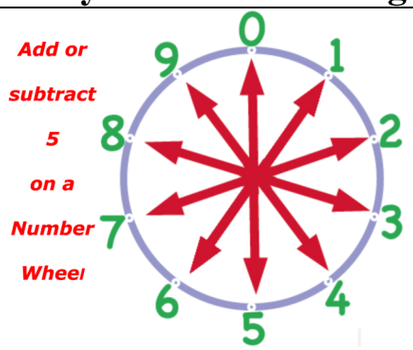
Now do it from 3, your long finger on your left hand, to 8, wiggle your long finger on your right hand.
Continue to 13 (wiggle left long finger) to 18 (wiggle right long) to 22 (wiggle left long) to 27 (wiggle left long).
Go as high as you like and then subtract Fives. To up or down five from any 3 or 8.

Now do it from 4, your ring on your left hand, to 9, wiggle your ring finger on your right hand.
Continue to 14 (wiggle left ring finger) to 19 (wiggle right ring) to 24 (wiggle left ring) to 29 (wiggle left ring).
Go as high as you like and then subtract Fives. To up or down five from any 4 or 9.

Play with starting at 5 (your little finger). Easy, right? 5, 10, 15, 20, 25, 30, 35, 40, 45, 50

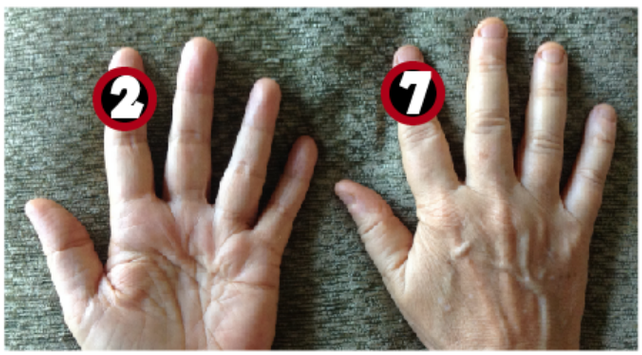
Play often with counting by fives on your fingers and see how easy it is.

Handy Trick for Adding or Subtracting Five from any Number



See the Number Wheel for adding or subtracting five from any number. It is easy to add or subtract 5 from 0 and 5: 5-10-15-20-25-30-35-40-45-50. Going up and down is easy, but it can be easy to do it from any number using the Number Wheel and a Handy Trick.

Hold both hands in front of you with the thumbs left (see picture: looking at the palm of your left hand and the back of your right hand). If you start with your left thumb as 1 (wiggle it), then see your right thumb as 6 (wiggle your sixth finger). You have just added 5 to 1 and got 6. Now add another 5 and see that it takes you back to your left thumb at 11 and wiggle it (we are focusing on the Ones and the Tens are easy). Add another 5 to 11 and you are at your right thumb as 16. Add another 5, and of course you are back to your left thumb at 21. Go to 26, to 31, to 36, to 41, and see that 6 and 1 are across the number wheel and you can go half way around each time.



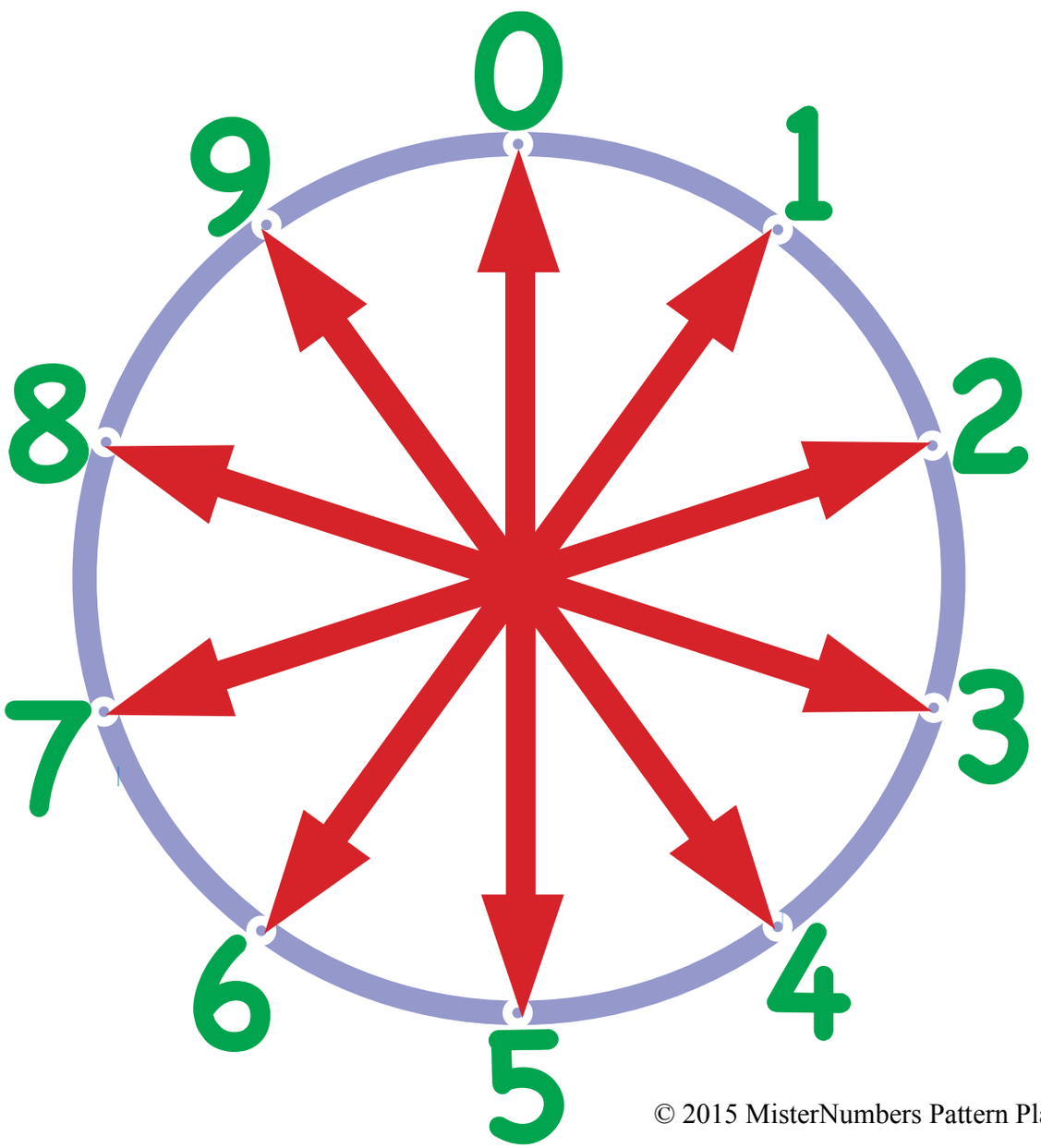
What is cool is that you can also subtract 5 using your hands and/or the wheel, because subtracting 5 also takes you exactly half way around the wheel. Let's start at 26 with our right thumb and subtract 5 and wiggle your left thumb at 21 (or go half way around the number wheel to 1).

Subtract 5 again from 21 and you are back to your right thumb at 16, then to 11 (left thumb) and 6 (right thumb) and subtract 5 to get to 1 on your left thumb. Look at your thumbs and see the jumps from 1 to 6 and to 1. Do this daily for two weeks and 1 and 6 are connected in your mind, and it will always be easy to add or subtract 5 from 1 or 6.

Repeat adding and subtracting 5 using your pointer fingers. Can you see that these are twos and sevens? Can you see that 2 and 7 are exactly half way around the Number Wheel? Look at your hands and count up and down from 2-7-12-17-22-27-32-37-42-47 and higher. Do this also daily for two weeks and 2 and 7 are connected in your mind, and it will always be easy to add or subtract 5 from 2 or 7.

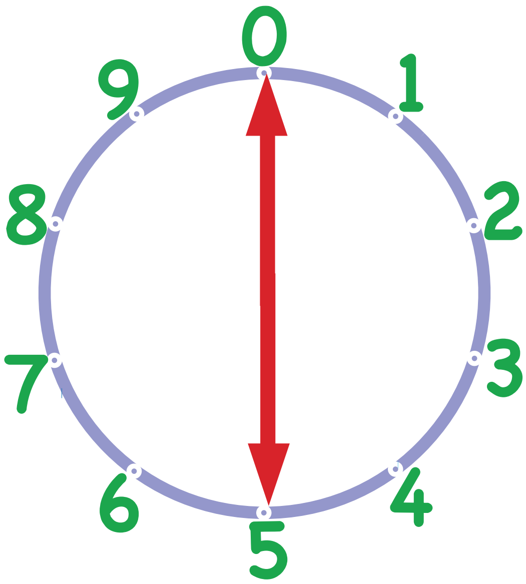
Repeat using the middle fingers for 3 and 8, and the ring fingers for 4 and 9.

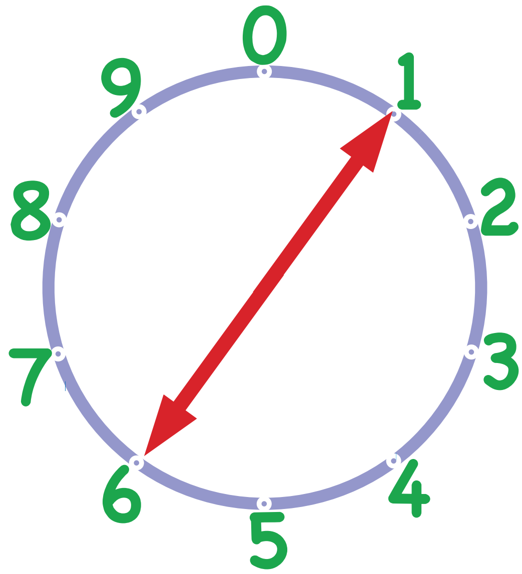
"Add/Subtract Fives" on a Number Wheel from any Number

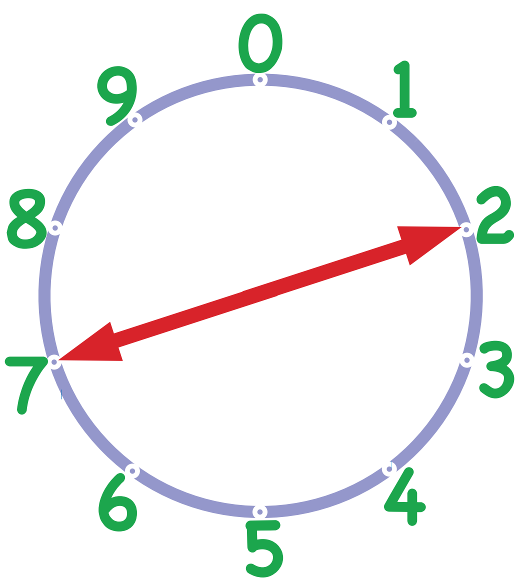


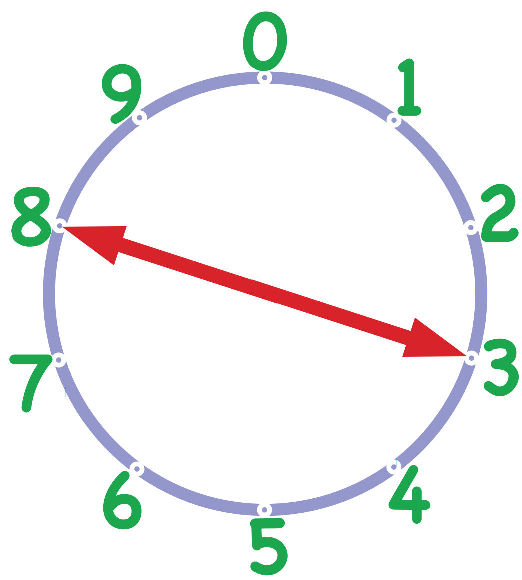
Add or subtract 5 from any number: Follow the arrow

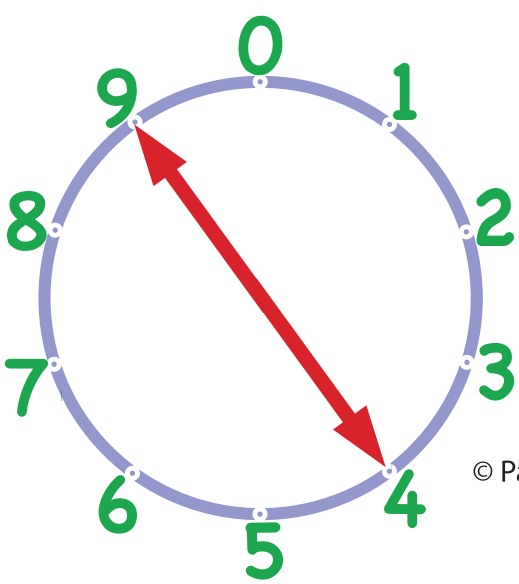
"Make Five" All

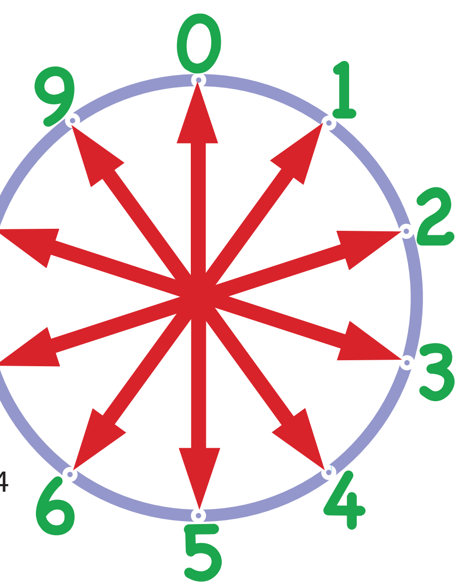




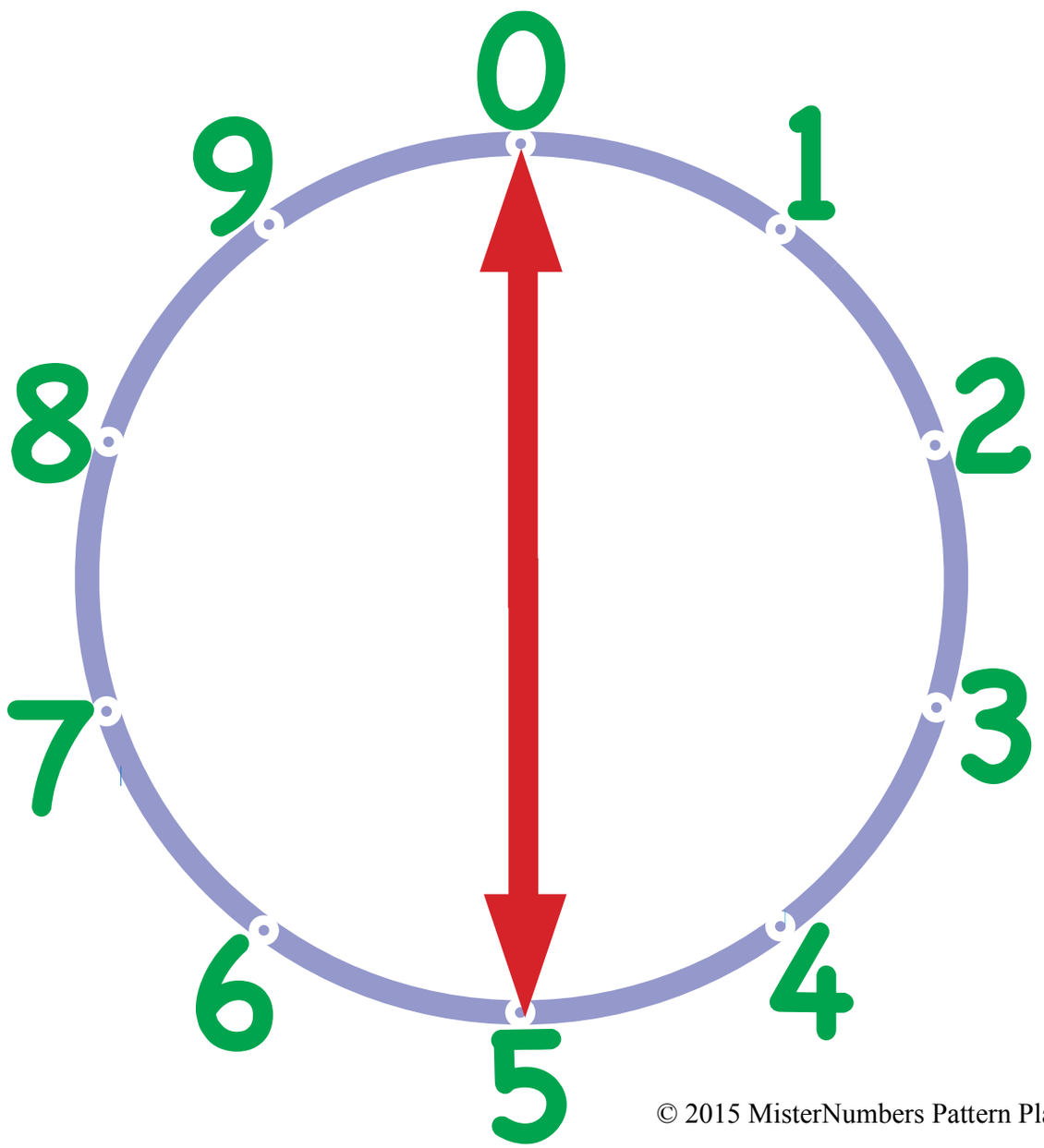






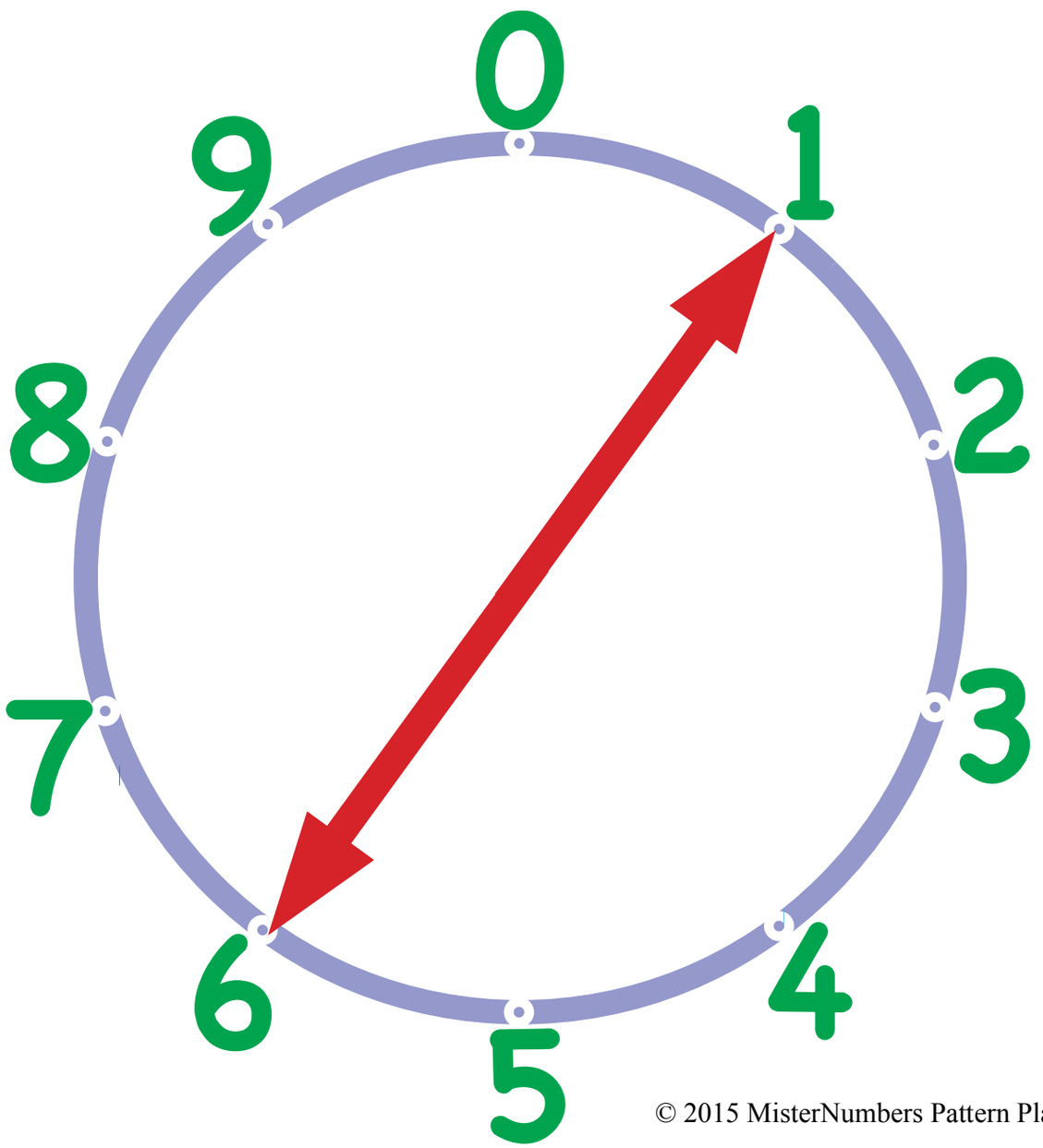


"Add/Subtract Fives" on a Number Wheel from 0 and 5



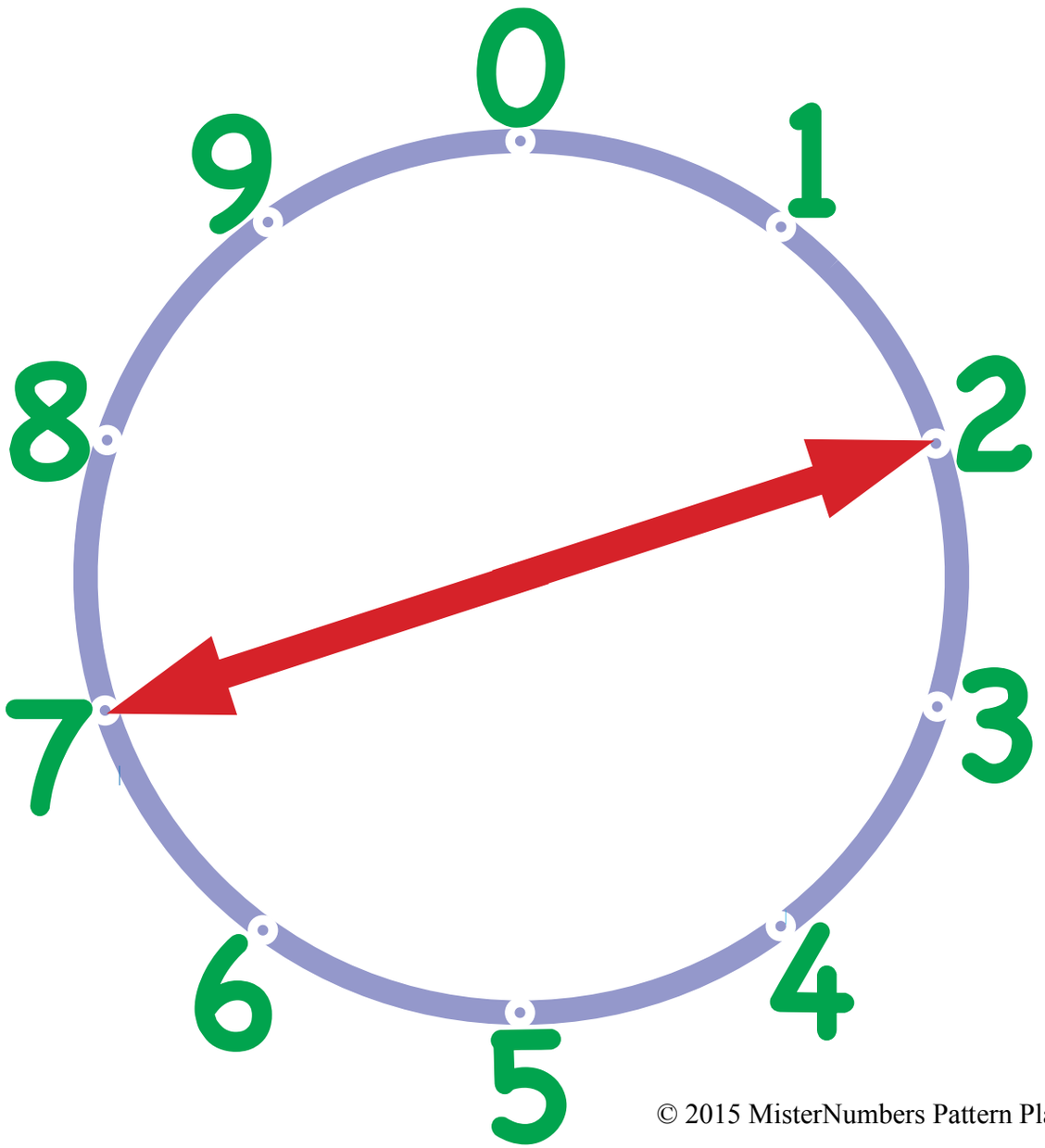
Add or subtract 5 from 0 and 5: Follow the arrow

"Add/Subtract Fives" on a Number Wheel from 1 and 6



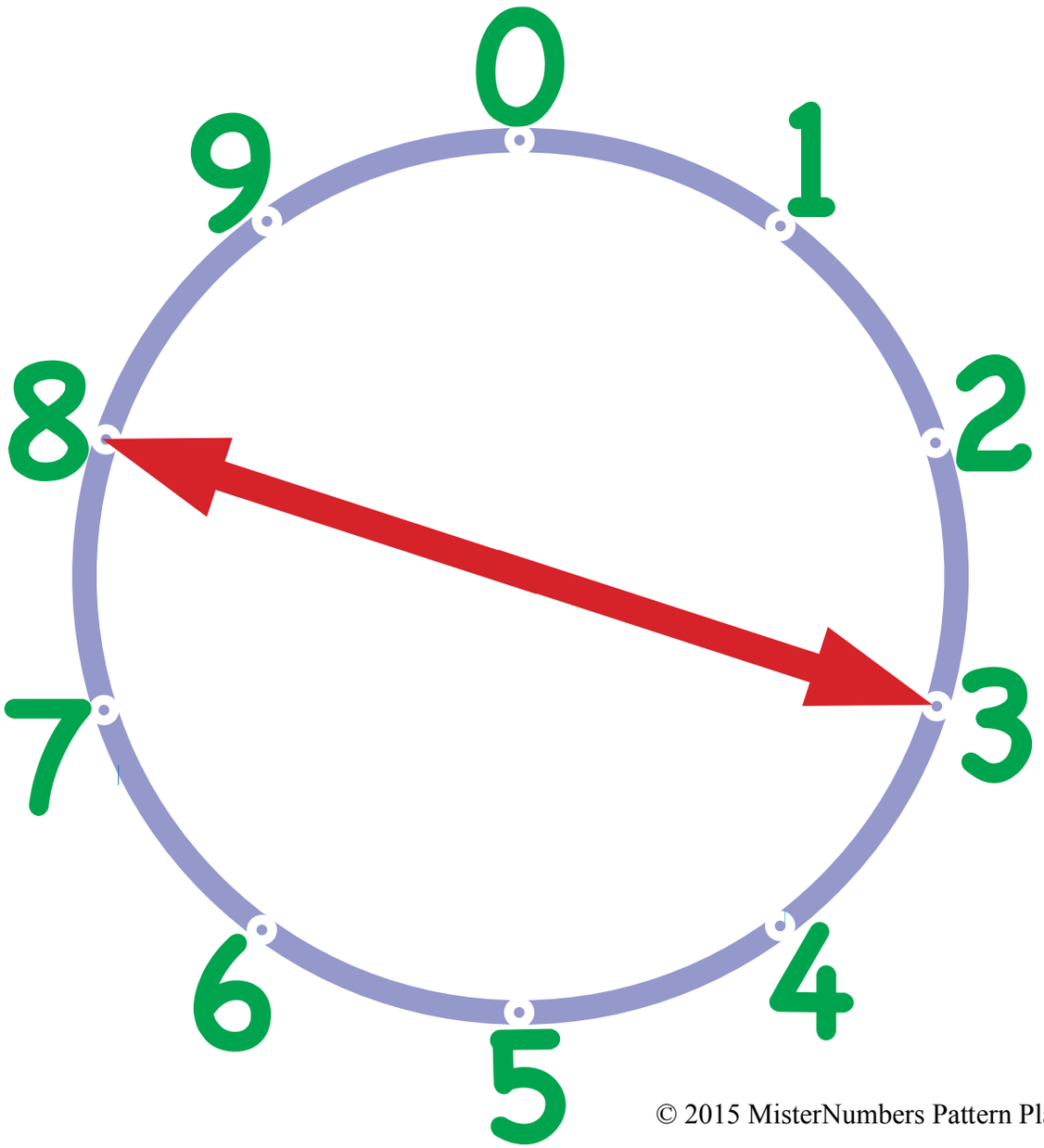
Add or subtract 1 and 6: Follow the arrow for last digit

"Add/Subtract Fives" on a Number Wheel from 2 and 7



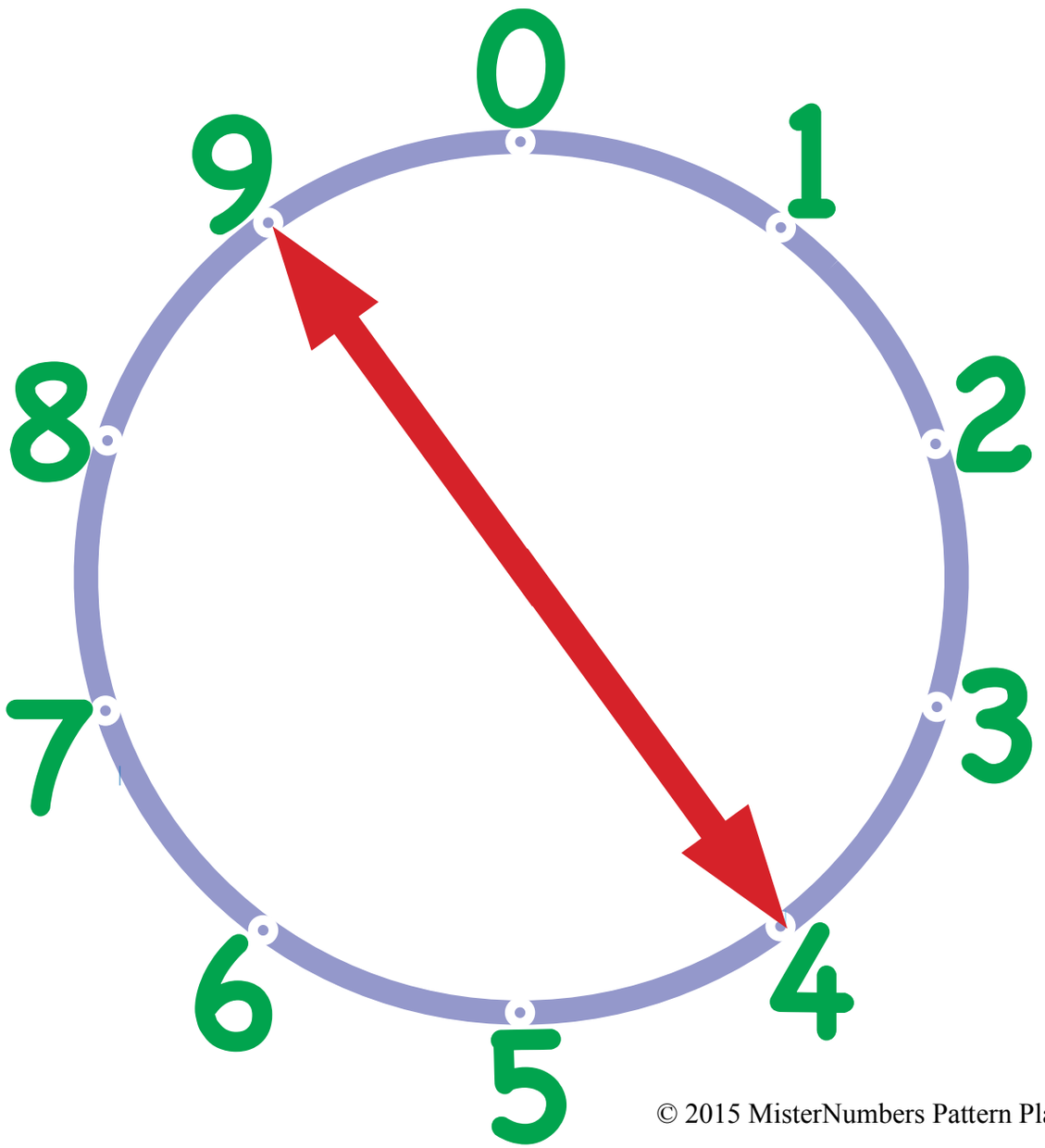
Add or subtract 2 and 7: Follow the arrow for last digit

"Add/Subtract Fives" on a Number Wheel from 3 and 8



Add or subtract 3 and 8: Follow the arrow for last digit

"Add/Subtract Fives" on a Number Wheel from 4 and 9

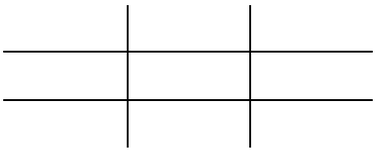


Add or subtract 4 and 9: Follow the arrow for last digit

Tic Tac Toe Math

THREES

Start with Tic-Tac-Toe lines.



Add the 123456789 pattern starting from lower left going up. These are ones-digits.

3	6	9
2	5	8
1	4	7

In the second row, add 1's in the Tens-digit place and 2's in the third row. You are creating the Threes (3x1 – 3x9).

03	06	09
12	15	18
21	24	27

3x10 = 30 Notice that this is the first box (3) with a 0 after it. The second will end in 60 (6) with a 0 after it. The 3rd set will end in 90, the 3rd number (9) with a 0 after it. The 4th will end in 120.

Repeat Tic-Tac-Toe lines and123456789 pattern. Add 3's, 4's, and 5's in the next three rows, creating 3x11 – 3 x 19.

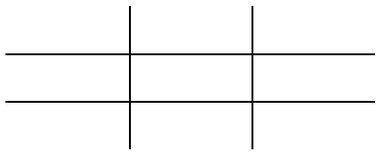
33	36	39
42	45	48
51	54	57

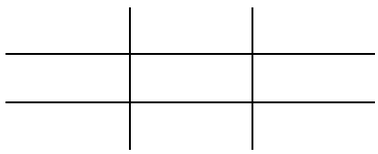
3x20 = 60

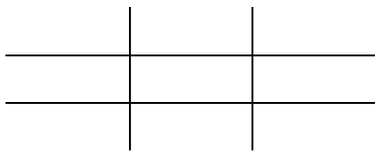
Do lines and and123456789 pattern.

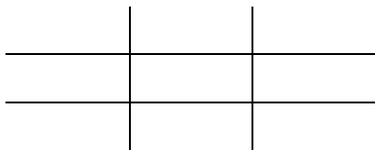
3	6	9
2	5	8
1	4	7

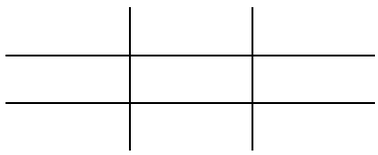
Continue creating the Threes as long as you like in this fun way. The next rows will add 6,7, and 8 in front of the 1-9 and the next table will add 9, 10, and 11 in front.



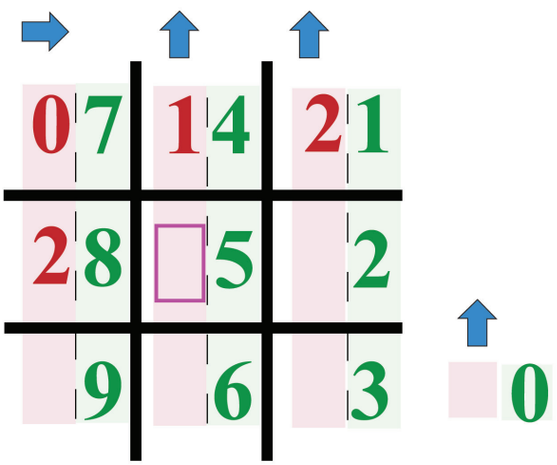








Buy EZ Times Table book on my website http://eztimestable.com for $9.95. It includes ways to do the Twos, Threes, Fours, Sixes, Eights, and Nines as well as a 1-page creation of the whole times table.


0 7
1 4
2 1
2 8
5
2
9
6
3
0

12 DIAL PADS TO PLAY ON FOR ALL NUMBERS

PatternPlayMath.com

1	2	3	
4	5	6	
7	8	9	0

1	2	3	
4	5	6	
7	8	9	0

1	2	3	
4	5	6	
7	8	9	0

1	2	3	
4	5	6	
7	8	9	0

1	2	3	
4	5	6	
7	8	9	0

1	2	3	
4	5	6	
7	8	9	0

1	2	3	
4	5	6	
7	8	9	0

1	2	3	
4	5	6	
7	8	9	0

1	2	3	
4	5	6	
7	8	9	0

THREES

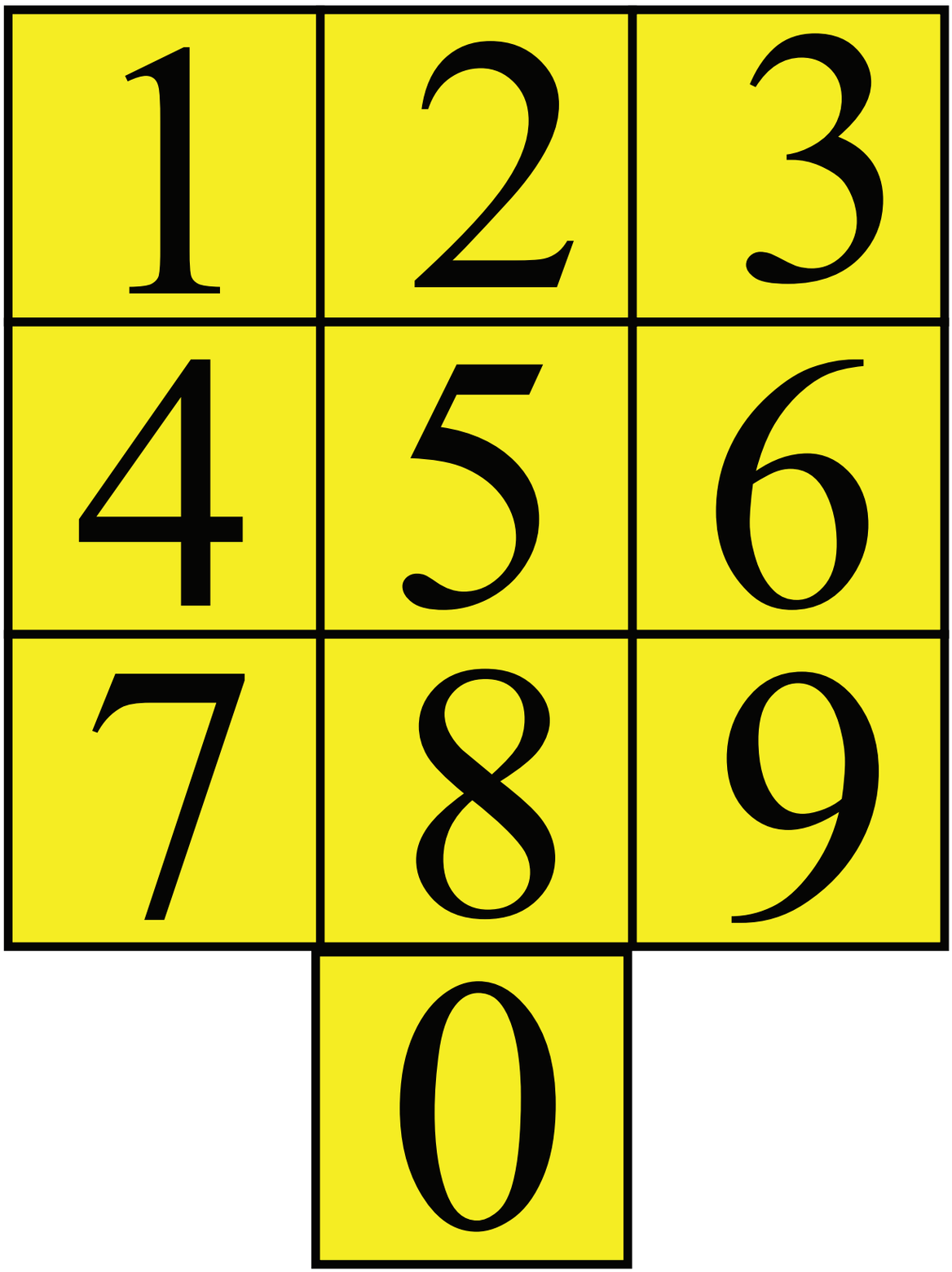
3	6	9	
2	5	8	
1	4	7	0

SEVENS

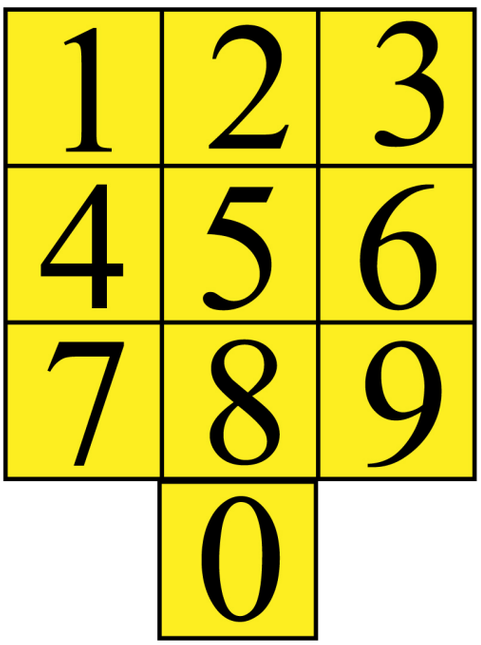
7	4	1	
8	5	2	
9	6	3	0

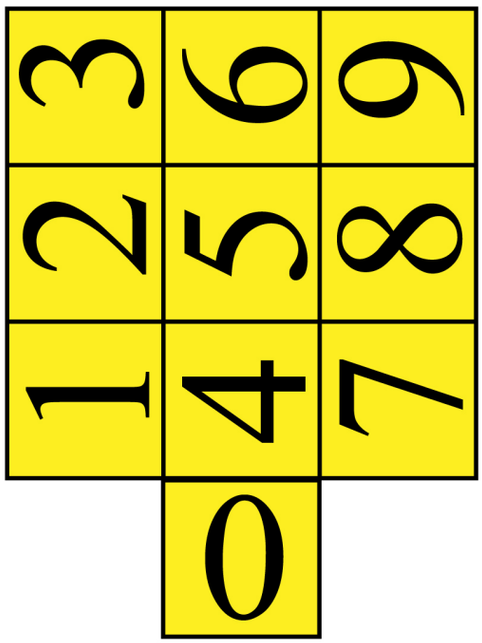
NINES

9	8	7	
6	5	4	
3	2	1	0


1
2
3
4
5
6
7
8
9
0

Threes: Rotate Phone left





Threes

03	06	09
12	15	18
21	24	27

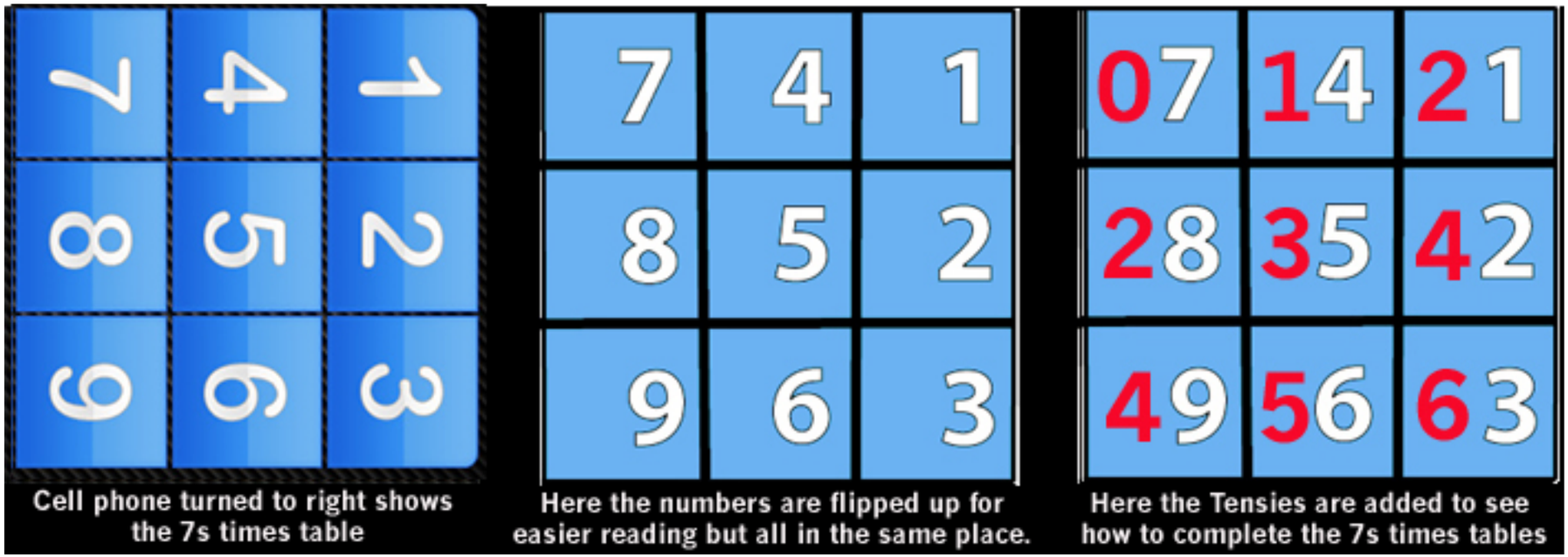
30

Red & Green together

1	2	3
4	5	6
7	8	9
	0	

Phone Rotated Left

3	6	9
2	5	8
1	4	7
	0	



EZ Times Table Worksheets

MathMatters

Grades K-4; Remedial 4-12

Math Made Easy

Curriculum Review Magazine (established 1960)
September 08 Issue (published by Federal News Services, a division of PaperClip Communications, Inc.)

The words "math" and "fun" don't often make the same sentence. But, in this case, a new book *does* make math fun! *EZ Times Table* by Thomas Biesanz (available September 2008, Growth-ink Publishing, ISBN# 978-0-9799636-1-2). This new book is a revolutionary visual and auditory introduction to math—a welcome resource in a time when U.S. math scores are falling behind other countries.

While traditional math instruction relies mainly on rote memory work, *EZ Times Table* helps children with multiplication. All they need to know is how to count to 10 and that 2, 4, 6, 8, and 0 are the even numbers, and they can create a whole times table from there. Kids as young as kindergarten age enjoy making the EZ Times Table (see MisterNumbers on Youtube). Students generate a structure for numbers, based on the Ones and Twos, that makes sense to a child's brain.

This right-brain approach presents instructions, additional information for parents/teachers, and a full 8.5" x 11" table for each step, detailing the result with playful graphics on the side. Employing the EZ Times Table, the book then shows how to use it to teach addition, subtraction, multiplication, division, factors, squares, place value, prime numbers, and more.

Find Out More About EZ Times Table

EZ Times Table **uses pattern play to teach multiplication. The Tic-Tac-Toe square helps students create multiplication tables all the way up to 20x20. Free instructional videos are available on Youtube by MisterNumbers at: http://youtube.com/user/ MisterNumbers. A DVD is also available at: http://eztimestable.com/. You'll quickly see how passionate author Thomas Biesanz (aka MisterNumbers) is about math!**

To find out more about the book, check out the blank copy of the "Creating the Threes and Seven from Patterns: Wow!" handout from *EZ Times Table* on the *Curriculum Review* website at: **www.curriculumreview.com**. Just go to the website, click on "Subscriber Spot" and enter the password

Right Brain Math

A fun, visual approach to learning multiplication and division where kids play with patterns and make friends with numbers

by
Thomas Biesanz
a.k.a. MisterNumbers

January 2011
Growth-Ink Publishing
4025 State Street #9
Santa Barbara, CA 93110
Library of Congress Catalog
Control Number: 2008905174
ISBN 978-0-9799636-1-2

Art work by Jakob Marsh
http://EZTimesTable.com

All Instructions on one page

1. Put a big 1 above the left gray column. Going down the right side of the column, write the numbers 1, 2, 3, 4, 5, 6, 7 8, 9, 0, and repeat until you reach the bottom of the column.
2. Put a 1 in front of the first 0, a two in front of the second 0... Put 1's between the 1 and 2 on the left side, 2's between the 2 and 3, and 3 in front of the last 1 and 2. You have created the numbers 1-32. write the numbers 2, 4, 6, 8, 0, and repeat until you reach the bottom of the column.
3. Put a 1 in front of the first 0, a two in front of the second 0... Put 1's between the 1 and 2 on the left side, 2's between the 2 and 3..., and 6 in front of the last 2 and 4. You have created the numbers 2-64.
4. Put a big 3 above the column to the left of the Ones. Put a 3 in the same row as the 3 in the Ones column. Above the 3 you just put in the Threes column, there are two empty boxes. Place a dot in these boxes. Look at the pattern you have just created. (dot, dot, 3). Continue all the way down this column with this pattern of ● ● 3, ● ● 3, ● ● 3...
5. Put a big 4 in the column to the right of the Twos. Put a 4 in the same row as the 4 in the Twos column. Above the 4 you just put in the Fours column, there is one empty box. Put a dot in that box. Notice that you have a pattern of a dot and then a 4. Continue this pattern all the way down the column: ● 4, ● 4, ● 4, ● 4, ● 4, ● 4...
6. Put a big 6 above the column to the right of the Fours. In this column, put a 6 in the same row as the 6 in the Twos column. Above the 6 you just put in the Sixes column, there are two empty boxes. Put a dot in those boxes. Now in the Sixes column, you have two dots and a 6. This is your pattern. Continue it all the way down the column: ● ● 6, ● ● 6, ● ● 6, ● ● 6, ● ● 6...
7. Put a big 8 above the column to the right of the Sixes. Put an 8 in the same row as the 8 in the Twos column. Above the 8 you just put in the Eights column, there are three empty boxes. Put a dot in those boxes. Now in this Eights column, you have three dots and then an 8. Look at this new pattern. Continue it down to the bottom of the column:● ● ● 8, ● ● ● 8, ● ● ● 8, ● ● ● 8...
8. Put a big 10 in the column to the right of the Eights. Here we will use a shortcut. On the left side, put the numbers 1-10. On the right side, put a 0 in each of the ten boxes. You have created the numbers 10-100.
9. Put a big 5 above the column to the left of the Threes. In the column to the left of the Threes, count down by 5's to 50 (5, 10, 15, 20, 25, 30, 35, 40, 45, 50).
10. Put a big 9 above the far left column. The Nines column has 10 rows divided by a dotted line. Write down the left side of the dotted line the numbers 0-9. In the same row as the 9 at the bottom, write a 0 on the right side of the dotted line. Write 0-9 going UP.
11. Put a big 7 above the column to the left of the Fives. In the seventh box down, write the number 49.
12. In the box in the bottom left corner of the EZ TIMES TABLE write "***0 X any number = 0***" or "***Zero times any number equals zero***."
13. To eliminate counting the numbers using dot patterns, place a little x1 in the corner of the first 3, a little x2 in the corner of the second 3, a little x3 in the corner of the third 3.... Repeat for the Fours, Sixes and Eights.

EZ TIMES TABLE

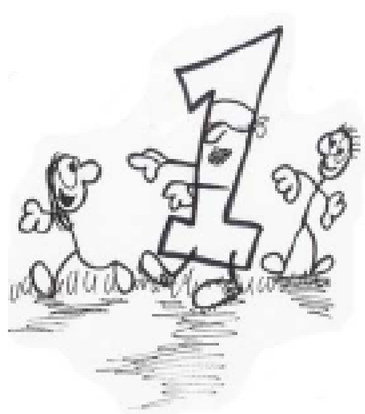
Odd Numbers						Even Numbers			

Use the Ones column to multiply the Fives, Sevens, Nines, and Tens.

E Z TIMES TABLE

Odd Numbers				1		Even Numbers			
				1					
				2					
				3					
				4					
				5					
				6					
				7					
				8					
				9					
				0					
				1					
				2					
				3					
				4					
				5					
				6					
				7					
				8					
				9					
				0					
				1					
				2					
				3					
				4					
				5					
				6					
				7					
				8					
				9					
				0					
				1					
				2					

Use the Ones column to multiply the Fives, Sevens, Nines, and Tens.



The Ones-A Table ©Thomas Biesanz 2007 www.eztimestable.com

EZ TIMES TABLE

Odd Numbers				1		Even Numbers			
				1					
				2					
				3					
				4					
				5					
				6					
				7					
				8					
				9					
				10					
				11					
				12					
				13					
				14					
				15					
				16					
				17					
				18					
				19					
				20					
				21					
				22					
				23					
				24					
				25					
				26					
				27					
				28					
				29					
				30					
				31					
				32					

Use the Ones column to multiply the Fives, Sevens, Nines, and Tens.

The Ones Table ©Thomas Biesanz 2007 www.eztimestable.com

EZ TIMES TABLE

Odd Numbers				1	2	Even Numbers			
				1	2				
				2	4				
				3	6				
				4	8				
				5	0				
				6	2				
				7	4				
				8	6				
				9	8				
				10	0				
				11	2				
				12	4				
				13	6				
				14	8				
				15	0				
				16	2				
				17	4				
				18	6				
				19	8				
				20	0				
				21	2				
				22	4				
				23	6				
				24	8				
				25	0				
				26	2				
				27	4				
				28	6				
				29	8				
				30	0				
				31	2				
				32	4				

Use the Ones column to multiply the Fives, Sevens, Nines, and Tens.

EZ TIMES TABLE

Odd Numbers				1	2	Even Numbers			
				1	2				
				2	4				
				3	6				
				4	8				
				5	10				
				6	12				
				7	14				
				8	16				
				9	18				
				10	20				
				11	22				
				12	24				
				13	26				
				14	28				
				15	30				
				16	32				
				17	34				
				18	36				
				19	38				
				20	40				
				21	42				
				22	44				
				23	46				
				24	48				
				25	50				
				26	52				
				27	54				
				28	56				
				29	58				
				30	60				
				31	62				
				32	64				

Use the Ones column to multiply the Fives, Sevens, Nines, and Tens.

The Twos Table ©Thomas Biesanz 2007 www.eztimestable.com

EZ TIMES TABLE

Odd Numbers				1	2	Even Numbers			
			3						
			•	1	2				
			•	2	4				
			3	3	6				
			•	4	8				
			•	5	10				
			3	6	12				
			•	7	14				
			•	8	16				
			3	9	18				
			•	10	20				
			•	11	22				
			3	12	24				
			•	13	26				
			•	14	28				
			3	15	30				
			•	16	32				
			•	17	34				
			3	18	36				
			•	19	38				
			•	20	40				
			3	21	42				
			•	22	44				
			•	23	46				
			3	24	48				
			•	25	50				
			•	26	52				
			3	27	54				
			•	28	56				
			•	29	58				
			3	30	60				
			•	31	62				
			•	32	64				

Use the Ones column to multiply the Fives, Sevens, Nines, and Tens.

EZ TIMES TABLE

Odd Numbers			3	1	2	Even Numbers			
			•	1	2				
			•	2	4				
			3 x1	3	6				
			•	4	8				
			•	5	10				
			3 x2	6	12				
			•	7	14				
			•	8	16				
			3 x3	9	18				
			•	10	20				

Use the Ones column to multiply the Fives, Sevens, Nines, and Tens.

•	11	22	
3 x4	12	24	
•	13	26	
•	14	28	
3 x5	15	30	
•	16	32	
•	17	34	
3 x6	18	36	
•	19	38	
•	20	40	
3 x7	21	42	
•	22	44	
•	23	46	
3 x8	24	48	
•	25	50	
•	26	52	
3 x9	27	54	
•	28	56	
•	29	58	
3 x10	30	60	
•	31	62	
•	32	64	

EZ TIMES TABLE

Odd Numbers				1	2	Even Numbers			
			3			4			
			•	1	2	•			
			•	2	4	4 x1			
			3 x1	3	6	•			
			•	4	8	4 x2			
			•	5	10	•			
			3 x2	6	12	4 x3			
			•	7	14	•			
			•	8	16	4 x4			
			3 x3	9	18	•			
			•	10	20	4 x5			
Use the Ones column to multiply the Fives, Sevens, Nines, and Tens.			•	11	22	•			
			3 x4	12	24	4 x6			
			•	13	26	•			
			•	14	28	4 x7			
			3 x5	15	30	•			
			•	16	32	4 x8			
			•	17	34	•			
			3 x6	18	36	4 x9			
			•	19	38	•			
			•	20	40	4 x10			
			3 x7	21	42	•			
			•	22	44	4			
			•	23	46	•			
			3 x8	24	48	4			
			•	25	50	•			
			•	26	52	4			
			3 x9	27	54	•			
			•	28	56	4			
			•	29	58	•			
			3 x10	30	60	4			
			•	31	62	•			
			•	32	64	4			

EZ TIMES TABLE

Odd Numbers				1	2	Even Numbers			
			3			4	6		
			•	1	2	•	•		
			•	2	4	4 x1	•		
			3 x1	3	6	•	6 x1		
			•	4	8	4 x2	•		
			•	5	10	•	•		
			3 x2	6	12	4 x3	6 x2		
			•	7	14	•	•		
			•	8	16	4 x4	•		
			3 x3	9	18	•	6 x3		
			•	10	20	4 x5	•		

Use the Ones column to multiply the Fives, Sevens, Nines, and Tens.

•	11	22	•	•
3 x4	12	24	4 x6	6 x4
•	13	26	•	•
•	14	28	4 x7	•
3 x5	15	30	•	6 x5
•	16	32	4 x8	•
•	17	34	•	•
3 x6	18	36	4 x9	6 x6
•	19	38	•	•
•	20	40	4 x10	•
3 x7	21	42	•	6 x7
•	22	44	4	•
•	23	46	•	•
3 x8	24	48	4	6 x8
•	25	50	•	•
•	26	52	4	•
3 x9	27	54	•	6 x9
•	28	56	4	•
•	29	58	•	•
3 x10	30	60	4	6 x10
•	31	62	•	•
•	32	64	4	•

EZ TIMES TABLE

Odd Numbers				1	2	Even Numbers			
			3			4	6	8	
			•	1	2	•	•	•	
			•	2	4	4 x1	•	•	
			3 x1	3	6	•	6 x1	•	
			•	4	8	4 x2	•	8 x1	
			•	5	10	•	•	•	
			3 x2	6	12	4 x3	6 x2	•	
			•	7	14	•	•	•	
			•	8	16	4 x4	•	8 x2	
			3 x3	9	18	•	6 x3	•	
			•	10	20	4 x5	•	•	

Use the Ones column to multiply the Fives, Sevens, Nines, and Tens.

•	11	22	•	•	•
3 x4	12	24	4 x6	6 x4	8 x3
•	13	26	•	•	•
•	14	28	4 x7	•	•
3 x5	15	30	•	6 x5	•
•	16	32	4 x8	•	8 x4
•	17	34	•	•	•
3 x6	18	36	4 x9	6 x6	•
•	19	38	•	•	•
•	20	40	4 x10	•	8 x5
3 x7	21	42	•	6 x7	•
•	22	44	4	•	•
•	23	46	•	•	•
3 x8	24	48	4	6 x8	8 x6
•	25	50	•	•	•
•	26	52	4	•	•
3 x9	27	54	•	6 x9	•
•	28	56	4	•	8 x7
•	29	58	•	•	•
3 x10	30	60	4	6 x10	•
•	31	62	•	•	•
•	32	64	4	•	8 x8

EZ TIMES TABLE

Odd Numbers				1	2	Even Numbers			
			3			4	6	8	10
			•	1	2	•	•	•	10
			•	2	4	4 x1	•	•	20
			3 x1	3	6	•	6 x1	•	30
			•	4	8	4 x2	•	8 x1	40
			•	5	10	•	•	•	50
			3 x2	6	12	4 x3	6 x2	•	60
			•	7	14	•	•	•	70
			•	8	16	4 x4	•	8 x2	80
			3 x3	9	18	•	6 x3	•	90
			•	10	20	4 x5	•	•	100

Use the Ones column to multiply the Fives, Sevens, Nines, and Tens.

•	11	22	•	•	•		
3 x4	12	24	4 x6	6 x4	8 x3		
•	13	26	•	•	•		
•	14	28	4 x7	•	•		
3 x5	15	30	•	6 x5	•		
•	16	32	4 x8	•	8 x4		
•	17	34	•	•	•		
3 x6	18	36	4 x9	6 x6	•		
•	19	38	•	•	•		
•	20	40	4 x10	•	8 x5		
3 x7	21	42	•	6 x7	•		
•	22	44	4	•	•		
•	23	46	•	•	•		
3 x8	24	48	4	6 x8	8 x6		
•	25	50	•	•	•		
•	26	52	4	•	•		
3 x9	27	54	•	6 x9	•		
•	28	56	4	•	8 x7		
•	29	58	•	•	•		
3 x10	30	60	4	6 x10	•		
•	31	62	•	•	•		
•	32	64	4	•	8 x8		

EZ TIMES TABLE

		Odd Numbers		1	2	Even Numbers			
		5	3			4	6	8	10
		5	•	1	2	•	•	•	10
		10	•	2	4	4 x1	•	•	20
		15	3 x1	3	6	•	6 x1	•	30
		20	•	4	8	4 x2	•	8 x1	40
		25	•	5	10	•	•	•	50
		30	3 x2	6	12	4 x3	6 x2	•	60
		35	•	7	14	•	•	•	70
		40	•	8	16	4 x4	•	8 x2	80
		45	3 x3	9	18	•	6 x3	•	90
		50	•	10	20	4 x5	•	•	100

Use the Ones column to multiply the Fives, Sevens, Nines, and Tens.

•	11	22	•	•	•
3 x4	12	24	4 x6	6 x4	8 x3
•	13	26	•	•	•
•	14	28	4 x7	•	•
3 x5	15	30	•	6 x5	•
•	16	32	4 x8	•	8 x4
•	17	34	•	•	•
3 x6	18	36	4 x9	6 x6	•
•	19	38	•	•	•
•	20	40	4 x10	•	8 x5
3 x7	21	42	•	6 x7	•
•	22	44	4	•	•
•	23	46	•	•	•
3 x8	24	48	4	6 x8	8 x6
•	25	50	•	•	•
•	26	52	4	•	•
3 x9	27	54	•	6 x9	•
•	28	56	4	•	8 x7
•	29	58	•	•	•
3 x10	30	60	4	6 x10	•
•	31	62	•	•	•
•	32	64	4	•	8 x8

EZ TIMES TABLE

Odd Numbers				1	2	Even Numbers			
9		5	3			4	6	8	10
0		5	•	1	2	•	•	•	10
1		10	•	2	4	4 x1	•	•	20
2		15	3 x1	3	6	•	6 x1	•	30
3		20	•	4	8	4 x2	•	8 x1	40
4		25	•	5	10	•	•	•	50
5		30	3 x2	6	12	4 x3	6 x2	•	60
6		35	•	7	14	•	•	•	70
7		40	•	8	16	4 x4	•	8 x2	80
8		45	3 x3	9	18	•	6 x3	•	90
9		50	•	10	20	4 x5	•	•	100

Use the Ones column to multiply the Fives, Sevens, Nines, and Tens.

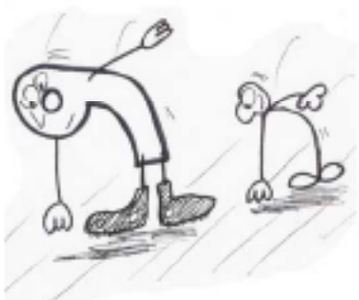
•	11	22	•	•	•		
3 x4	12	24	4 x6	6 x4	8 x3		
•	13	26	•	•	•		
•	14	28	4 x7	•	•		
3 x5	15	30	•	6 x5	•		
•	16	32	4 x8	•	8 x4		
•	17	34	•	•	•		
3 x6	18	36	4 x9	6 x6	•		
•	19	38	•	•	•		
•	20	40	4 x10	•	8 x5		
3 x7	21	42	•	6 x7	•		
•	22	44	4	•	•		
•	23	46	•	•	•		
3 x8	24	48	4	6 x8	8 x6		
•	25	50	•	•	•		
•	26	52	4	•	•		
3 x9	27	54	•	6 x9	•		
•	28	56	4	•	8 x7		
•	29	58	•	•	•		
3 x10	30	60	4	6 x10	•		
•	31	62	•	•	•		
•	32	64	4	•	8 x8		

EZ TIMES TABLE

Odd Numbers				1	2	Even Numbers			
9	7	5	3			4	6	8	10
0 9		5	•	1	2	•	•	•	1 0
1 8		10	•	2	4	4 x1	•	•	2 0
2 7		15	3 x1	3	6	•	6 x1	•	3 0
3 6		20	•	4	8	4 x2	•	8 x1	4 0
4 5		25	•	5	1 0	•	•	•	5 0
5 4		30	3 x2	6	1 2	4 x3	6 x2	•	6 0
6 3		35	•	7	1 4	•	•	•	7 0
7 2		40	•	8	1 6	4 x4	•	8 x2	8 0
8 1		45	3 x3	9	1 8	•	6 x3	•	9 0
9 0		50	•	1 0	2 0	4 x5	•	•	10 0

Use the Ones column to multiply the Fives, Sevens, Nines, and Tens.

•	1 1	2 2	•	•	•		
3 x4	1 2	2 4	4 x6	6 x4	8 x3		
•	1 3	2 6	•	•	•		
•	1 4	2 8	4 x7	•	•		
3 x5	1 5	3 0	•	6 x5	•		
•	1 6	3 2	4 x8	•	8 x4		
•	1 7	3 4	•	•	•		
3 x6	1 8	3 6	4 x9	6 x6	•		
•	1 9	3 8	•	•	•		
•	2 0	4 0	4 x10	•	8 x5		
3 x7	2 1	4 2	•	6 x7	•		
•	2 2	4 4	4	•	•		
•	2 3	4 6	•	•	•		
3 x8	2 4	4 8	4	6 x8	8 x6		
•	2 5	5 0	•	•	•		
•	2 6	5 2	4	•	•		
3 x9	2 7	5 4	•	6 x9	•		
•	2 8	5 6	4	•	8 x7		
•	2 9	5 8	•	•	•		
3 x10	3 0	6 0	4	6 x10	•		
•	3 1	6 2	•	•	•		
•	3 2	6 4	4	•	8 x8		



EZ TIMES TABLE

Odd Numbers				1	2	Even Numbers			
9	7	5	3			4	6	8	10
0:9	7	5	•	1	2	•	•	•	1:0
1:8	14	10	•	2	4	4 x1	•	•	2:0
2:7	21	15	3 x1	3	6	•	6 x1	•	3:0
3:6	28	20	•	4	8	4 x2	•	8 x1	4:0
4:5	35	25	•	5	10	•	•	•	5:0
5:4	42	30	3 x2	6	12	4 x3	6 x2	•	6:0
6:3	49	35	•	7	14	•	•	•	7:0
7:2	56	40	•	8	16	4 x4	•	8 x2	8:0
8:1	63	45	3 x3	9	18	•	6 x3	•	9:0
9:0	70	50	•	10	20	4 x5	•	•	10:0

Use the Ones column to multiply the Fives, Sevens, Nines, and Tens.

•	11	22	•	•	•	
3 x4	12	24	4 x6	6 x4	8 x3	
•	13	26	•	•	•	
•	14	28	4 x7	•	•	
3 x5	15	30	•	6 x5	•	
•	16	32	4 x8	•	8 x4	
•	17	34	•	•	•	
3 x6	18	36	4 x9	6 x6	•	
•	19	38	•	•	•	
•	20	40	4 x10	•	8 x5	
3 x7	21	42	•	6 x7	•	
•	22	44	4	•	•	
•	23	46	•	•	•	
3 x8	24	48	4	6 x8	8 x6	
•	25	50	•	•	•	
•	26	52	4	•	•	
3 x9	27	54	•	6 x9	•	
•	28	56	4	•	8 x7	
•	29	58	•	•	•	
3 x10	30	60	4	6 x10	•	
•	31	62	•	•	•	
•	32	64	4	•	8 x8	

EZ TIMES TABLE

Odd Numbers				1	2	Even Numbers			
9	7	5	3			4	6	8	10
0 9	7	5	•	1	2	•	•	•	1 0
1 8	14	10	•	2	4	4 x1	•	•	2 0
2 7	21	15	3 x1	3	6	•	6 x1	•	3 0
3 6	28	20	•	4	8	4 x2	•	8 x1	4 0
4 5	35	25	•	5	1 0	•	•	•	5 0
5 4	42	30	3 x2	6	1 2	4 x3	6 x2	•	6 0
6 3	49	35	•	7	1 4	•	•	•	7 0
7 2	56	40	•	8	1 6	4 x4	•	8 x2	8 0
8 1	63	45	3 x3	9	1 8	•	6 x3	•	9 0
9 0	70	50	•	1 0	2 0	4 x5	•	•	10 0
Use the Ones column to multiply the Fives, Sevens, Nines, and Tens.			•	1 1	2 2	•	•	•	
			3 x4	1 2	2 4	4 x6	6 x4	8 x3	
			•	1 3	2 6	•	•	•	
			•	1 4	2 8	4 x7	•	•	
			3 x5	1 5	3 0	•	6 x5	•	
			•	1 6	3 2	4 x8	•	8 x4	
			•	1 7	3 4	•	•	•	
			3 x6	1 8	3 6	4 x9	6 x6	•	
			•	1 9	3 8	•	•	•	
			•	2 0	4 0	4 x10	•	8 x5	
			3 x7	2 1	4 2	•	6 x7	•	
			•	2 2	4 4	4	•	•	
			•	2 3	4 6	•	•	•	
			3 x8	2 4	4 8	4	6 x8	8 x6	
			•	2 5	5 0	•	•	•	
			•	2 6	5 2	4	•	•	
			3 x9	2 7	5 4	•	6 x9	•	
			•	2 8	5 6	4	•	8 x7	
			•	2 9	5 8	•	•	•	
			3 x10	3 0	6 0	4	6 x10	•	
			•	3 1	6 2	•	•	•	
			•	3 2	6 4	4	•	8 x8	

Zero X any number = zero

EASY TIMES

by Janet Jacobsen

If numbers make you feel numb and dumb,
here is a way to make them fun.
Just take a look at the open chart
and see the big "T", that's your start.

Now number down both sides of the "T".
On the left side write down 1, 2 , 3,
4, 5, 6, 7, 8, 9, oh,
repeating again on down the row.

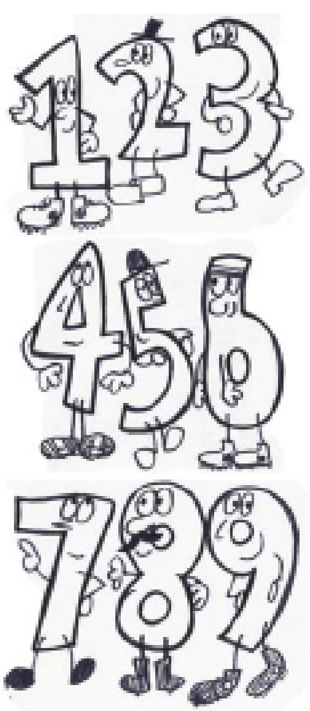
On the right side 2, 4, 6, 8, oh,
And repeat again on down you go.
Add one's and two's making teens and twenties.
It's as easy as counting copper pennies.

Odd numbers go across the left top "T" line.
Write 1, 3, 5, 7, and then 9.
Even numbers go across the right side again,
2, 4, 6, 8 and then 10.

Now you have a big numbered "T".
Once you add dots you'll have the key
to finding patterns that are fun and easy to see
and will help you learn the times table effortlessly.

E Z T I M E S T A B L E

Odd Numbers						Even Numbers			
Use the Ones column to multiply the Fives, Sevens, Nines, and Tens.									



reality (half of a box).

Division

If a number (the dividend) is **divided by a number in a short column, the answer is in the Ones column** in the same row as the dividend. Let's divide 63 by 9. we would look in the Nines column for the "answer" since we are dividing by 9. We find 63 or the nearest lower number. It is in the seventh box in the nines column, so the answer is 63 ÷ 9 = 7. It is also in the same row as the 7 in the Ones column. Students now understand that multiplication and division are opposites and that they can work either way with the Chart.

SQUARES

Finding the first One, the second Two, the third Three, the fourth Four, the fifth Five... adds a dimension to squares that creates interest and promotes understanding of what a square number is. Ones, Twos, Threes, etc. are capitalized because they are families where the individual numbers in each set are at home. The Fives include 5, 10, 15, 20, and **25, which is the fifth and square number of the Five family.**

FRACTIONS

Fractions are another way of seeing division with some multiplication thrown in. Start with ¼ of 12. Since 12 is an even number, find 12 in the Twos column. One fourth means that you are dividing by 4. Looking in the Fours column next to the 12 in the Ones column, you see that the third 4 is there. You can also divide the Ones column down to twelve in four equal parts (three numbers each). **This adds another visual, right-brain dimension**. ¼ x 12 = 3. I like using ¼ because it is also called a quarter. For 2/4 (two quarters) of 12, I hold up a real quarter and ask, "If one quarter (¼) is worth 3, then two quarters are worth _____?" I hold up two quarters and the students see that two quarters (each worth 3) are worth 6. "And three quarters are worth _____?" They see that three quarters (each worth 3) are worth 9. Once the principle is established, fractions are easy work.

FACTORS

Factors can easily be found for any number by finding the number on the EZTT. Looking to see what column they are in tells the student one factor of the number. Another can be found by looking in the Ones and Twos column in the same row. 24, next to 6_{x4} shows that 6 and 4 are factors of that number.

PLACE VALUE

Students have used Ones-digits and Tens-digits in patterns when they created the Ones, Twos, Nines and Tens. See **Ones-units on page 54**. Kids are just learning names for what they already are using.

PRIME NUMBERS

The ***Times Line Table*** (page 65) is a great overview to explore **prime numbers**. These are numbers that can only be divided by 1 and themselves. Accepting that 2, 3, 5, and 7 fit this definition, they are circled (they show up as factors of themselves). Go down the Ones column and see that 11 has only dots (no factor numbers) in that row. 13, 17, 19, 23, 29, 31, 37, 41, 43, & 47 also have only dots in their row. These numbers are also circled. Because they have no factors, they are prime numbers. The Table could be continued to 100 or more as a project to learn about factors and prime numbers using this right-brain overview. Could we find all prime numbers by continuing this chart?

USING THE EZ TIMES TABLE WITH OTHER LEARNING METHODS

The EZ TIMES TABLE appeals to several learning strategies. It can stand alone as a method of teaching math, but it also is reinforced by combining it with other methods.

Using it with flash cards can become a game to find the answers in two different ways for each card. This increases confidence and locks in the actual multiplication facts as students learn their way around the Table.

The **EZTT works well with manipulatives** too. As you move each pair of blocks (or other manipulatives), go down one box in the Twos column with a finger or pencil. The Twos column will keep count of the total number of blocks and Ones column will keep track of the number of pairs.

Now double up the pairs and move the groups of four blocks down as groups. In the Fours column, point to the first 4 with this group, and then the second 4 with the second group of 4 blocks. Moving over to the Twos column shows that you have 8 blocks and the Ones column shows that this is your second group of 4 blocks. Moving the tenth group of four is done as you point to the tenth 4. This shows the student that he has moved 40 blocks (in the Twos column) and that this is his tenth group of four blocks (by counting the 4's or looking at the small x10 after that 4).

The same method works for the Threes, Sixes, and Eights. For the Fives, Sevens, Nines, and Tens, go down one box with each corresponding set of blocks moved.

The EZ Times Table also works well with counting rectangles on graph paper. On graph paper you can give added meanings to each of the families of Ones, Twos, Threes, Fours, etc. with rectangles one wide, two wide, three wide, etc. and then going to the **EZTT** to get totals for each row of squares.

WORKSHEET

The next two pages are a two sided worksheet that can be used to focus on using the Table while, or after creating the Table. It can also be used in a class for fast students who are waiting for their peers to finish a column.

NAME _____ DATE _____

ONES

8 x 1 =

6 x 1 =

3 x 1 =

9 x 1 =

1 x 4 =

1 x 2 =

1 x 7 =

1 x 1 =

6 + 2 =

7 + 4 =

14 + 3 =

15 + 6 =

12 + 3 + 4 =

22 + 5 + 2 =

TWOS

6 x 2 =

3 x 2 =

9 x 2 =

8 x 2 =

2 x 4 =

2 x 2 =

2 x 7 =

2 x 1 =

2 x 18 =

2 x 23 =

14 / 2 =

18 / 2 =

26 / 2 =

30 / 2 =

THREES

3 x 5 =

3 x 8 =

3 x 2 =

2 x 3 =

3 x 7 =

3 x 9 =

3 x 1 =

1 x 3 =

4 x 3 =

3 x 6 =

8 x 3 =

9 x 3 =

FOURS

8 x 4 =

4 x 4 =

4 x 4 =

4 x 7 =

4 x 1 =

4 x 2 =

6 x 4 =

3 x 4 =

9 x 4 =

7 x 4 =

5 x 4 =

2 x 4 =

SIXES

9 x 6 =

8 x 6 =

6 x 4 =

6 x 6 =

6 x 7 =

6 x 1 =

6 x 8 =

6 x 3 =

3 x 6 =

6 x 2 =

7 x 6 =

5 x 6 =

EIGHTS

8 x 5 =

8 x 8 =

8 x 2 =

2 x 8 =

8 x 7 =

8 x 9 =

8 x 1 =

1 x 8 =

4 x 8 =

5 x 8 =

8 x 3 =

6 x 8 =

8 x 4 =

3 x 8 =

TENS

10 x 5 =

10 x 8 =

10 x 2 =

2 x 10 =

10 x 7 =

10 x 9 =

10 x 1 =

1 x 10 =

4 x 10 =

10 x 3 =

10 x 6 =

10 x 4 =

8 x 10 =

6 x 10 =

FIVES

8 x 5 =

5 x 5 =

5 x 8 =

5 x 7 =

5 x 1 =

5 x 2 =

6 X 5 =

3 x 5 =

9 x 5 =

5 x 6 =

5 x 3 =

7 X 5 =

4 x 5 =

9 x 5 =

NINES

9 x 9 =

8 x 9 =

9 x 4 =

9 x 9 =

9 x 7 =

9 x 1 =

9 x 8 =

9 x 3 =

3 x 9 =

5 x 9 =

7 x 9 =

4 x 9 =

6 x 9 =

2 x 9 =

SEVENS

9 x 7 =

8 x 7 =

7 x 4 =

7 x 7 =

7 x 7 =

7 x 1 =

7 x 2 =

7 x 3 =

3 x 7 =

6 x 7 =

7 x 5 =

7 x 8 =

7 x 6 =

5 x 7 =

PLAYING WITH THE EZ TIMES TABLE

Any multiplication workbook or page of **problems can be used with the Chart**. The following page starts with one digit multiplication. Copy this for your class or use your own. The students have created the times table and they are amazed that all the answers to one-digit multiplication are in this simple Table. It is very important to use the **EZTT** with many problems until they understand that all multiplication facts are here and they start thinking in the families of the Threes, Sixes, Eights, etc.

There is even **a pattern way to learn a 20 X 20 times table** in the back of the book. Students will have to learn a traditional or lattice technique to multiply 2 digit or larger numbers. They are learning to use it quickly and to double-check their answers by reversing the problems (6 X 8 gives the same result as 8 X 6). **Finding the same answer in two different ways on a chart that they made is very satisfying for many students.**

There is a huge amount of information on this Table and it is useful for students to look at similarities, patterns, and go back and forth between addition and multiplication with the Table. They can visually see where the same numbers have more than one factor (24 has half of the numbers 1-10 as factors: 1, 3, 4, 6, and 8).

For 6 X 5= 30, the student can count down 6 Fives, or go down the Ones column to 6 and then over to the Fives column. They have found the answer 30 in two ways. This also **reinforces that multiplication is just adding the same number over and over again.**

Numbers start making more sense to the student. Four 4's and two 8's both add up to 16. They can **SEE** number relationships. They trust the **TREES of the Ones and Twos column** to know that their answers are correct. They can visually see the answers. These TREES of the Ones and Twos can help them learn the multiplication tables by heart because it is not blind memory. The numbers make sense and relate to each other. Studying the numbers with the Table that they created **helps them own the numbers**.

The following **worksheet** gives students an opportunity to expand the use of the EZ Times Table.

2 X 3 =

6 x 2 =

3 x 4 =

4 x 5 =

5 x 6 =

6 x 7 =

7 x 8 =

8 x 9 =

9 x 9 =

9 x 7 =

8 x 6 =

7 x 5 =

6 x 4 =

5 x 3 =

8 x 4 =

7 x 3 =

6 X 9 =

26 / 2 =

24 / 6 =

32 / 8 =

35 / 5 =

63 / 9 =

18 / 4 =

21 / 3 =

49 / 7 =

34
x 2

23
x 3

35
x 4

68
x 5

44
x 62

73
X 96

853
x 421

Half of 26 is _____

Half of 50 is _____

Half of $88 is _____

Double 4 is _____

Double 7 is _____

Double 8 is _____

Double 16 is _____

Double 25 cents _____

½ of 26 is _____

½ of $38 is _____

½ of $55 is _____

¼ of 20 is _____

¾ of 20 is _____

1/9 of 36 is _____

2/9 of 36 is _____

3/9 of 36 is _____

1/3 of 27 is _____

3 3's are _____

4 4's are _____

5 x 5 is _____

6 squared is _____

7 squared is _____

8^2 is _____

9^2 is _____

Using EZ Times Table in a Home or in the Classroom

The EZTT can be used many ways with a single student or a classroom. To introduce it to a group of students, I recommend use of an overhead projector. **Make a transparency of the blank EZTT** and talk the class through it as you create your own Table on the transparency. Some students often quickly get excited by seeing and creating the patterns. This becomes an incentive for other students to join in the fun. I recommend grouping students who start going ahead ("All students who have finished the Threes already should come over here and do these problems").

Another approach is eliminating the small x1, x2, x3, x4, etc. for the whole class and then giving it to the faster students to fill in. Leaving it out makes the Table easier and clearer for some students, and it is still fully functional. The students just need to count down the numbers in the pattern to multiply and divide (for example, look at 24, find the 6 in the same row, and count down to find that it is the 4th 6 in the Sixes column).

A third addition for fast students is to have them convert their **EZTT** to an **EZ Facts Table** by changing the patterns to the multiplication facts (found in the Ones and Twos columns). The second 6 is erased and replaced with a 12 (which is in the same row in the Twos column). The third 6 is replaced by 18 (in the same row in the Twos column), etc. Have these students replace all patterns with numbers from the same row in the Twos column for the Threes, Fours, Sixes, and Eights columns or give them the **EZ Fill-in Facts** Table.

Students can use their own **EZTT** to work on their math problems for addition, subtraction, multiplication and division for their daily work. Students have chosen to laminate their **EZTT** because it was so valuable to them. They have made their own calculator!

The students could re-create the EZTT once a week. If they use graph paper, they start seeing that they are creating the whole times table "from scratch", which they can do for standarized tests. Even just re-creating the Nines or Sevens in a few seconds on the side of a paper can eliminate errors and build trust.

I highly recommend ***Teach Your Child the Multiplication Tables: Fast, Fun & Easy with Dazzling Patterns, Grids & Tricks!*** by Eugenia Francis who has created great worksheets that focus on patterns. Please send me ideas and suggestions that I can pass on to other teachers.

Lesson Plan for EZ Times Table

Lesson Plan: EZ Times Table

Combine Goals, Objectives, and Activities that are appropriate for your students. Some of the 3rd, 4th, and 5th grade activities are found in the advanced Part 3.

Time varies: usually .5 hour for each table (20 tables)

Subject: Math

Goals: (Use these California Standards or from your own state)

1st Grade California Standards

1.0 Students understand and use numbers up to 100.
2.0 Students demonstrate the meaning of addition and subtraction and use these operations to solve problems.

2ND Grade California Standards

1.0 Students model, represent, and interpret number relationships to create and solve problems involving addition and subtraction.
3.0 Students model and solve simple problems involving multiplication and division:

3rd Grade California Standards

2.0 Students calculate and solve problems involving addition, subtraction, multiplication, and division:
2.3 Use the inverse relationship of multiplication and division to compute and check results.
2.6 Understand the special properties of 0 and 1 in multiplication and division.

4th Grade California Standards

2.0 Students use two-dimensional coordinate grids to represent points and graph lines and simple figures.
3.0 Students solve problems involving addition, subtraction, multiplication, and division of whole numbers and understand the relationships among the operations.
4.0 Students know how to factor small whole numbers.

5th Grade California Standards

2.0 Students perform calculations and solve problems involving addition, subtraction, and simple multiplication and division of fractions and decimals.
2.0 Students use strategies, skills and concepts in finding solutions.
3.0 Students move beyond a particular problem by generalizing to other situations.

Objectives 1st GRADE: Student will be able to

1.1 …count, read, and write whole numbers to 100. … create the Twos from patterns to 64 and beyond.

1.3 …represent equivalent forms of the same number through the use of physical models, diagrams, and number expressions (to 20) (e.g., 8 may be represented as 4 + 4, 5 + 3, 2 + 2 + 2 + 2, 10 - 2, 11 - 3).

… half or double any number to 32 and beyond.

… add any three numbers from 1-10 in any order resulting in the same answer.

… subtract a smaller number from any number up to 32.

2ND GRADE: Student will be able to:

…use repeated addition, arrays, counting by multiples to do multiplying

…Use the commutative and associative rules to simplify mental calculations and to check results.

…Recognize and describe patterns & determine a next term in linear patterns.

Solve problems involving simple number patterns.

3rd GRADE: Student will be able to:

… Recognize and use the commutative and associative properties of multiplication (e.g., if 5 x 7 = 35, then what is 7 x 5?, if 5 x 7 x 3 = 105, then what is 7 x 3 x 5?).

…Use the inverse relationship of multiplication and division to compute and check results.

… Understand the special properties of 0 and 1 in multiplication and division.

… Select appropriate operational and relational symbols to make an expression true (e.g., 4 __ 3 = 12, what operation symbol goes in the blank?).

Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to explain mathematical reasoning.

4th GRADE: Student will be able to:

… Understand that many whole numbers break down in different ways (e.g., 12 = 4 x 3 = 2 x 6 = 2 x 2 x 3).

…Know that numbers such as 2, 3, 5, 7, and 11 do not have any factors except 1 and themselves and that such numbers are called prime numbers.

…Draw the points corresponding to linear relationships on graph paper.

…Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to explain mathematical reasoning.

5th GRADE: Student will be able to:

1.4… Determine the prime factors of all numbers through 50.

1.1... Use information taken from a graph or equation to answer questions about a problem situation.

2.3... Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, and models, to explain mathematical reasoning.

Activities

You may go in sequence or choose whatever the student or class is ready to learn.

Kindergarden
p.8: Create the Ones Number line.

First Grade, EZ Times Table
p.11: Do addition problems, adding two or more numbers.
p. 11: Do subtraction problems with EZTT.
p.12: Create the 2's. Count by 2's, Double a number, Multiply by 2.
p. 14 Learn to Divide by 2, to find half of a number.

Second Grade, Ez Times Table
p. 4-40 Create the EZ Times Table.
p. 68: Create the Color EZTT.
p. 37: Add multiples of 1-10 (preparation for multiplication).

Third Grade, EZ Times Table
p. 43: Multiplication with EZTT.
p. 60: Create EZ Facts Table. Use EZ Facts to memorize multiplication table.
p. 45: Find and understand factors on the EZTT.
p. 55: Threes and Sevens patterns. Fun! See MisterNumbers on Youtube.
P. 58: Twos, Fours, Sixes, Eights patterns.
p. 44: Division on the EZTT.
p. 45: Learn Square Numbers on the EZTT.
p. 74: Create a Ruler EZTT
p. 4-40: Create the EZTT on graph paper.

Fourth Grade, EZTT
p. 56: Learn Rule of Tens.
p. 70: Create 10 X 10 and 10 X 20 Multiplication Table
p. 64: Create Time Line Table.
P. 64: Find factors on Time Line Table.

Fourth & Fifth Grade, EZTT
p. 72: Create a 20 X 20 Multiplication Table.
p. 66: Create the Slope Line Table.
p. 66: Anchor slope lines in Graphing with slope line table.
p. 64: Find Prime Numbers on Times Line Table.
P. 72 : Create a 30 x 30 Table on graph paper.

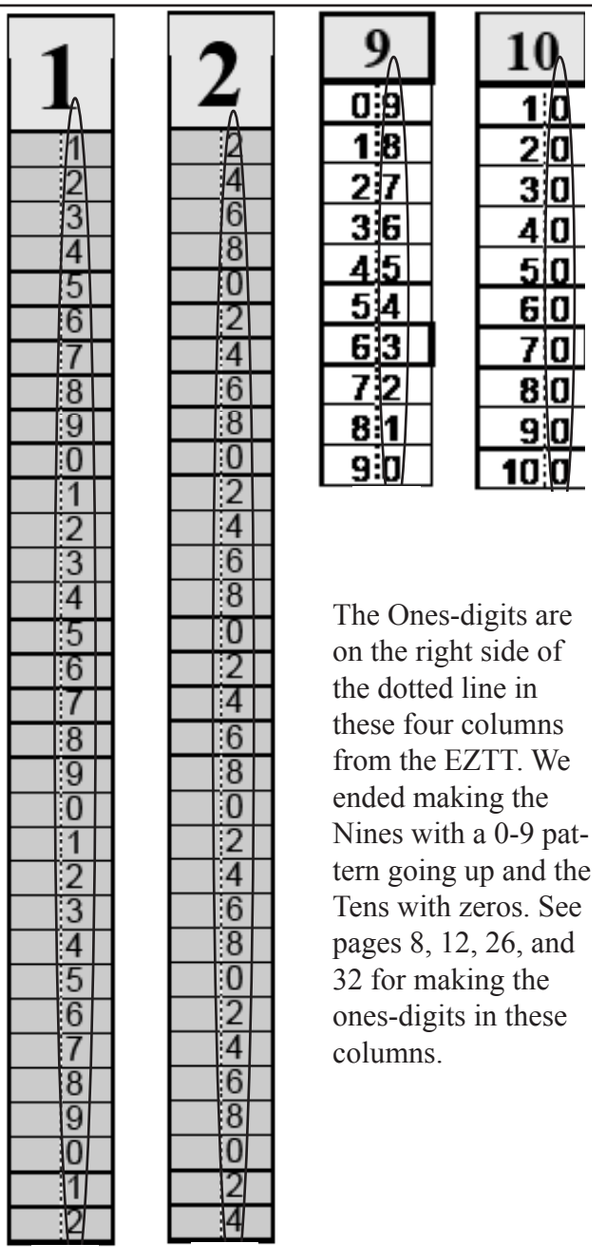
Fun Patterns with the Ones-digits and Tens-digits

Feel free to skip this page. Come back if you want to understand ones-digits.

What are **Ones-digits?** We have already worked with the Ones-digits when we created the Ones, Twos, Nines and Tens columns in the EZTT. They are the numbers to the right of the dotted line, in the Ones place. The **Tens-digits** are the digits in the tens place, the number to the left of the dotted line in these four columns. See below. We will use the Ones-digits and Tens-digits for **more pattern play starting on the next page.**

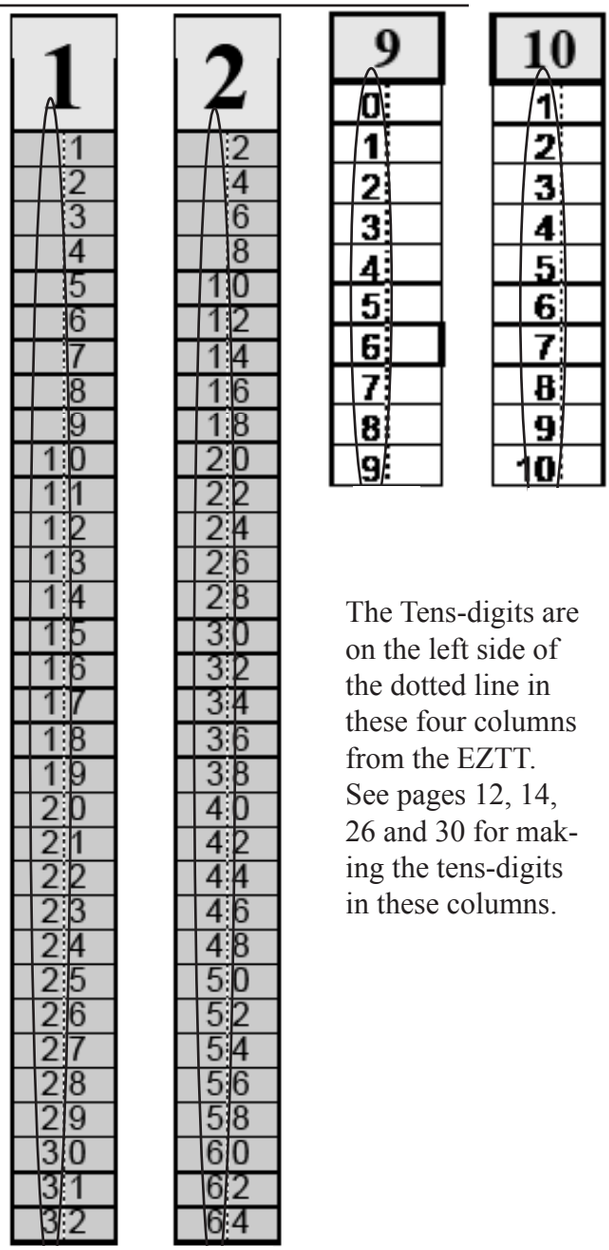
Note that on the last row of the Tens, the tens-digits reach 10 at 100, we could add another dotted line on the left and have 1 in the hundreds-digits.

The **ONES-DIGITS** are circled below. In the EZTT, we started the Ones and Twos with a pattern in the ones-digits.



The Ones-digits are on the right side of the dotted line in these four columns from the EZTT. We ended making the Nines with a 0-9 pattern going up and the Tens with zeros. See pages 8, 12, 26, and 32 for making the ones-digits in these columns.

The **TENS-DIGITS** are circled below. In the EZTT, we started the Nines and Tens with patterns in the tens-digits.

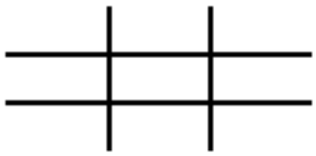


The Tens-digits are on the left side of the dotted line in these four columns from the EZTT. See pages 12, 14, 26 and 30 for making the tens-digits in these columns.

Creating the Threes and Sevens from Patterns: WOW!

The Threes

Make a Tic-Tac-Toe Square.



Add the 1-2-3-4-5-6-7-8-9-0 pattern starting from lower left going up. These are ones-digits.

3	6	9
2	5	8
1	4	7

0

Add 1's in the Tens-digit place in the second row, and 2's in the third row. You are creating the Threes (3x1 – 3x9).

03	06	09
12	15	18
21	24	27

3x10 = 30

Repeat Tic-Tac-Toe square & 123456789 pattern. Add 3's, 4's, and 5's in each of the next three rows, creating 3x11 – 3 x 19.

33	36	39
42	45	48
51	54	57

3x20 = 60

Repeat Tic-Tac-Toe square & 123456789 pattern. Add 6's, 7's, and 8's in each of the next three rows, creating 3x21 – 3 x 29.

63	66	69
72	75	78
81	84	87

3x30 = 90

Notice that each Tic-ac-Toe square ends with 30, 60, 90, 120, 150…These are threes (3, 6, 9, 12, 15…) with a 0 after it.

3	6	9
2	5	8
1	4	7

3x40 = 120

Continue creating the Threes as long as you like in this fun way.

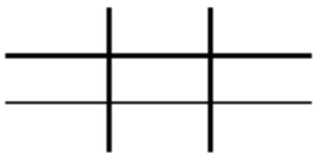
See MisterNumbers on Youtube for a video.

3	6	9
2	5	8
1	4	7

3x50 = 150

The Sevens

Make a Tic-Tac-Toe Square.



Add the 1-2-3-4-5-6-7-8-9-0 pattern starting from upper right and going down. This is the same, but opposite pattern as 3's.

7	4	1
8	5	2
9	6	3

0

As you go across, add 1 to the tens-digit in 2nd & 3rd columns (X's). You are creating the Sevens (7x1 – 7x9).

	X	X
07	14	21
28	35	42
49	56	63

7x10 = 70

Add 70 as the 10th 7. Repeat Tic-Tac-Toe square & 123456789 pattern. Continue to add 1 to the tens-digit in 2nd & 3rd columns (X's) as you go across

	X	X
77	84	91
98	105	112
119	126	133

7x20 = 140

Repeat Tic-Tac-Toe lines and123456789 pattern.

	X	X
7	4	1
8	5	2
9	6	3

7x30 = 210

Notice that each Tic-ac-Toe square ends with 70, 140, 210, 280, 350…These are sevens (7, 14, 21, 28, 35…) with a 0 after it.

	X	X
7	4	1
8	5	2
9	6	3

7x40 = 280

Continue creating the Sevens as long as you like or start over in the last three Squares.

Notice on both Threes and Sevens squares that all opposite digits add up to 10: 7+3, 4+6, 1+9, & 2+8.

	X	X
7	4	1
8	5	2
9	6	3

7x50 = 350

"RULE OF TENS" PATTERNS

My Rule of Tens states that **all** columns adding up to ten have reversed patterns in the **ones-digits**. Looking just at the ones-digits give us a great place **to explore patterns** in numbers. You just learned used two of them in the Threes and Sevens page. If you understand ones-digits, feel free to **TURN THE PAGE NOW AND CONTINUE TO HAVE FUN** with the Twos, Fours, Sixes, Eights, and creating a 20 X 20 EZ Table from patterns. When you want to know more about **HOW** it works, read this page.

We know that the ones-digit (Could Ones-ie be a simpler name?) holds the ones place, the last digit in a whole number. In the Ones, Twos, Nines and Tens columns, we saw that it is the number to the right of the dotted line, and the **tens-digit** (Tens-ie?) is the digit in the tens place, the number to the left of the dotted line.

All multiplication table ones-digits fall into just 6 patterns (some are reversed). This gets more interesting when one of the patterns is made up **only of Zeros** in the Zero and Tens columns. The Fives end with **alternating 5's and 0's**, and suddenly we are down to only four patterns in the ones-digits. All patterns start and end with 0. We can leave the starting or ending Zero off to see the reverse pattern clearer.

In the EZ Table, we created the ones-digits for both the **Ones and Nines** and they (1 and 9) add up to ten, so let us look at the Rule of Tens. We made the ones-digits for the Ones column with a repeating **0-1-2-3-4-5-6-7-8-9-0.** We created the second half of the Nines with the same pattern. We reversed them by starting at the bottom. So reading **down** the right side of the **Nines** column is the reverse **0-9-8-7-6-5-4-3-2-1-0.** Look at the 10 x 20 EZ Table on page 74 (where we separate all the ones-digits with a dotted line for 20 rows) for confirmation that the pattern repeats. This is the **third pattern**.

We created the ones-digits for the **Twos** with a repeating **0-2-4-6-8-0** on the right side of the dotted line. By my Rule of Ten, the **Eights** should have the opposite pattern. If we look at the 10 x 20 EZ Table again, we see that, indeed, the Eights pattern **is 0-8-6-4-2-0.** This is the **fourth pattern,** which is really a 5-digit pattern when we leave off one of the zeros.

By the Rule of Tens, The **Fours and Sixes** columns should have reversed patterns. We can look at the EZ Facts Table (page 57) to confirm that the

ones-digit repeating pattern for the Fours is **4-8-2-6-0** and the Sixes pattern is the opposite, **6-2-8-4-0** (leaving the starting zeros off gives us the 5 repeating numbers). This is the **fifth pattern.**

Our **sixth and last pattern** is in the **Threes** and, by the rule of Tens, the **Sevens** columns (3 + 7 = 10). Looking at the EZ facts Table or the 10 x 20 EZ Table we can see that the patterns for the Threes is **3-6-9-2-5-8-1-4-7-0** and the Sevens have the reverse pattern of **7-4-1-8-5-2-6-3-1-0.** We have seen in the Threes and Sevens page this easy way to visualize these patterns in sets of Three on a **Tic-tac-Toe square,** with the zero below. Threes add 3 to 3, 2, 1 while the Sevens subtract 3 from 7, 8, 9.

Threes: 3-6-9, 2-5-8, 1-4-7, 0

3	6	9
2	5	8
1	4	7
	0	

Sevens: 7-4-1, 8-5-2, 9-6-3, 0

7	4	1
8	5	2
9	6	3
	0	

The Six patterns and their opposites in the Ones-digits

All patterns start and end in Zero, the starting zero has been left off.

Column	*Repeating Pattern & Reverse*	*Also shows up in larger Table*
For Zeros	**0-0**	Tens, Twenties, ...
For Fives	**5-0**	Fifteens, Twentyfives, ...
For Ones	**1-2-3-4-5-6-7-8-9-0**	Elevens, Twenty-ones, ...
For Nines	**9-8-7-6-5-4-3-2-1-0 (reverse)**	Nineteens, Twenty-nines, ...
For Twos	**2-4-6-8-0**	Twelves, Twenty-twos, ...
For Eights	**8-6-4-2-0 (reverse of Twos)**	Eighteens, Twenty-eights, ...
For Fours	**4-8-2-6-0**	Fourteens, Twenty-fours, ...
For Sixes	**6-2-8-4-0 (reverse of Fours)**	Sixteens, Twenty-sixes, ...
For Threes	**3-6-9-2-5-8-1-4-7-0**	Thirteens, Twenty-Threes, ...
For Sevens	**7-4-1-8-5-2-9-6-3-0 (reverse)**	Seventeens, Twenty-sevens, ..

If we look at the 20 x 20 EZ Table on page 72, we see that the patterns in the ones-digits are the same for 1 and 11, 2 and 12, 3 and 13, 4 and 14, 5 and 15... If we make the Table even wider, we will see that all numbers ending in 1 will repeat the **1-2-3-4-5-6-7-8-9-0** pattern, all numbers ending in 2 will repeat the **2-4-6-8-0** pattern, all numbers ending in 4 will repeat the **4-8-2-6-0** pattern, numbers ending in 5 will repeat the **5-0** pattern, and so forth.

You will now use these patterns to create the Twos, Fours, Sixes, and Eights, and you can use these patterns in **Part 3** to create several multiplication tables.

Patterns for the Twos, Fours, Sixes and Eights

We will create these times tables from patterns in groups of 5 repeating numbers in 5 columns. The Twos and Eights, as well as the Fours and Sixes, have the same but opposite sequence in the first four numbers of the Ones-digits and end in 0. If a ones-digit in a box below is less than the one to its left, it has an X above it. Since it is less, we increase the Tens-digit by one (We are "carrying" a ten when we pass 0). Once we establish where the X's are, we can fill in the tens-digits. The left tables show the pattern, then adds the tens-digits. The right column is for you.

The Twos repeating pattern in the ones-digits is **24680**. Only 0 is less than the number to its left (8) and has an X above it. So at 0, the tens-digit always increases by 1. On the left table we add a 1 in front of the first 0. Continue with 1's in the second row until the 0 gets a 2. We are creating the Twos with this pattern. Continue to create the Twos on the right table.

Create the Twos pattern

				X
2	4	6	8	0
2	4	6	8	0
2	4	6	8	0

Add the tens-digits

				X
2	4	6	8	10
12	14	16	18	20
22	24	26	28	30

Create your own Twos

				X
2	4	6	8	0
2	4	6	8	0
2	4	6	8	0
2	4	6	8	0
2	4	6	8	0
2	4	6	8	0
2	4	6	8	0

The Eights repeating pattern is the opposite (putting the zero last): **86420**. The 6, 4, 2, and 0 are decreasing and get an X above their columns. This means that their tens-digits increase by one. So in each row, we add 1 under each X to make multiplication by 8. The 0 column makes 8 x5, x10, x15... Multiplying by 8 the EZ way!

Create the Eights Pattern

	X	X	X	X
8	6	4	2	0
8	6	4	2	0
8	6	4	2	0

Add the tens-digits

	X	X	X	X
8	16	24	32	40
48	56	64	72	80
88	96	104	112	120

Create your own Eights

	X	X	X	X
8	6	4	2	0
8	6	4	2	0
8	6	4	2	0
8	6	4	2	0
8	6	4	2	0
8	6	4	2	0
8	6	4	2	0
8	6	4	2	0

The Fours repeating pattern is **48260**. The 2 and 0 are getting smaller and get an X above their columns. This means that their tens-digits increase by one. In the first row, we add 1 & 2 under the X's to create 4,8,12,16,& 20. Say aloud the rhythm of the tens-digits:22334, 44556, ...

Create the Fours Pattern

		X		X
4	8	2	6	0
4	8	2	6	0
4	8	2	6	0

Add the tens-digits

		X		X
4	8	12	16	20
24	28	32	36	40
44	48	52	56	60

Create your own 4's

		X		X
4	8	2	6	0
4	8	2	6	0
4	8	2	6	0
4	8	2	6	0
4	8	2	6	0
4	8	2	6	0
4	8	2	6	0
4	8	2	6	0

The Sixes repeating pattern is **62840**, opposite of the Fours. The 2, 4, and 0 are getting smaller and get an X above their columns. This means that their tens-digits increase by one. In the first row, we add 1's under the X's to create 6 x 5 =30. The next rows end in 60 & 90. Isn't this fun and amazing? See MisterNumbers on Youtube.

Create the Sixes Pattern

	X		X	X
6	2	8	4	0
6	2	8	4	0
6	2	8	4	0

Add the tens-digits

	X		X	X
6	12	18	24	30
36	42	48	54	60
66	72	78	84	90

Create your own 6's

	X		X	X
6	2	8	4	0
6	2	8	4	0
6	2	8	4	0
6	2	8	4	0
6	2	8	4	0
6	2	8	4	0
6	2	8	4	0
6	2	8	4	0

PART 3:

ADVANCED EZ TABLES

The first advanced table is the ***EZ Facts Table***, which is helpful to almost all students.

We have created most of the times table in two ways. First we created the EZ Times Table and then we created the Threes, Sevens, Twos, Fours, Sixes and Eights from patterns. Now we can create a 20 x 20 times table purely from patterns. Those who play here often feel that numbers are fun and friendly.

EZ TIMES TABLE

Odd Numbers				1	2	Even Numbers			
9	7	5	3			4	6	8	10
0:9	7	5	•	1	2	•	•	•	10
1:8	14	10	•	2	4	4 x1	•	•	20
2:7	21	15	3 x1	3	6	•	6 x1	•	30
3:6	28	20	•	4	8	8 x2	•	8 x1	40
4:5	35	25	•	5	10	•	•	•	50
5:4	42	30	6 x2	6	12	12 x3	12 x2	•	60
6:3	49	35	•	7	14	•	•	•	70
7:2	56	40	•	8	16	16 x4	•	16 x2	80
8:1	63	45	9 x3	9	18	•	18 x3	•	90
9:0	70	50	•	10	20	20 x5	•	•	100
			•	11	22	•	•	•	
			12 x4	12	24	24 x6	24 x4	24 x3	
			•	13	26	•	•	•	
			•	14	28	28 x7	•	•	
			15 x5	15	30	•	30 x5	•	
			•	16	32	32 x8	•	32 x4	
			•	17	34	•	•	•	
			18 x6	18	36	36 x9	36 x6	•	
			•	19	38	•	•	•	
			•	20	40	40 x10	•	40 x5	
			21 x7	21	42	•	42 x7	•	
			•	22	44		•	•	
			•	23	46	•	•	•	
			24 x8	24	48		48 x8	48 x6	
			•	25	50	•	•	•	
			•	26	52		•	•	
			27 x9	27	54	•	54 x9	•	
			•	28	56		•	56 x7	
			•	29	58	•	•	•	
			30 x10	30	60		60 x10	•	
			•	31	62	•	•	•	
			•	32	64		•	64 x8	

Use the Ones column to multiply the Fives, Sevens, Nines, and Tens.

Facts are the numbers that make up the times table. Here are the fact families (like the Twos, Threes, etc) in relation to each other. It is easier to memorize the facts from this chart.

Factors are the numbers that you multiply to get an answer. One factor of each number on this table is the column it is in. The other is little number after the x (for example x4) in the long columns. In the short columns, the numbers in the same row of the Ones column are factors. For example, 35 is in the Fives column so five is a factor.

35 is also in the same row as the 7 in the Ones column so 7 is also a factor.

Zero X any number = zero

EZ FILL-IN FACTS Table

Students who have created an EZ Times Table can form the **Facts Table** on the previous page. One way is to erase the 3's in the Threes column, replacing them with numbers from the Ones column. They can create the Fours, Sixes, and Eights in the same manner by erasing and filling in the numbers from the Twos column.

The table on the right is an exercise for students who understand the EZ Times Table to quickly **create the FACTS Table** on the previous page. Creating the Fill-In Facts chart allows them to keep their original **EZTT** that they value and create the Facts Table too. The need for erasing on the EZTT is eliminated. Fun and neat.

They now have the sets of the Ones, Twos, Threes, Fours, Fives, Sixes, Seven, Eights, Nines, and Tens. Each is still in the structure of the EZ Times Table and the relationship to the Ones and Twos are still evident. Now they can easily memorize the facts from a chart that they made. Creating this chart makes it easier to move up or down one or two boxes to figure out any facts they are unsure of. **They have the structure of each set of numbers.**

They have accepted the Ones and Twos as accurate and the dot patterns are already in place in the Threes, Fours, Sixes, and Eights columns. Even the little "$x_1, x_2, \ldots$" are in place in the openings in the dot pattern on the table on the right.

The student creates the Threes by going down to each open box in the pattern, seeing the number in the same row of the Ones, and putting in that number in the Ones column. So the first open box (cell) in the Threes column (. . _) is a 3. At the next open box, the student puts a 6 since it is in the same row of the Ones. The third box is a 9, and down they go to 30. They have now created the set of the Threes.

They also create the Fours (4, 8, 12, 16,...), Sixes (6, 12, 18, 24, ...) and Eights (8, 16, 24, 32...) in a similar manner by pulling numbers from the Twos column. They have created the sets of the Fours, Sixes and Eights. This allows them to see each of these sets separate, but connected to the Ones and Twos.

They again re-create the Tens, Fives, Nines, and Tens similar to the EZ Times Table. Notice that one **factor** for each number found on the Table is the column that contains it. The other factor is the little number next to the x, or it is the number in the Ones column. For example, we find 18 in the Sixes Column and it has a x_3 behind it which means that 6 and 3 are factors. 15 is in the Fives column in the same row as 3 in the Ones column and so 5 and 3 are factors.

EZ TIMES TABLE

Odd Numbers				1	2	Even Numbers			
9	7	5	3			4	6	8	10
			•	1	2	•	•	•	
			•	2	4	x1	•	•	
			x1	3	6	•	x1	•	
			•	4	8	x2	•	x1	
			•	5	10	•	•	•	
			x2	6	12	x3	x2	•	
			•	7	14	•	•	•	
			•	8	16	x4	•	x2	
			x3	9	18	•	x3	•	
			•	10	20	x5	•	•	

Use the Ones column to multiply the Fives, Sevens, Nines, and Tens.

•	11	22	•	•	•		
x4	12	24	x6	x4	x3		
•	13	26	•	•	•		
•	14	28	x7	•	•		
x5	15	30	•	x5	•		
•	16	32	x8	•	x4		
•	17	34	•	•	•		
x6	18	36	x9	x6	•		
•	19	38	•	•	•		
•	20	40	x10	•	x5		
x7	21	42	•	x7	•		
•	22	44		•	•		
•	23	46	•	•	•		
x8	24	48		x8	x6		
•	25	50	•	•	•		
•	26	52		•	•		
x9	27	54	•	x9	•		
•	28	56		•	x7		
•	29	58	•	•	•		
x10	30	60		x10	•		
•	31	62	•	•	•		
•	32	64		•	x8		

Zero X any number = zero

VARIATIONS OF THE EZ TIMES TABLES

The EZ Times Table (EZTT) that the student has already created contains the whole multiplication table. They are hooked. There is nothing weird or scary about it. They count by Ones and Twos, count up to three, and do their Fives. Everything else falls into place in a way that they totally understand. Viewing the Table in different forms can facilitate fun understanding and learning math the easy way. A ***Color EZ Times Table*** can be created using different colors for each number.

THE TIMES LINE TABLE

The ***Times Line Table*** on the right uses the dots pattern from the **EZTT**. The Ones and Twos columns increase to 50 rows and are still the anchors of the table. The main difference is that 5, 7, 9, and 10 are also done as dot patterns. A student sees that Fives can also be dot, dot, dot, dot, 5, and similar patterns can be created for the Sevens, Nines and Tens. **The numbers arrange themselves in angle line patterns.** The lines of these patterns are drawn on this table and we can see that the first lines are all multiplication-times-one problems for the even and the odd numbers.

The first 9 is in the same row in the Nines column as it is in the Ones column, and the 3, 5, and 7 that are in the same line are also repeated in the Ones column. In the 2X line on the even side, the second 10 is in the same row as the 20 in the Twos column (10 X 2= 20). Look at the 4X (multiplication-by-4) line on the left and find the 7. Looking in the same row in the Ones column, we find the answer, 28. **Similar results are found for every number on a line.** Students can accurately guess that **all whole numbers are on lines if the chart is long enough.**

Prime numbers show up on this chart (see page 44). Numbers outside the Ones and Twos column indicate **factors** in the same row. The numbers without factors (only dots) in their rows are circled and are **prime numbers**. We could continue the chart and have students **find more prime numbers**.

This table can be created by students on graph paper for a "***Wow"*** learning experience. Use large square graph paper and use ten squares width, or for more rows, use small square graph paper and use two square width for each column.

VARIATIONS ON THE FOLLOWING PAGES

This is followed in the next pages by the ***Slope Lines Table*** which is very similar with an amazing twist for graph charts, **Patterns create an *EZ 20 x 20 Table*** and an ***EZ Ruler Table*** making the times table on a blank sheet.

Times Line Table: all dots down

9	7	5	3	1	2	4	6	8	10
-	-	-	-	1	2	-	-	-	-
-	-	-	-	2	4	4	-	-	-
-	-	-	3	3	6	-	6	-	-
-	-	-	-	4	8	4	-	8	-
-	-	5	-	5	10	-	-	-	10
-	-	-	3	6	12	4	6	-	-
-	7	-	-	7	14	-	-	-	-
-	-	-	-	8	16	4	-	8	-
9	-	-	3	9	18	-	6	-	-
-	-	5	-	10	20	4	-	-	10
-	-	-	-	11	22	-	-	-	-
-	-	-	3	12	24	4	6	8	-
-	-	-	-	13	26	-	-	-	-
-	7	-	-	14	28	4	-	-	-
-	-	5	3	15	30	-	6	-	10
-	-	-	-	16	32	4	-	8	-
-	-	-	-	17	34	-	-	-	-
9	-	-	3	18	36	4	6	-	-
-	-	-	-	19	38	-	-	-	-
-	-	5	-	20	40	4	-	8	10
-	7	-	3	21	42	-	6	-	-
-	-	-	-	22	44	4	-	-	-
-	-	-	-	23	46	-	-	-	-
-	-	-	3	24	48	4	6	8	-
-	-	5	-	25	50	-	-	-	10
-	-	-	-	26	52	4	-	-	-
9	-	-	3	27	54	-	6	-	-
-	7	-	-	28	56	4	-	8	-
-	-	-	-	29	58	-	-	-	-
-	-	5	3	30	60	4	6	-	10
-	-	-	-	31	62	-	-	-	-
-	-	-	-	32	64	4	-	8	-
-	-	-	3	33	66	-	6	-	-
-	-	-	-	34	68	4	-	-	-
-	7	5	-	35	70	-	-	-	10
9	-	-	3	36	72	4	6	8	-
-	-	-	-	37	74	-	-	-	-
-	-	-	-	38	76	4	-	-	-
-	-	-	3	39	78	-	6	-	-
-	-	5	-	40	80	4	-	8	10
-	-	-	-	41	82	-	-	-	-
-	7	-	3	42	84	4	6	-	-
-	-	-	-	43	86	-	-	-	-
-	-	-	-	44	88	4	-	8	-
9	-	5	3	45	90	-	6	-	10
-	-	-	-	46	92	4	-	-	-
-	-	-	-	47	94	-	-	-	-
-	-	-	3	48	96	4	6	8	-
-	7	-	-	49	98	-	-	-	-
-	-	5	-	50	100	4	-	-	10

1X 2X 3X 4X 5X 6X 7X 8X

Times Line Table: all dots down

MORE VARIATIONS ON THE NEXT PAGES

The **Times Line Table** is followed in the next pages by the **Slope Lines Table** which is very similar with an amazing twist for graph charts, Patterns creating an **EZ 20 x 20 Table**, and **an EZ Ruler Table** that creates the times table on a blank sheet.

THE SLOPE LINE TABLE

The ***Slope Line Table*** on the right is fascinating to many students when they see the patterns that the numbers create. It is identical to the *Times Line Table* except the numbers start at the bottom and the boxes are square. The first line at the bottom is the One times line. (One times the number is the same number). The second line is the 2X line (2 x 4 = 8, 2 x 6 = 12...). The third and fourth lines are the 3x and 4x lines (3 or 4 times the number is found in the Twos column). This is similar to the *Times Line* table.

What is amazing is that the **One-times-line (1x)**, looking at the table as a graph, is also **the slope line y=1x**. The Two times line (2x) is the slope line y=2X. This gives students similar results for y=3x, y= 4x... Students now have a memory anchor for the angle of different slope lines.

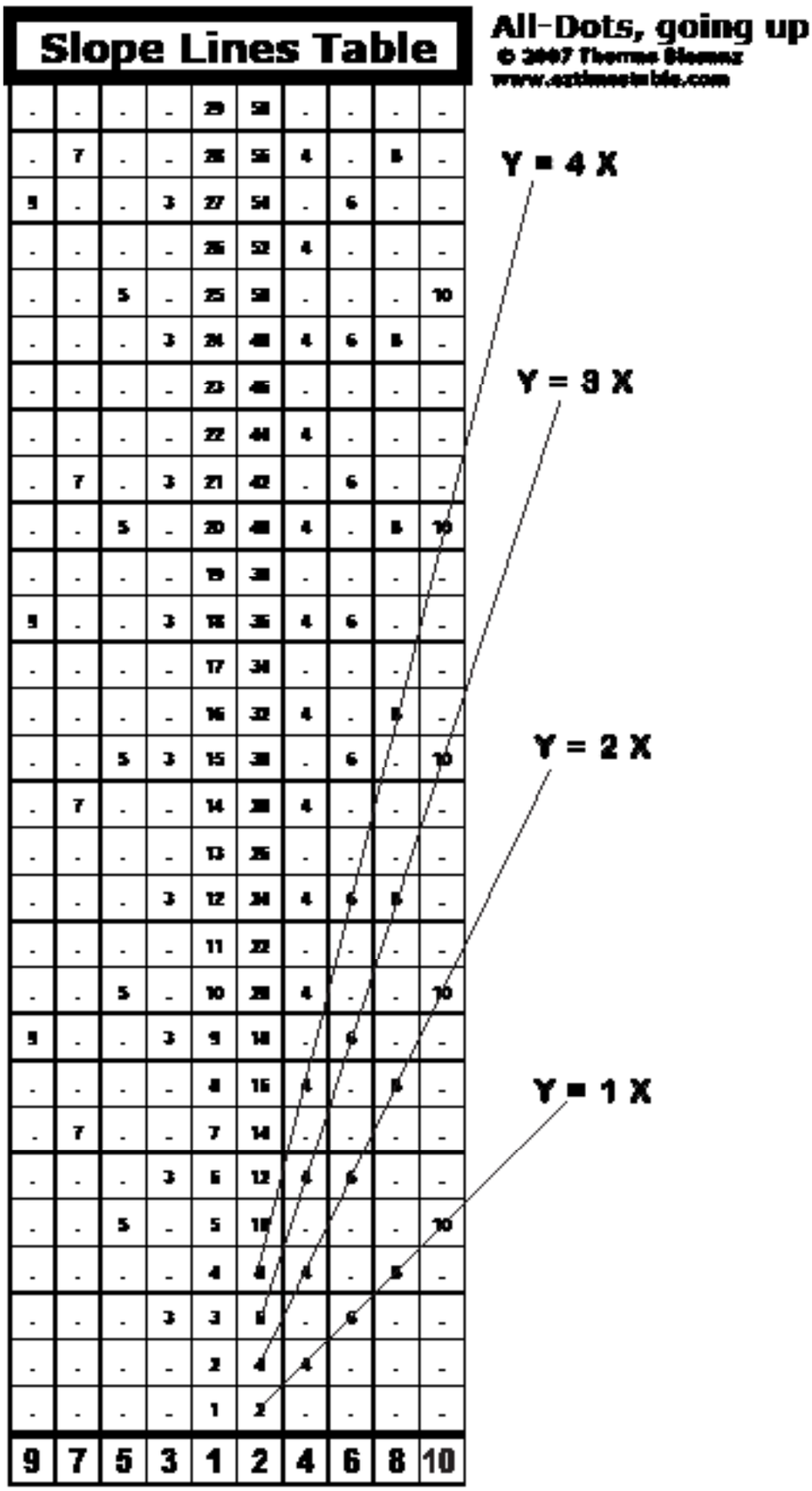
Now students can look at a y=1x slope line and see a practical form that it takes that is real to them, that they created. They can remember that as the value of X gets larger, the slope line gets sharper, just as you multiply by a larger number, the number increases.

THE COLOR EZ TIMES TABLE

A fun color Table can be created with different colors for each number. This gives a nice graphic picture of how the different numbers relate. Making the **EZTT** in color is a **right-brain way** for students to help the number families come alive and make the Table visually appealing. This can be expanded to the EZ Facts table, adding colors for factors of the number.

THE IMPORTANCE OF PATTERN RECOGNITION

Kids notice patterns with all the Tables, like the Threes and Sixes are in the same rows, and that every other 4 is an 8, and that the Eights end with a repeated 8, 6, 4, 2, 0 pattern. Students love the dot patterns and these patterns include numbers, and soon the numbers are easier. An older friend told me he was recruited to do early computer programming based, not on math ability, but on pattern recognition. The variations of the EZ Times Table all teach pattern recognition. Right-brain creative insights and learnings in life and in school are based on noticing patterns and seeing relationships.



Slope Line Table copyright 2007 Thomas Biesanz

NUMBER PATTERNS 10 x 10

From this page to the end of the book **is extra** for those students who enjoy seeing and playing with the patterns. In the top table on the next page, all ten columns are divided by dotted lines like the Ones, Twos, Nines and Tens were in the EZTT. These four columns are copied here and the numbers for the Threes, Fours, Sixes, and Eights are found in the **EZTT** or in the **EZFT** (EZ Facts Table). They are placed here with the dotted lines separating the the **ones-digits** (the single number to the right) and the **tens-digits.**

A learning progression is to have students create the **EZTT** with verbal instructions and use of an overhead projector, then create the **EZTT** on their own, then create the **EZ Facts Table,** and then this **EZ 10 x 10 Table.** Each step helps the student see the fun patterns while learning the multiplication facts. **This results in a form of the EZTT that is similar in some ways to a standard times table,** but we have established patterns that we can continue to play with to see how full of fun patterns numbers can be.

NUMBER PATTERNS 10 x 20

The lower table is identical to the upper table, but is extended down to 20 rows. The Ones and Twos are already done past 20 rows in the **EZTT** and can be transferred to the empty table. The Ones can be put in the left column of the Tens and finished by putting zeros in the ones-digit column.

The ones-digits: Look at the EZTT and see that the ones-digit patterns repeat for every number (except that 3, 7 and 9 have ended in 0 and are ready to repeat). The dotted lines again divide each column into ones and tens columns. Repeat ones-digit patterns in all right columns for 2-9 all the way down the chart. Since 3, 7, and 9 ended in 0, they start over with 3, 7, and 9 in the 11th row and repeat their respective patterns from the **EZTT**.

The Tens digits: We already have the first ten rows for 3-9 in this chart from EZTT. To do the next tens-digit in 3-9, look at the number above on the ones-digit side. If **the new ones digit number is larger, repeat the previous number** on the left**. If it is smaller, increase the number by one**. For example, after 30 (tenth row of the Threes), the pattern indicates a shift from 0 to 3 in the ones-digit. Since the 3 is larger than the 0, the tens-digit remains the same: 33 (11th row). After 39 the ones digit pattern indicates a shift from 9 to 3. Since the 3 is smaller, the tens increase to 4, resulting in 42). Using this pattern works for all columns.

Look at how it works on the EZ Pattern 10 x 20 Table and re-create it using these rules on the empty EZ 20 x 20 Table when you turn the page.

Check MisterNumbers on Youtube.com for help creating this table.

Seeing the Patterns in the Ones-digits and Tens-digits

EZ Patterns 10 x 10 ©2007 Tom Bleeenz									
9	7	5	3	1	2	4	6	8	10
09	07	5	3	1	2	4	6	8	10
18	14	10	6	2	4	8	12	16	20
27	21	15	9	3	6	12	18	24	30
36	28	20	12	4	8	16	24	32	40
45	35	25	15	5	10	20	30	40	50
54	42	30	18	6	12	24	36	48	60
63	49	35	21	7	14	28	42	56	70
72	56	40	24	8	16	32	48	64	80
81	63	45	27	9	18	36	54	72	90
90	70	50	30	10	20	40	60	80	100

Using the Patterns in the Ones-digits and Tens-digits

EZ Patterns 10 x 20 ©2007 Tom Bleeenz									
9	7	5	3	1	2	4	6	8	10
09	7	5	3	1	2	4	6	8	10
18	14	10	6	2	4	8	12	16	20
27	21	15	9	3	6	12	18	24	30
36	28	20	12	4	8	16	24	32	40
45	35	25	15	5	10	20	30	40	50
54	42	30	18	6	12	24	36	48	60
63	49	35	21	7	14	28	42	56	70
72	56	40	24	8	16	32	48	64	80
81	63	45	27	9	18	36	54	72	90
90	70	50	30	10	20	40	60	80	100
99	77	55	33	11	22	44	66	88	110
108	84	60	36	12	24	48	72	96	120
117	91	65	39	13	26	52	78	104	130
126	98	70	42	14	28	56	84	112	140
135	105	75	45	15	30	60	90	120	150
144	112	80	48	16	32	64	96	128	160
153	119	85	51	17	34	68	102	136	170
162	126	90	54	18	36	72	108	144	180
171	133	95	57	19	38	76	114	152	190
180	140	100	60	20	40	80	120	160	200

NUMBER PATTERNS TO 20 x 20

The top half of the **EZ 20 x 20 Table** is the **EZ 10 x 20** Table from the previous page. The bottom half is the EZ 11 x 20 patterns. These are lined up so that the Nineteens are located directly below the Nines, The Seventeens are located directly below the Sevens, etc. In the top half, the Ones show you the row numbers. There are numbers on the right to show the row number in the lower half of the Table.

Notice that the ones-digit in the right column have created a pattern in the 10 x 20 top portion of the Table and are exactly the same numbers in the same pattern in the Nines as in the Nineteens. This holds true for every column and **you can fill in all the ones-digits in the Eleven to Nineteen columns simply be repeating the patterns** established in the Ones to Tens columns above them!

See that this is true on the EZ 20 x 20 Table on the right and fill in those patterns on the blank EZ 20 x 20 Table when you turn the page. You may want to use your **EZTT** or the **EZMFT** to see the patterns. You have now created all the ones-digits for the 20 x 20 Table

Now we will use a similar pattern from the last page to create the **tens-digits** on the 11 x 20 part of the table. In the first row of 12-19, put a 1 in the left column to create the numbers 12-19, since the ones-digits are already in place. To do the next row, look at the number above on the ones-digit side.

If the new ones-digit number is larger, increase the previous number on the left by one. If it is smaller, increase the number by two (e.g. after 12, the ones-digit pattern indicates a shift from 2 to 4 in the ones digit. Since the 4 is larger than 2, the tens increase by 1: resulting in 24. After 48 the pattern indicates a shift from 8 to 0. Since the 0 is smaller, the tens increase by two, resulting in 60)**. Use this pattern going down the tens-digit columns** to fill in all the numbers.

You are done. I hope you made it through the maze of words because the patterns are fairly simple and creating the Table is satisfying.

You can actually start with a blank 20 x 20 table, fill in the Ones-digits from the Rule of Tens, and use the two rules for Tens-digits to fill in the whole table. There is also a blank 20 x 20 Table for you to fill in with these patterns. The Ones are filled in as well as the first row of 11-19 to get you started. Follow the instructions on the last pages and you will have created the times table to 20x20 from patterns without doing any multipying!

Creating EZ Patterns 20 x 20 in two parts (10 x 20 and 11 x 20)

EZ Patterns 10 x 20 ©2007 Tom Bloomz

9	7	5	3	1	2	4	6	8	10
0 9	7	5	3	1	2	4	6	8	1 0
1 8	1 4	1 0	6	2	4	8	1 2	1 6	2 0
2 7	2 1	1 5	9	3	6	1 2	1 8	2 4	3 0
3 6	2 8	2 0	1 2	4	8	1 6	2 4	3 2	4 0
4 5	3 5	2 5	1 5	5	1 0	2 0	3 0	4 0	5 0
5 4	4 2	3 0	1 8	6	1 2	2 4	3 6	4 8	6 0
6 3	4 9	3 5	2 1	7	1 4	2 8	4 2	5 6	7 0
7 2	5 6	4 0	2 4	8	1 6	3 2	4 8	6 4	8 0
8 1	6 3	4 5	2 7	9	1 8	3 6	5 4	7 2	9 0
9 0	7 0	5 0	3 0	1 0	2 0	4 0	6 0	8 0	10 0
9 9	7 7	5 5	3 3	1 1	2 2	4 4	6 6	8 8	11 0
10 8	8 4	6 0	3 6	1 2	2 4	4 8	7 2	9 6	12 0
11 7	9 1	6 5	3 9	1 3	2 6	5 2	7 8	10 4	13 0
12 6	9 8	7 0	4 2	1 4	2 8	5 6	8 4	11 2	14 0
13 5	10 5	7 5	4 5	1 5	3 0	6 0	9 0	12 0	15 0
14 4	11 2	8 0	4 8	1 6	3 2	6 4	9 6	12 8	16 0
15 3	11 9	8 5	5 1	1 7	3 4	6 8	10 2	13 6	17 0
16 2	12 6	9 0	5 4	1 8	3 6	7 2	10 8	14 4	18 0
17 1	13 3	9 5	5 7	1 9	3 8	7 6	11 4	15 2	19 0
18 0	14 0	10 0	6 0	2 0	4 0	8 0	12 0	16 0	20 0

EZ Patterns 11 x 20 ©2007 Tom Bloomz

19	17	15	13	11	12	14	16	18	20	
1 9	1 7	1 5	1 3	1 1	1 2	1 4	1 6	1 8	2 0	1
3 8	3 4	3 0	2 6	2 2	2 4	2 8	3 2	3 6	4 0	2
5 7	5 1	4 5	3 9	3 3	3 6	4 2	4 8	5 4	6 0	3
7 6	6 8	6 0	5 2	4 4	4 8	5 6	6 4	7 2	8 0	4
9 5	8 5	7 5	6 5	5 5	6 0	7 0	8 0	9 0	10 0	5
11 4	10 2	9 0	7 8	6 6	7 2	8 4	9 6	10 8	12 0	6
13 3	11 9	10 5	9 1	7 7	8 4	9 8	11 2	12 6	14 0	7
15 2	13 6	12 0	10 4	8 8	9 6	11 2	12 8	14 4	16 0	8
17 1	15 3	13 5	11 7	9 9	10 8	12 6	14 4	16 2	18 0	9
19 0	17 0	15 0	13 0	11 0	12 0	14 0	16 0	18 0	20 0	10
20 9	18 7	16 5	14 3	12 1	13 2	15 4	17 6	19 8	22 0	11
22 8	20 4	18 0	15 6	13 2	14 4	16 8	19 2	21 6	24 0	12
24 7	22 1	19 5	16 9	14 3	15 6	18 2	20 8	23 4	26 0	13
26 6	23 8	21 0	18 2	15 4	16 8	19 6	22 4	25 2	28 0	14
28 5	25 5	22 5	19 5	16 5	18 0	21 0	24 0	27 0	30 0	15
30 4	27 2	24 0	20 8	17 6	19 2	22 4	25 6	28 8	32 0	16
32 3	28 9	25 5	22 1	18 7	20 4	23 8	27 2	30 6	34 0	17
34 2	30 6	27 0	23 4	19 8	21 6	25 2	28 8	32 4	36 0	18
36 1	32 3	28 5	24 7	20 9	22 8	26 6	30 4	34 2	38 0	19
38 0	34 0	30 0	26 0	22 0	24 0	28 0	32 0	36 0	40 0	20

Create your own 20 x 20 Times Table here from Patterns

EZ Patterns in Ones through Tens ©2007 Tom Bleasdale									
9	7	5	3	1	2	4	6	8	10
				1					
				2					
				3					
				4					
				5					
				6					
				7					
				8					
				9					
				10					
				11					
				12					
				13					
				14					
				15					
				16					
				17					
				18					
				19					
				20					

EZ Patterns in Elevens Through Twenties ©2007 Tom Bleasdale									
19	17	15	13	11	12	14	16	18	20
19	17	15	13	11	12	14	16	18	20

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

EZ RULER TABLE

This EZ Ruler Table is created on a blank sheet of paper with just **a 1" wide ruler and a pencil.** It is interesting to view new patterns and **see how the Threes and Sixes, and Fours and Eights are connected.** It is also possible to re-create part or all of it in a testing situation. I suggest doing an **EZTT** first because it will establish how to create the Ones and Twos accurately. Neatness helps and variations are included at the bottom of this page. The next few pages will demonstrate the steps in creating the **EZ Ruler Table**.

1. Put the ruler along the top of the page and draw a line on the lower side.
2. Put the pencil tip roughly in the center of that line and draw a line down the page perpendicular to the first line. Accuracy is not important here.
3. Put the top of the ruler on the horizontal line and draw a line on the lower side of the ruler making a parallel line. Repeat until you have 9 evenly spaced horizontal lines.
4. Put a big 1 above the left side of the T made by the first two lines. Placing four numbers per line, put the numbers 1-32 just to the left of the vertical line.
5. Put a big 2 above the right side of the T made by the first two lines. Using four numbers per line, put the even numbers 2-64 just to the right of the vertical line.
6. Put a small-circled 3 6 above the big 1 and 2. Count every third set of numbers (3 and 6, 6 and 12, 9 and 18, etc.) and enclose with an oval.
7. Put a 4 8 in a rectangle above the big 1 and 2. Put a rectangle enclosing numbers that are just above the lines. Rectangles create the 4's and 8's. Starting at the vertical line, draw horizontal lines to the left under the 1, 2, 3, 5, 6, 7, 9, and 10 (lines are already under the 4 and 8).
8. Put a big 5 to the left of the big 1. Count by Fives down to 50 in the ten spaces.
9. Put a big 9 to the far left of the big 1. Put a vertical dotted line down the ten spaces. Put 0-9 going down the left side of the dotted line and 0-9 going up the right side of the dotted line. This creates the Nines.
10. Put a big 7 between the big 5 and the big 9. Put 49 in the seventh space.

You are done. Count the circles to multiply by 3 and 6 and count the lines to multiply by 4 and 8. The other numbers are similar to the **EZTT**.

Variations: Use these variations to make the Table neater and give more and faster answers.

1. Use dotted lines for the Ones and Twos column for accuracy.
2. Number the horizontal lines starting with 1 after the first four numbers. This gives the number for multiplication by 4 and 8. The sixth line: 4 x 4 = 16 and 4 x 8 = 32. Also number the ovals for multilplying by 3 and 6.
3. Extending the Ones and Twos to 36 and 72 below the last horizontal line gives more answers.
4. Count down every 5th set of numbers and put an arrow in front of the numbers in the Ones and Twos columns. This creates your Fives and Tens.
5. Create these patterns on the **EZTT** after creating the Ones and Twos. The last Table shows the variations and tips on how to use this Table. Enjoy!

EZ RULER TABLE steps 1- 5

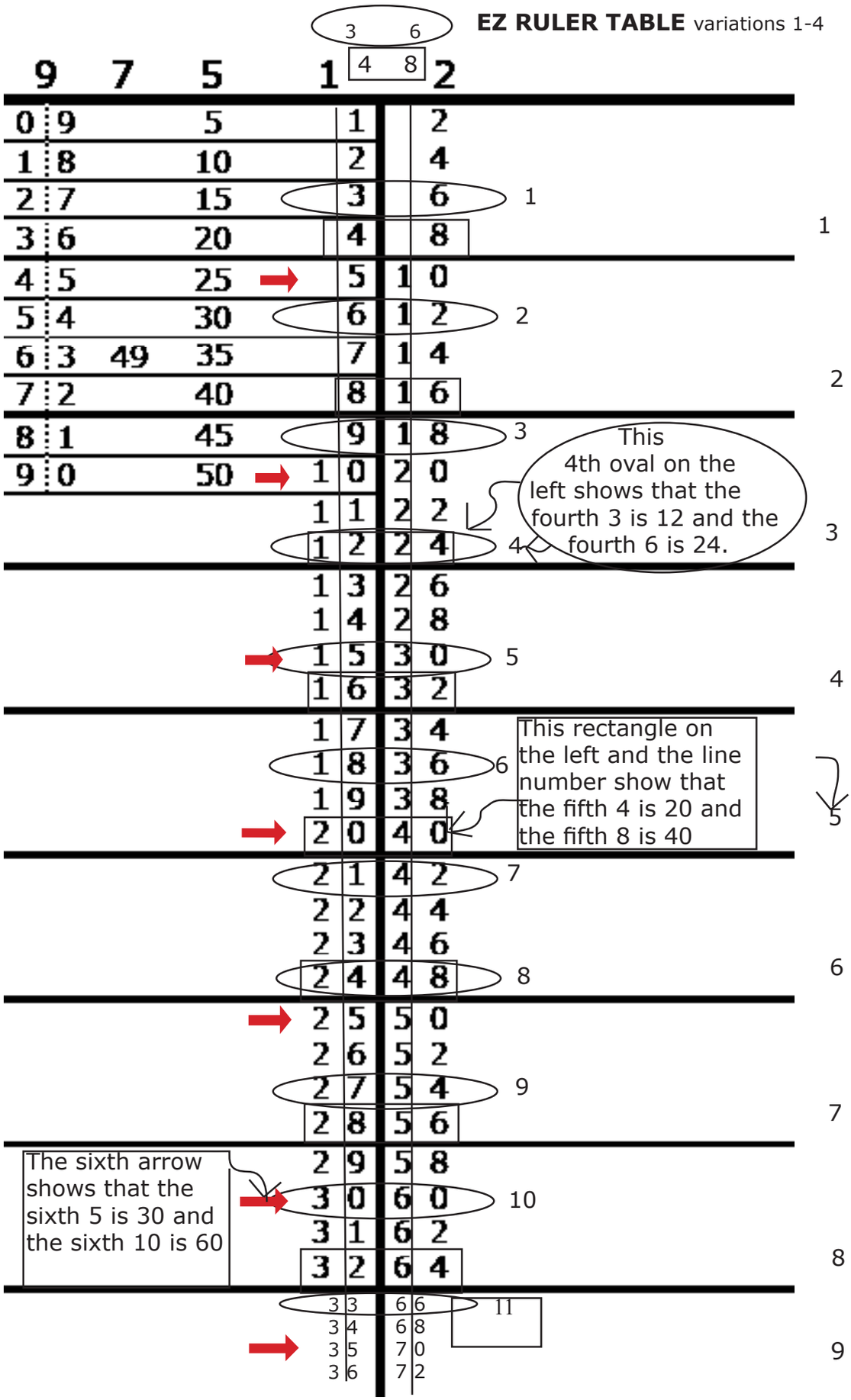
1	2
1	2
2	4
3	6
4	8
5	10
6	12
7	14
8	16
9	18
10	20
11	22
12	24
13	26
14	28
15	30
16	32
17	34
18	36
19	38
20	40
21	42
22	44
23	46
24	48
25	50
26	52
27	54
28	56
29	58
30	60
31	62
32	64

1	2
1	2
2	4
3	6
4	8
5	10
6	12
7	14
8	16
9	18
10	20
11	22
12	24
13	26
14	28
15	30
16	32
17	34
18	36
19	38
20	40
21	42
22	44
23	46
24	48
25	50
26	52
27	54
28	56
29	58
30	60
31	62
32	64

EZ RULER TABLE steps 8-11

9	7	5	1	2
0	9	5	1	2
1	8	10	2	4
2	7	15	3	6
3	6	20	4	8
4	5	25	5	10
5	4	30	6	12
6	3	35	7	14
7	2	40	8	16
8	1	45	9	18
9	0	50	10	20
			11	22
			12	24
			13	26
			14	28
			15	30
			16	32
			17	34
			18	36
			19	38
			20	40
			21	42
			22	44
			23	46
			24	48
			25	50
			26	52
			27	54
			28	56
			29	58
			30	60
			31	62
			32	64

EZ RULER TABLE variations 1-4



Fun Patterns in Numbers

1 x 1 = 1
11 x 11 = 121
111 x 111 = 12321
1111 x 1111 = 1234321
11111 x 11111 = 123454321
111111 x 111111 = 12345654321
1111111 x 1111111 = 1234567654321
11111111 x 11111111 = 123456787654321

1 x 9 + 2 = 11
12 x 9 + 3 = 111
123 x 9 + 4 = 1111
1234 x 9 + 5 = 11111
12345 x 9 + 6 = 111111
123456 x 9 + 7 = 1111111
1234567 x 9 + 8 = 11111111
1234568 x 9 + 9 = 111111111
123456789 x 9+10 = 1111111111

6^2 = 36
66^2 = 4356
666^2 = 443556
6666^2 = 44435556
66666^2 = 4444355556
666666^2 = 444443555556
6666666^2 = 4444443555556

1 x 8 + 1 = 9
12 x 8 + 2 = 98
123 x 8 + 3 = 987
1234 x 8 + 4 = 9876
12345 x 8 + 5 = 98765
123456 x 8 + 6 = 987654
1234567 x 8 + 7 = 9876543
12345678 x 8 + 8 = 98765432
123456789 x 8 + 9 = 987654321

9 x 9 + 7 = 88
98 x 9 + 6 = 888
987 x 9 + 5 = 8888
9876 x 9 + 4 = 88888
98765 x 9 + 3 = 888888
987654 x 9 + 2 = 8888888
9876543 x 9 + 1 = 88888888

Creating the Ones and Nines from fun patterns

Ones

1	2	3	4	5	6	7	8	9	0	10s
1	2	3	4	5	6	7	8	9	0	20s
1	2	3	4	5	6	7	8	9	0	30s
1	2	3	4	5	6	7	8	9	0	40s
1	2	3	4	5	6	7	8	9	0	50s
1	2	3	4	5	6	7	8	9	0	60s
1	2	3	4	5	6	7	8	9	0	70s
1	2	3	4	5	6	7	8	9	0	80s

Nines

9	8	7	6	5	4	3	2	1	0	10s
9	8	7	6	5	4	3	2	1	0	20s
9	8	7	6	5	4	3	2	1	0	30s
9	8	7	6	5	4	3	2	1	0	40s
9	8	7	6	5	4	3	2	1	0	50s
9	8	7	6	5	4	3	2	1	0	60s
9	8	7	6	5	4	3	2	1	0	70s
9	8	7	6	5	4	3	2	1	0	80s

See EZ Times Table pp 54-58.
It's Easy! RightBrainMath.com

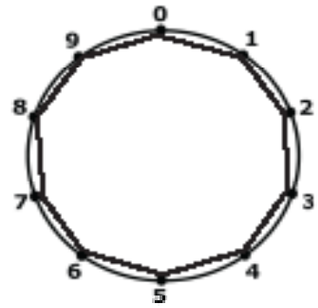
Directions for making the Ones and Nines w/patterns

The numbers on this page are the pattern for the Ones and Nines. The Ones are easy, the numbers 1-0 repeated in the ones-digit place. When we get to 0, there is an ⬆ above it because the tens-digit gets bigger.

You are making 10 in each row so the last column ends in 10, 20, 30, 40, etc.

The Nines work the same way. Each number after the first 9 is smaller, so the tens-digit has to get bigger, and has an ⬆ over it.

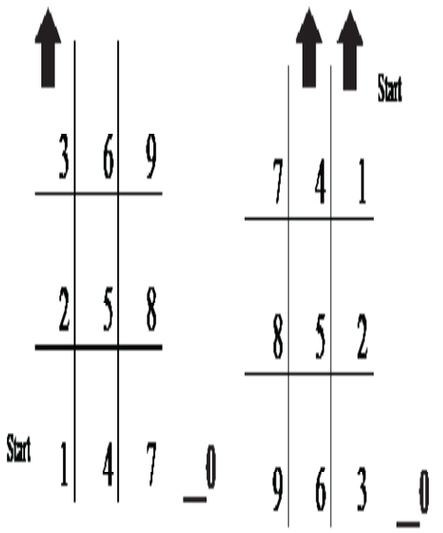
Starting with 0 in front of the first 9, put a 1, 2, 3, 4, 5, 6, 7, 8, and 9 in front of the other numbers. You have created the Nines. You can continue in the next row, repeating the 9 in front of the second 9, and then 10, 11, 12, 13, 14, 15, 16, 17, and 18. You are now at 9 x 20.

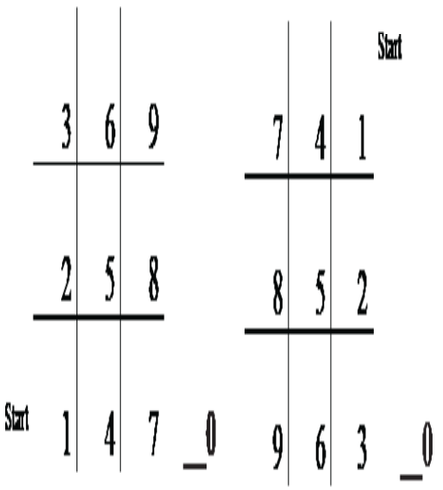


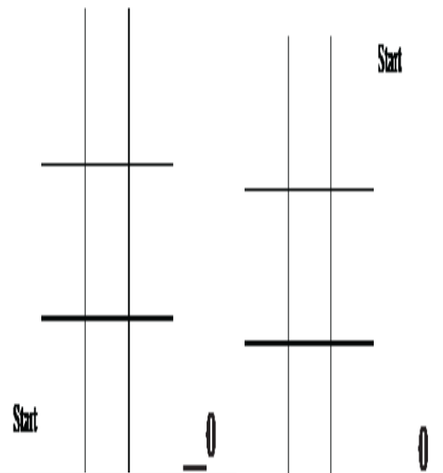
See MisterNumbers instructional videos Magic Blackboard: http://youtube.com/user/MisterNumbers

Multiplication by THREES

Multiplication by SEVENS







3's are a diamond pattern: every other 3. Nines show up in top right column, middle middle, & lower left column

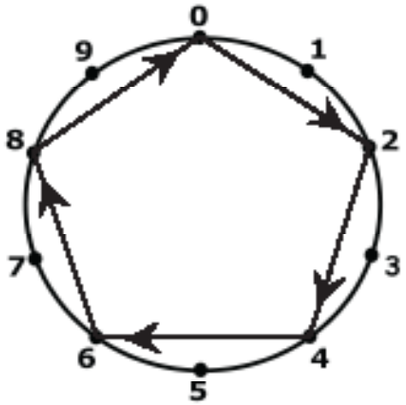
↑ means adds one to the tens-digit on the left

Instructions also in the EZ Times Table book and on website: http://RightBrainMath.com

Right Brain Math 2's, 4's, 6's and 8's

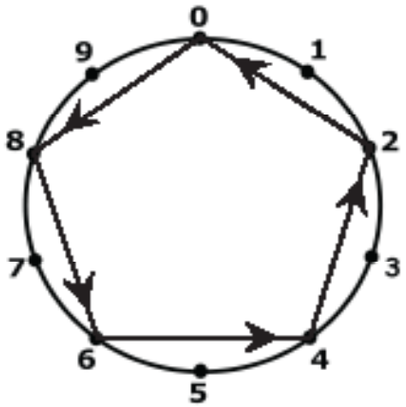
Create your own Twos

2	4	6	8	0	x5
2	4	6	8	0	x10
2	4	6	8	0	x15
2	4	6	8	0	x20



Create your own Eights RightBrainMath.com

8	6	4	2	0	x5
8	6	4	2	0	x10
8	6	4	2	0	x15
8	6	4	2	0	x20

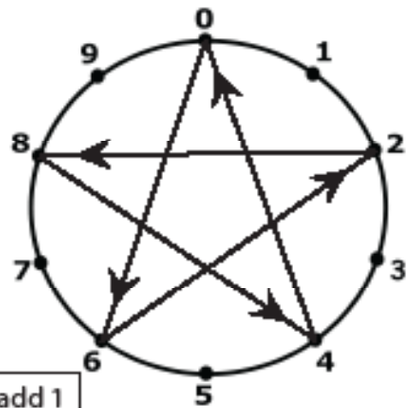


Create your own 4's

4	8	2	6	0	x5
4	8	2	6	0	x10
4	8	2	6	0	x15
4	8	2	6	0	x20

Create your own 6's

6	2	8	4	0	x5
6	2	8	4	0	x10
6	2	8	4	0	x15
6	2	8	4	0	x20



The ones-digits repeat for each factor set. Start the tens-digits with 0 and add 1 each time the column has a smaller number to its left, indicated by an ⬆ above

Creating the Twos from Fun Patterns

See EZ Times Table pp 54-58 It's EZ. RightBrainMath.com

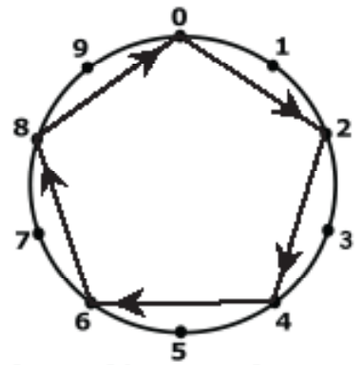
An Arrow above a column increases the tens-digit by 1

2	4	6	8	0	(x5)
2	4	6	8	0	(x10)
2	4	6	8	0	(x15)
2	4	6	8	0	(x20)
2	4	6	8	0	(x25)
2	4	6	8	0	(x30)
2	4	6	8	0	(x35)
2	4	6	8	0	(x40)
2	4	6	8	0	(x45)
2	4	6	8	0	(x50)

Starts out 02, 04, 06, 08, and 10. It ends with 92, 94, 96, 98, and 100.

http://RightBrainMath.com MisterNumbers on Youtube

Directions for Making the Twos Time Table from Patterns to 100



The numbers on this page are the pattern for the Twos (2, 4, 6, 8, and 0), and are repeated. These are, of course, the even numbers.

These are the ones-digit numbers, that we can call the Ones-ies. They repeat as the Twos get larger.

We will use a simple pattern to create the tens-digit numbers to go in front of the Ones-ies.

Start tens-digits with 0. The simple pattern is to repeat the tens-digit number (Tens-ies) before it unless the column has an ⬆ over it (the 0 column). If there is an ⬆, add one to the previous Tens-ie.

The last number of each row will be 5 times 2, 10 times 2, 15 times 2, up to 50 times 2 (100).

Creating the Eights from Fun Patterns

See EZ Times Table pp 54-58 It's EZ. RightBrainMath.com

	X	X	X	X	
8	6	4	2	0	(x5)
8	6	4	2	0	(x10)
8	6	4	2	0	(x15)
8	6	4	2	0	(x20)
8	6	4	2	0	(x25)
8	6	4	2	0	(x30)
8	6	4	2	0	(x35)
8	6	4	2	0	(x40)
8	6	4	2	0	(x45)
8	6	4	2	0	(x50)

Starts out 08, 16, 24, 32 and 40. It ends with 368, 376, 384, 392, and 400.

Directions for Making the Eights Time Table from Patterns to 400

The numbers on this page are the pattern for the Eights (8, 6, 4, 2, and 0), and are repeated.

These are the ones-digit numbers, that we can call the Ones-ies. They repeat as the Eights get larger.

We will use a simple pattern to create the tens-digit numbers to go in front of the Ones-ies.

The simple pattern is to repeat the tens-digit number (Tens-ies) before it unless the column has an X over it. If there is an X, add one to the previous Tens-ie. The pattern is: same, same, UP, same, UP. Say them out loud.

Together these two numbers will make up the sequence of the Eights. The last number of each row will be 5 times 8, 10 times 8, 15 times 8, etc..

p.s. a box has an X over it if the Ones-ie is smaller than the one before it, and the Tens-ie must then get larger by one.

See EZ Times Table, pp 54-58 for more info on how and why this works and the Rule of Tens.

Creating the Fours from Fun Patterns

See EZ Times Table
pp 54-58 It's EZ.
RightBrainMath.com

An arrow above a column increases tens-digits by 1

4	8	2	6	0	(x5)
4	8	2	6	0	(x10)
4	8	2	6	0	(x15)
4	8	2	6	0	(x20)
4	8	2	6	0	(x25)
4	8	2	6	0	(x30)
4	8	2	6	0	(x35)
4	8	2	6	0	(x40)
4	8	2	6	0	(x45)
4	8	2	6	0	(x50)

Starts out 04, 08, 12, 16, and 20. It ends with 184,188, 192, 196 and 200.

Directions for Making the Sixes Time Table from Patterns

The numbers on this page are the pattern for the Fours (4, 8, 2, 6, and 0), and are repeated.

These are the ones-digit numbers, that we can call the Ones-ies. They repeat as the Fours get larger.

We will use a simple pattern to create the tens-digit numbers to go in front of the Ones-ies.

Start tens-digits with 0. The simple pattern is to repeat the tens-digit number (Tens-ie) before it unless the column has an ⬆ over it. If there is an ⬆ add one to the previous Tens-ie. The pattern for the Tens-ies is: "same, up, same, up, up". Say them out loud.

The last number of each row will be 5 times 4, 10 times 4, 15 times 4, up to 50 times 4 (200).

Creating the Sixes from Fun Patterns

See EZ Times Table
pp 54-58 It's EZ.
RightBrainMath.com

An arrow above a column increases tens-digit by 1.

6	2	8	4	0	(x5)
6	2	8	4	0	(x10)
6	2	8	4	0	(x15)
6	2	8	4	0	(x20)
6	2	8	4	0	(x25)
6	2	8	4	0	(x30)
6	2	8	4	0	(x35)
6	2	8	4	0	(x40)
6	2	8	4	0	(x45)
6	2	8	4	0	(x50)

Starts out 06, 12, 18, 24, and 30 and ends with 276, 282, 288, 294, and 300.

See MisterNumbers video on 4s and 6s at RightBrainMath.com/experience **OR** on Youtube: http://www.youtube.com/watch?v=rnvOuSYPd0Y

Directions for Making the Sixes Time Table from Patterns

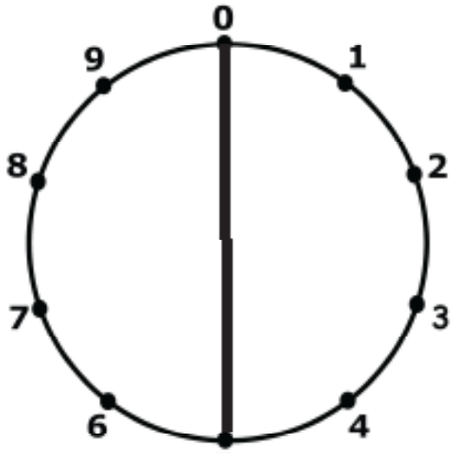
The numbers on this page are the pattern for the Sixes (6, 2, 8, 4, and 0), and are repeated.

These are the ones-digit numbers, that we can call the Ones-ies. They repeat as the Sixes get larger.

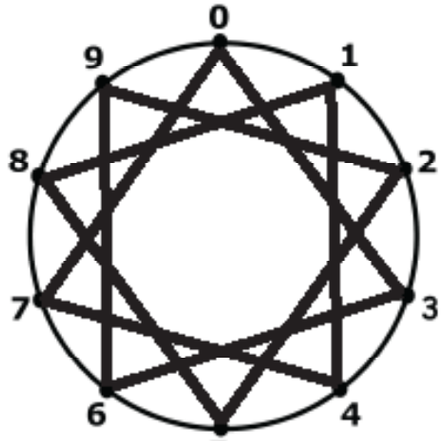
We will use a simple pattern to create the tens-digit numbers to go in front of the Ones-ies.

The simple pattern is to repeat the tens-digit number (Tens-ie) before it unless the column has an ↑ over it. If there is an ↑, add one to the previous Tens-ie. The pattern for the Tens-ies is: "same, up, same, up, up". Say them out loud. The last number of each row will be 5 times 6, 10 times 6, 15 times 6, up to 50 times 6.
See EZ Times Table, pp 54-58 for more info on how and why this works and the Rule of Tens

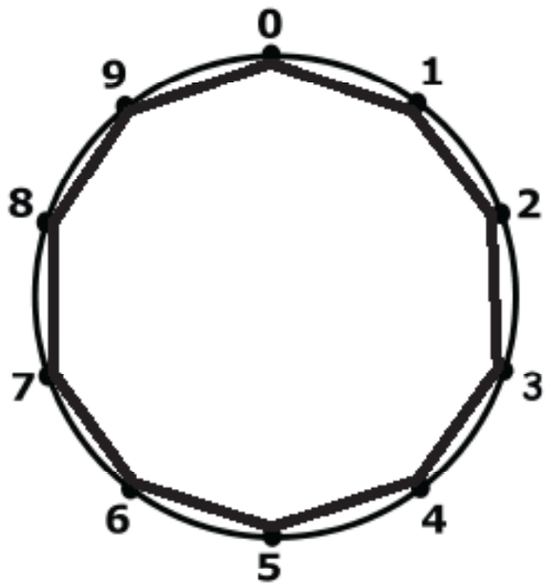
These circles show the repetitive patterns created by the ones-digits for the numbers 1-9. See other Right Brain Math handout sheets for how to use the fun patterns.
The Twos go from 0 to 2, 2 to 4, 4 to 6, 6 to 8, and back to 0. The Eights have opposite pattern, going from 0 to 8, 8 to 6, 6 to 4, 4 to 2, and back to 0.
Threes and Sevens have the opposite 10 pointed star pattern.
Fours and Sixes have a 5 pointed star made in the opposite direction.
Fives just go up and down between 5 and 0



Fives

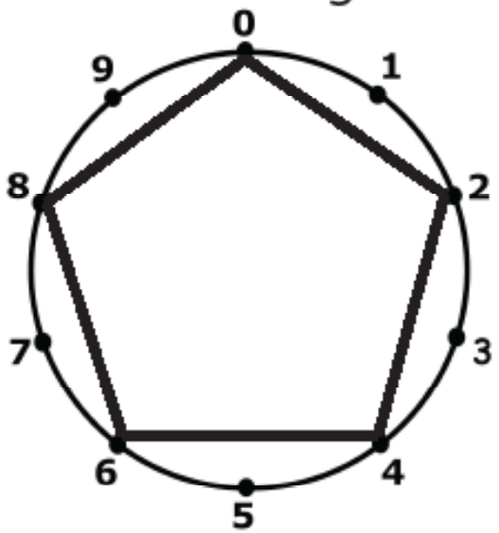


Threes and Sevens



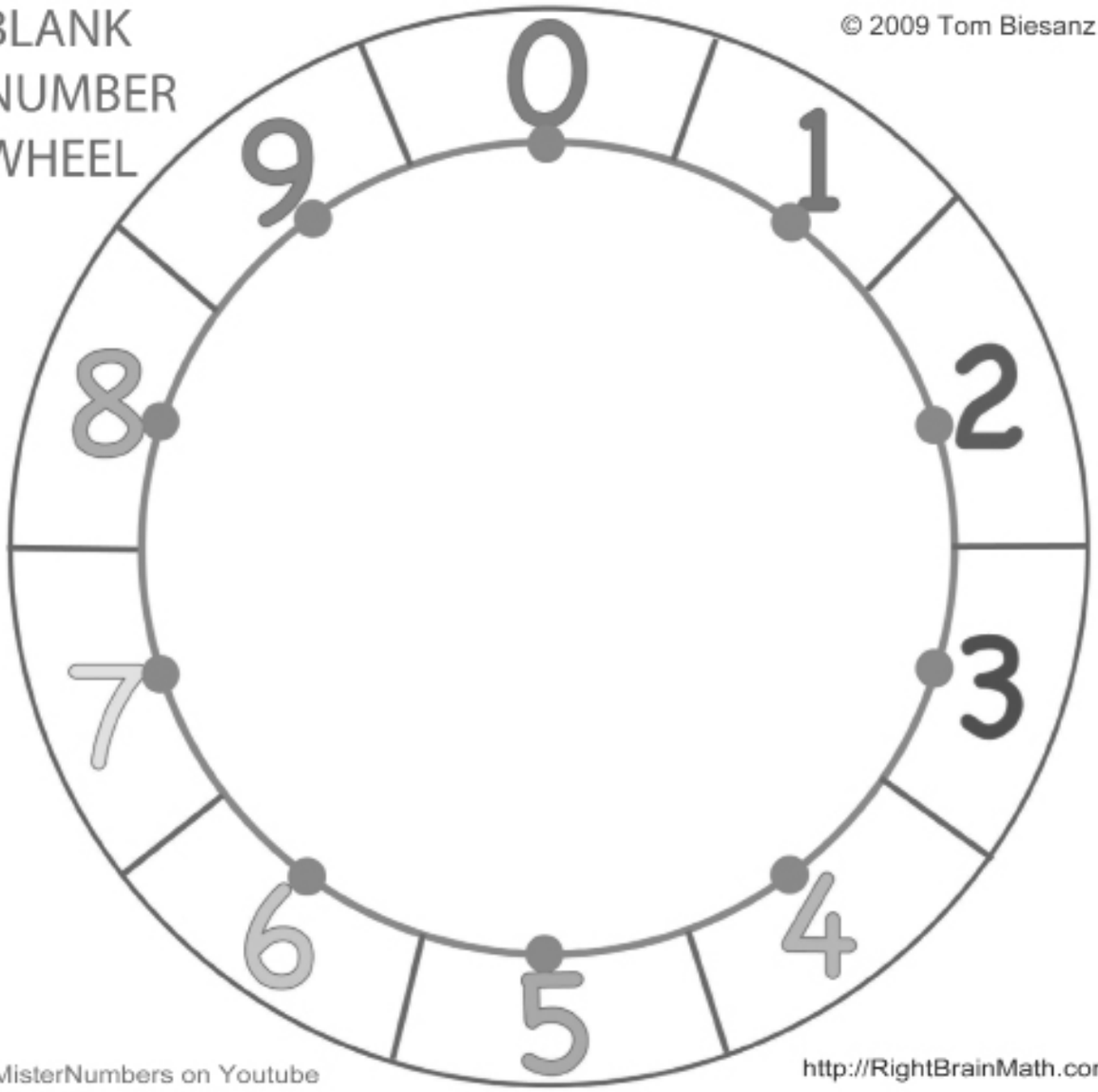
Ones and Nines

Twos and Eights



Fours and Sixes

BLANK
NUMBER
WHEEL

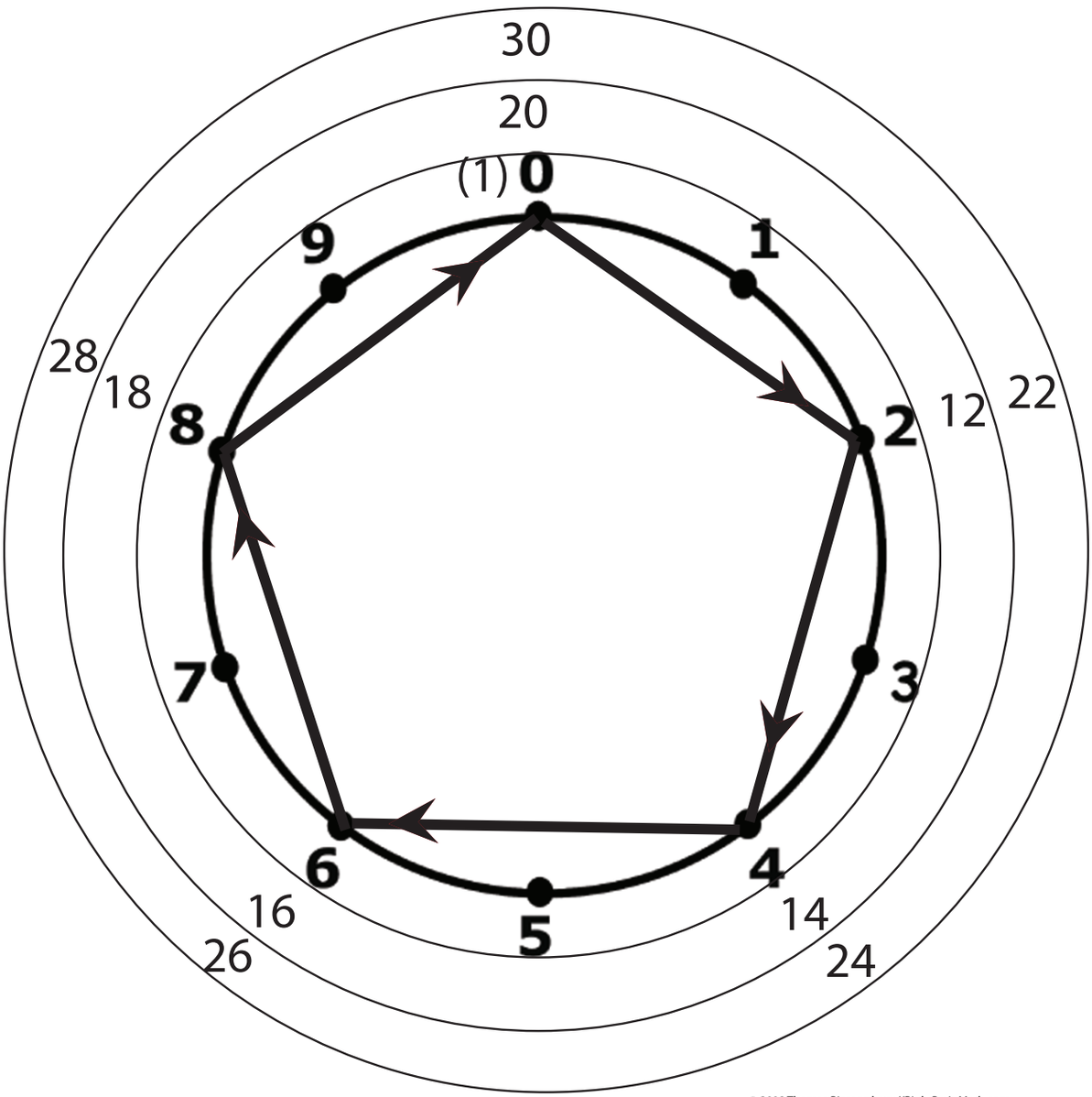


MisterNumbers on Youtube

http://RightBrainMath.com

				0	(x5)
				0	(x10)
				0	(x15)
				0	(x20)
				0	(x25)
				0	(x30)

Twos on a Number Circle: An Atomic Pentagon



Go around the numbers 2, 4, 6, 8, and 0 in the circle and make a pentagon.
Each time you reach 0, jump out one ring and go around again clockwise.
The rings keep getting bigger and bigger and contain all the Twos.

EZ TIMES TABLE

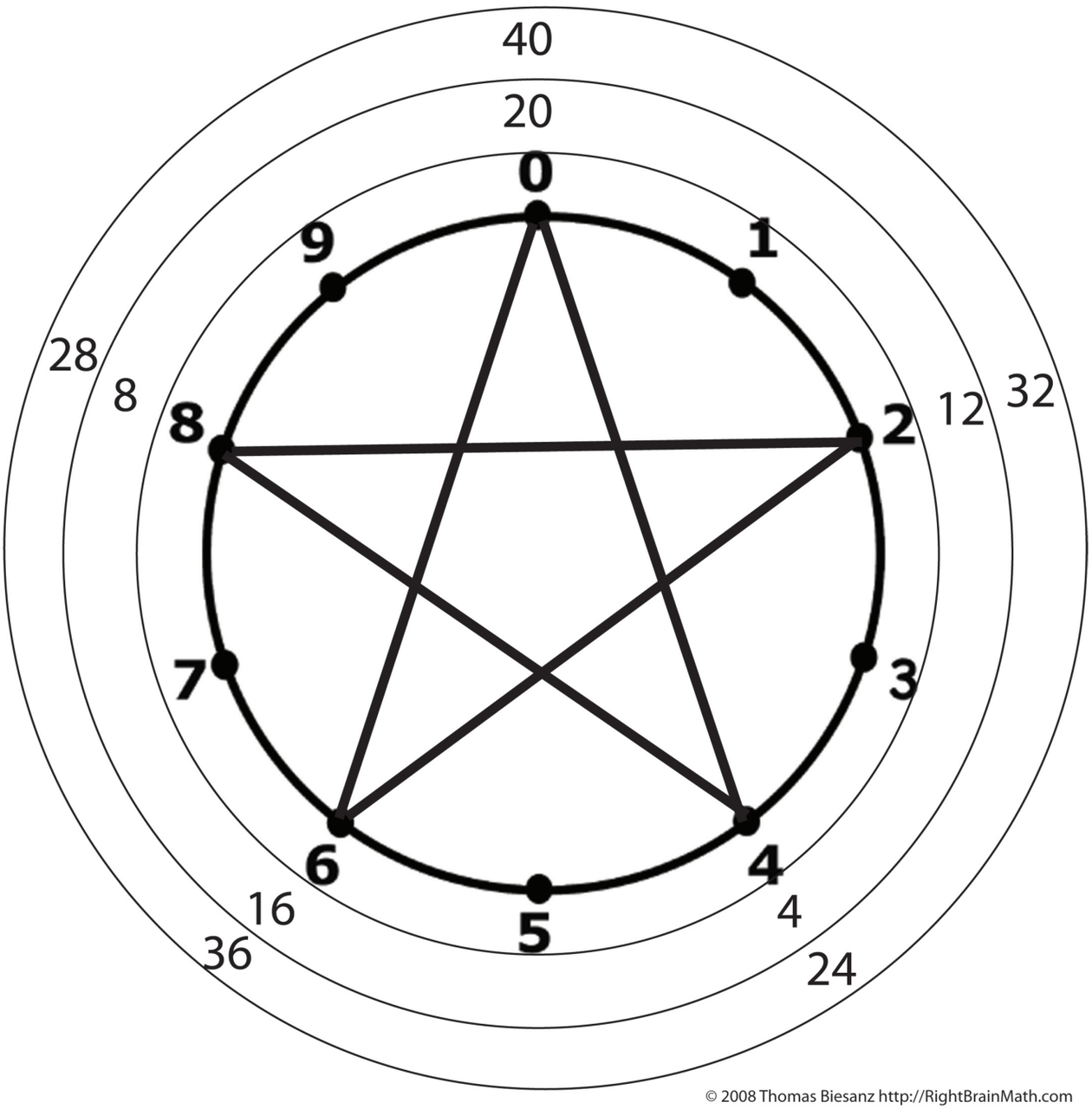
Chart for multiplying Negative Numbers

-10 8	-84	-60	-3x4	-1 2	-2 4	-4x6	-6x4	-8x2	-12 0
-9 9	-77	-55	•	-1 1	-2 2	•	•	•	-11 0
-9 0	-70	-50	•	-1 0	-2 0	-4x5	•	•	-10 0
-8 1	-63	-45	-3x3	-0 9	-1 8	•	-6x3	•	-9 0
-7 2	-56	-40	•	-0 8	-1 6	-4x4	•	-8x1	-8 0
-6 3	-49	-35	•	-0 7	-1 4	•	•	•	-7 0
-5 4	-42	-30	-3x2	-0 6	-1 2	-4x3	-6x2	•	-6 0
-4 5	-35	-25	•	-0 5	-1 0	•	•	•	-5 0
-3 6	-28	-20	•	-0 4	-0 8	-4x2	•	-8x2	-4 0
-2 7	-21	-15	-3x1	-0 3	-0 6	•	-6x1	•	-3 0
-1 8	-14	-10	•	-0 2	-0 4	-4x1	•	•	-2 0
-0 9	-7	-5	•	-0 1	-0 2	•	•	•	-1 0
				 0					
0 9	7	5	•	1	2	•	•	•	1 0
1 8	14	10	•	2	4	4x1	•	•	2 0
2 7	21	15	3x1	3	6	•	6x1	•	3 0
3 6	28	20	•	4	8	4x2	•	8x1	4 0
4 5	35	25	•	5	1 0	•	•	•	5 0
5 4	42	30	3x2	6	1 2	4x3	6x2	•	6 0
6 3	49	35	•	7	1 4	•	•	•	7 0
7 2	56	40	•	8	1 6	4x4	•	8x2	8 0
8 1	63	45	3x3	9	1 8	•	6x3	•	9 0
9 0	70	50	•	1 0	2 0	4x5	•	•	10 0
9 9	77	55	•	1 1	2 2	•	•	•	11 0
10 8	84	60	3x4	1 2	2 4	4x6	6x4	8x3	12 0

Multiplying with negative numbers just means more friends to play with. Face them (like the child above) if you are multiplying by a negative number and then go forward if multiplying that by a positive number or step backward (negative direction) if multiplying by a negative number.

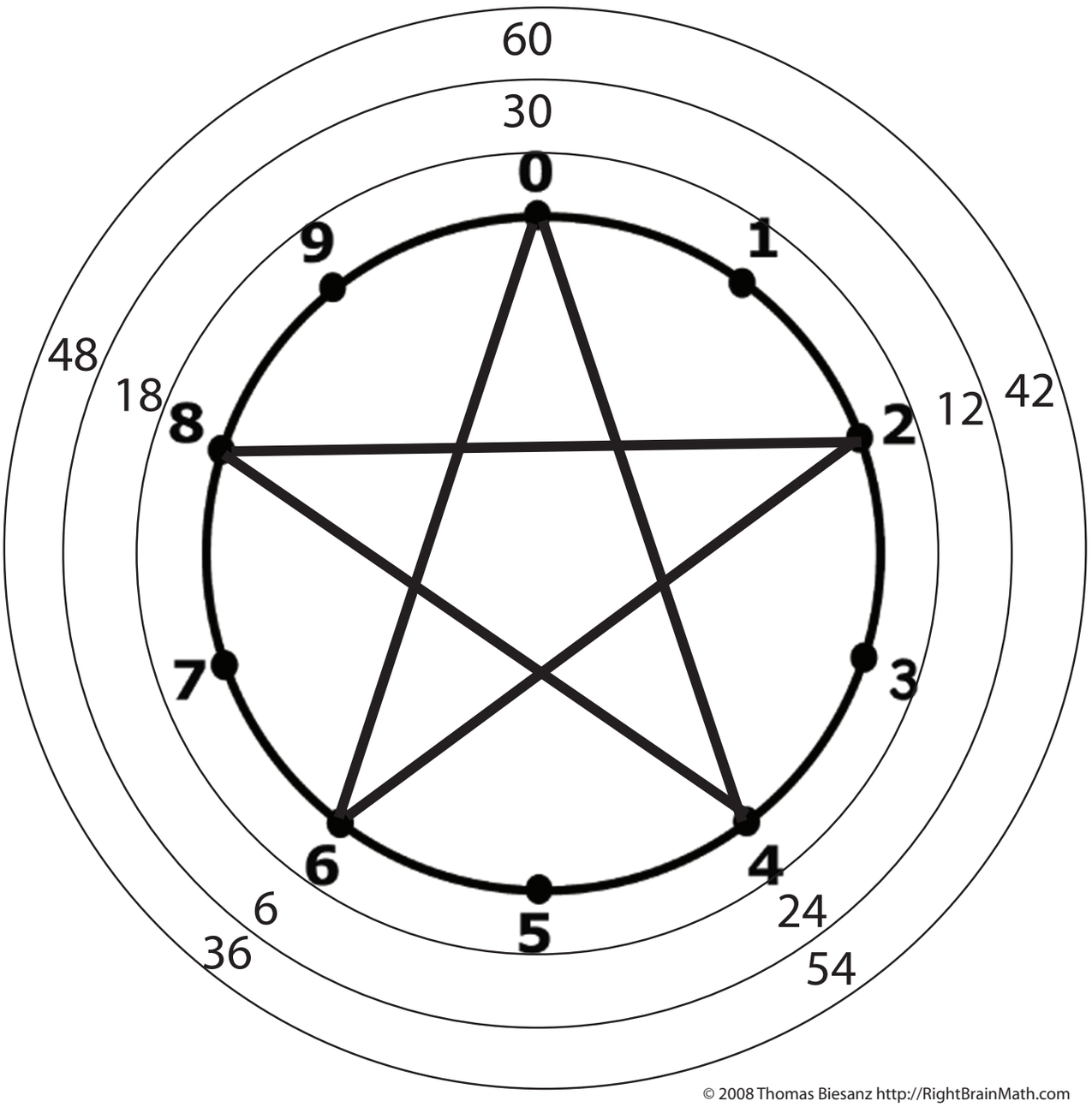
Can you see that multiplying a negative number (facing them) by a positive number (going forward) will take you into the negative numbers (Plus times Minus = Minus. Multiplying negative numbers (facing them) by a negative number (stepping backwards) will take you into the positive numbers (Minus times Minus = Plus).

Fours on a Number Circle: An Atomic STAR



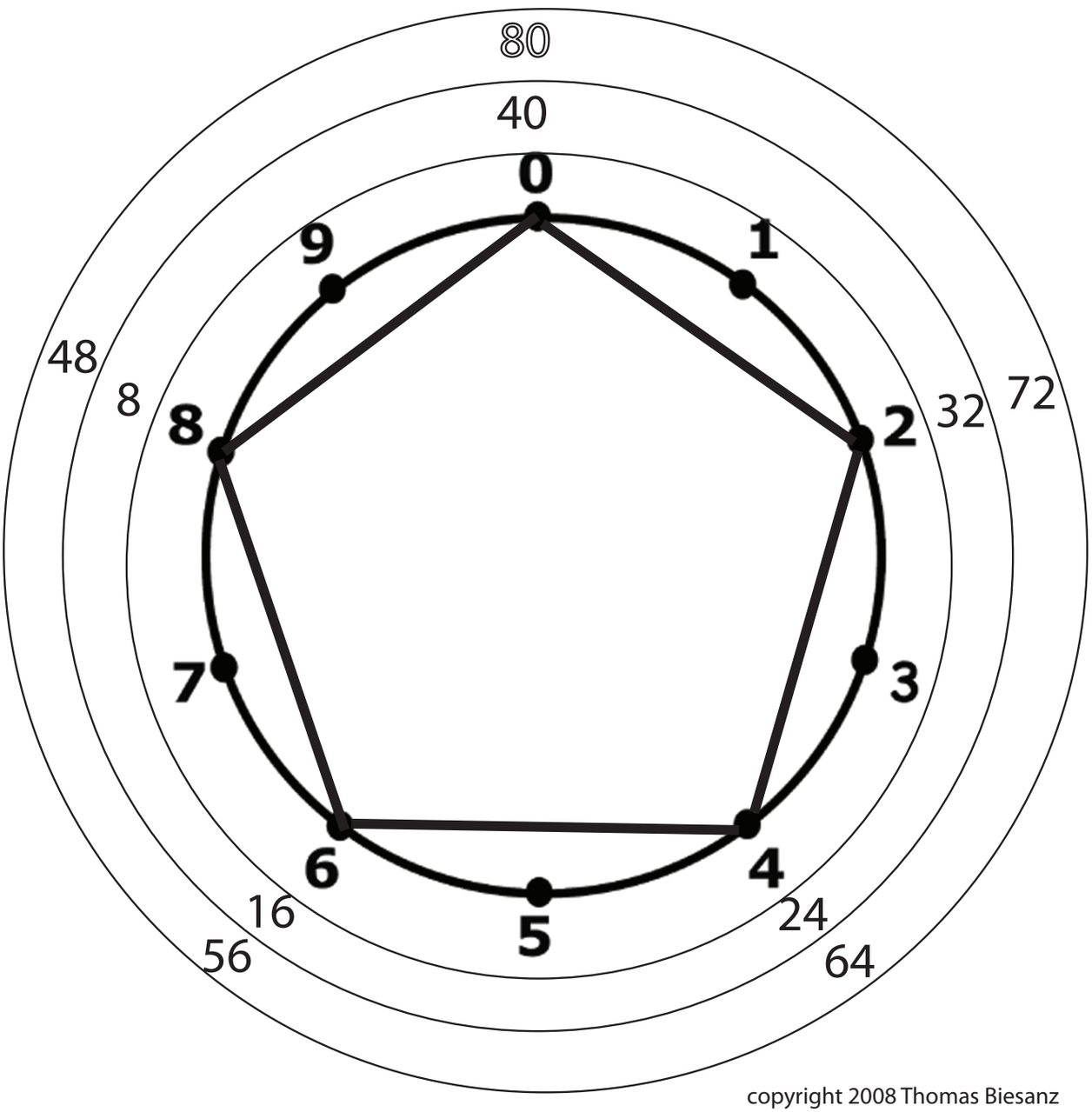
Go around the numbers 4, 8, 2, 6, and 0 in the circle and make a STAR. Each time you reach 0, jump out one ring and go around again clockwise. The rings keep getting bigger and bigger and contain all the Fours.

Sixes on a Number Circle: An Atomic STAR



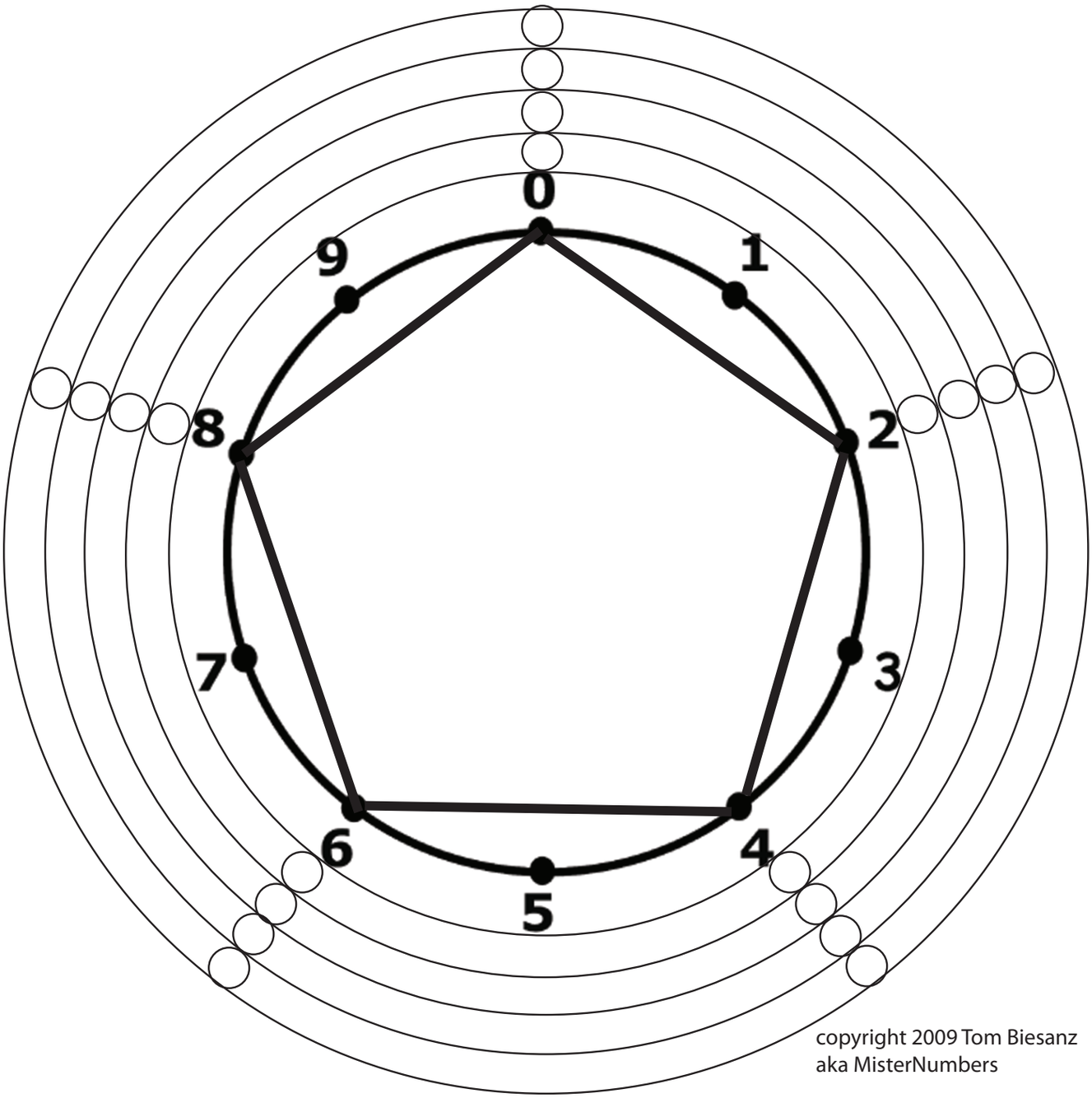
Go around the numbers 6, 2, 8, 4, and 0 on the circle and make a STAR.
Each time you reach 0, jump out one ring and go around again clockwise.
The rings keep getting bigger and bigger and contain all the Sixes.

Eights on a Number Circle: An Atomic Pentagon



Go around the numbers 8, 6, 4, 2, and 0 in the circle and make a pentagon. Each time you reach 0, jump out one ring and go around again counterclockwise. The rings keep getting bigger and bigger and contain all the Eights.

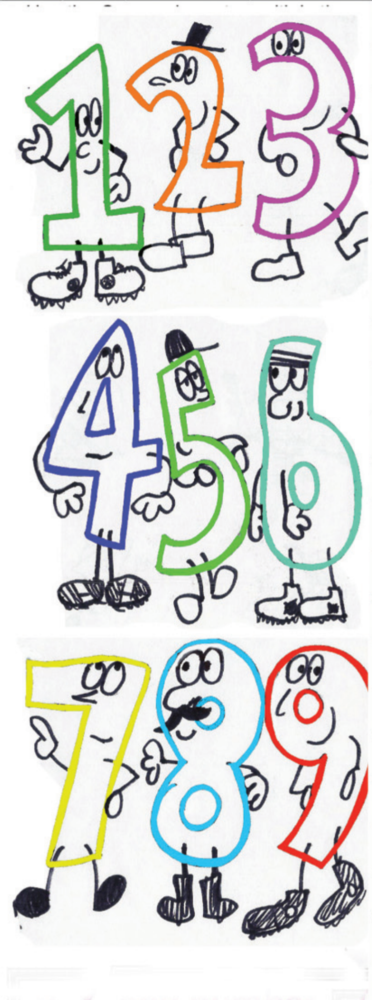
Twos & Eights on a Number Circle: Fill in the Atomic Pentagons



Go around this number wheel clockwise and fill in the first ring of circles to create the TWOS. The first ring will be ***2***, ***4, 6, 8***, and 1***0***. Continue to the next ring. The last ring will end at forty. Now on another copy, go around counter-clockwise to create the EIGHTS. The first ring will be ***8***, 1***6***, 2***4***, 3***2***, and 4***0***. The last ring will end at 16***0***. See the Eights worksheet for a demo(http://www.eztimestable.com/EZImages/Eights_AtomicWorksheet.pdf)

EZ TIMES TABLE

Odd Numbers							Even Numbers			



EZ TIMES TABLE

Odd Numbers						Even Numbers			
9	7	5	3	1	2	4	6	8	10
0 9	7	5	•	1	2	•	•	•	1 0
1 8	14	10	•	2	4	4x1	•	•	2 0
2 7	21	15	3x1	3	6	•	6x1	•	3 0
3 6	28	20	•	4	8	4x2	•	8x1	4 0
4 5	35	25	•	5	1 0	•	•	•	5 0
5 4	42	30	3x2	6	1 2	4x3	6x2	•	6 0
6 3	**49**	35	•	7	1 4	•	•	•	7 0
7 2	56	40	•	8	1 6	4x4	•	8x2	8 0
8 1	63	45	3x3	9	1 8	•	6x3	•	9 0
9 0	70	50	•	1 0	2 0	4x5	•	•	**10** 0
			•	1 1	2 2	•	•	•	
			3x4	1 2	2 4	4x6	6x4	8x3	
			•	1 3	2 6	•	•	•	
			•	1 4	2 8	4x7	•	•	
			3x5	1 5	3 0	•	6x5	•	
			•	1 6	3 2	4x8	•	8x4	
			•	1 7	3 4	•	•	•	
			3x6	1 8	3 6	4x9	6x6	•	
			•	1 9	3 8	•	•	•	
			•	2 0	4 0	4x10	•	8x5	
			3x7	2 1	4 2	•	6x7	•	
			•	2 2	4 4	4	•	•	
			•	2 3	4 6	•	•	•	
			3x8	2 4	4 8	4	6x8	8x6	
			•	2 5	5 0	•	•	•	
			•	2 6	5 2	4	•	•	
			3x9	2 7	5 4	•	6x9	•	
			•	2 8	5 6	4	•	8x7	
			•	2 9	5 8	•	•	•	
			3x10	3 0	6 0	4	6x10	•	
			•	3 1	6 2	•	•	•	
			•	3 2	6 4	4	•	8x8	

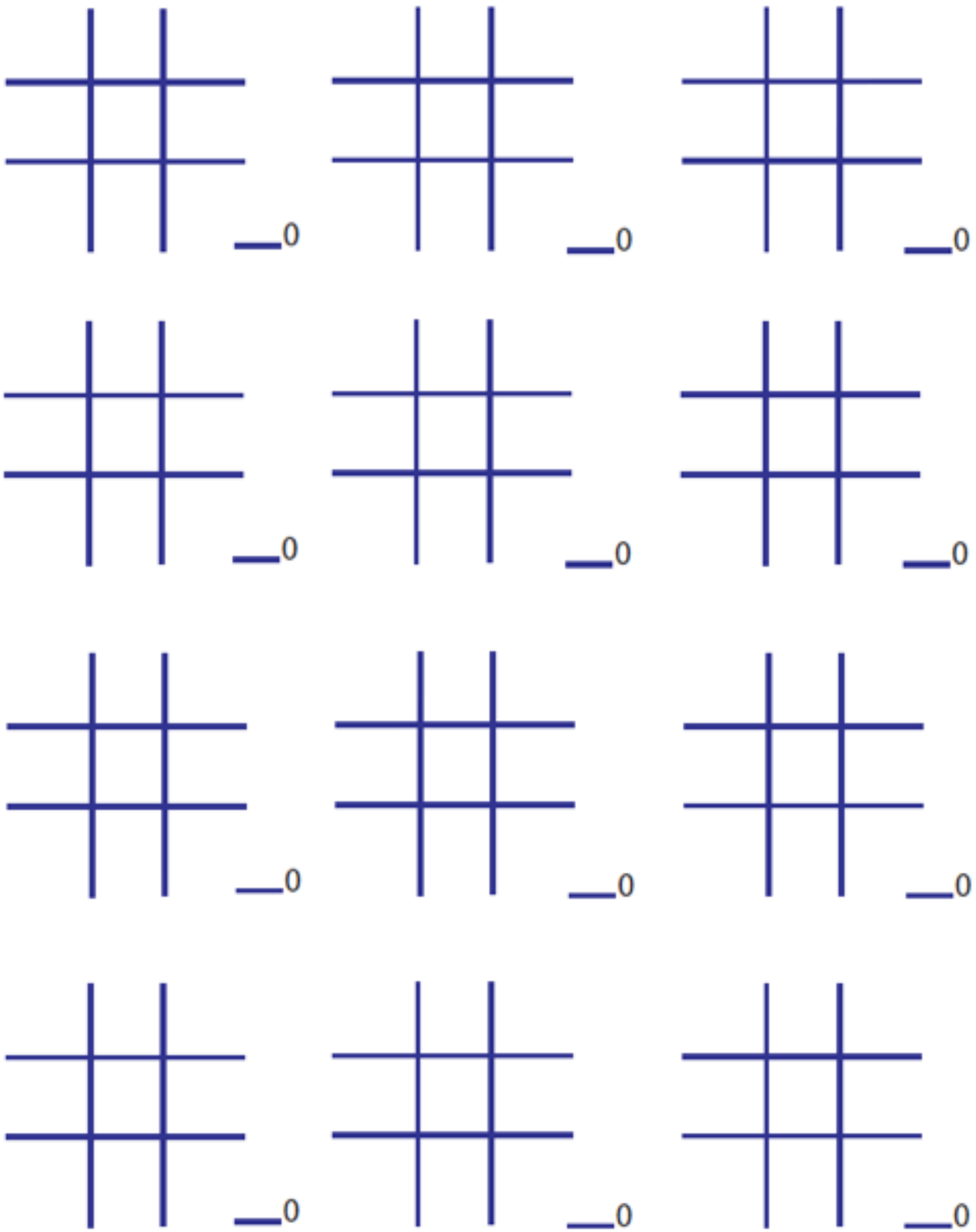
0 x any number = 0

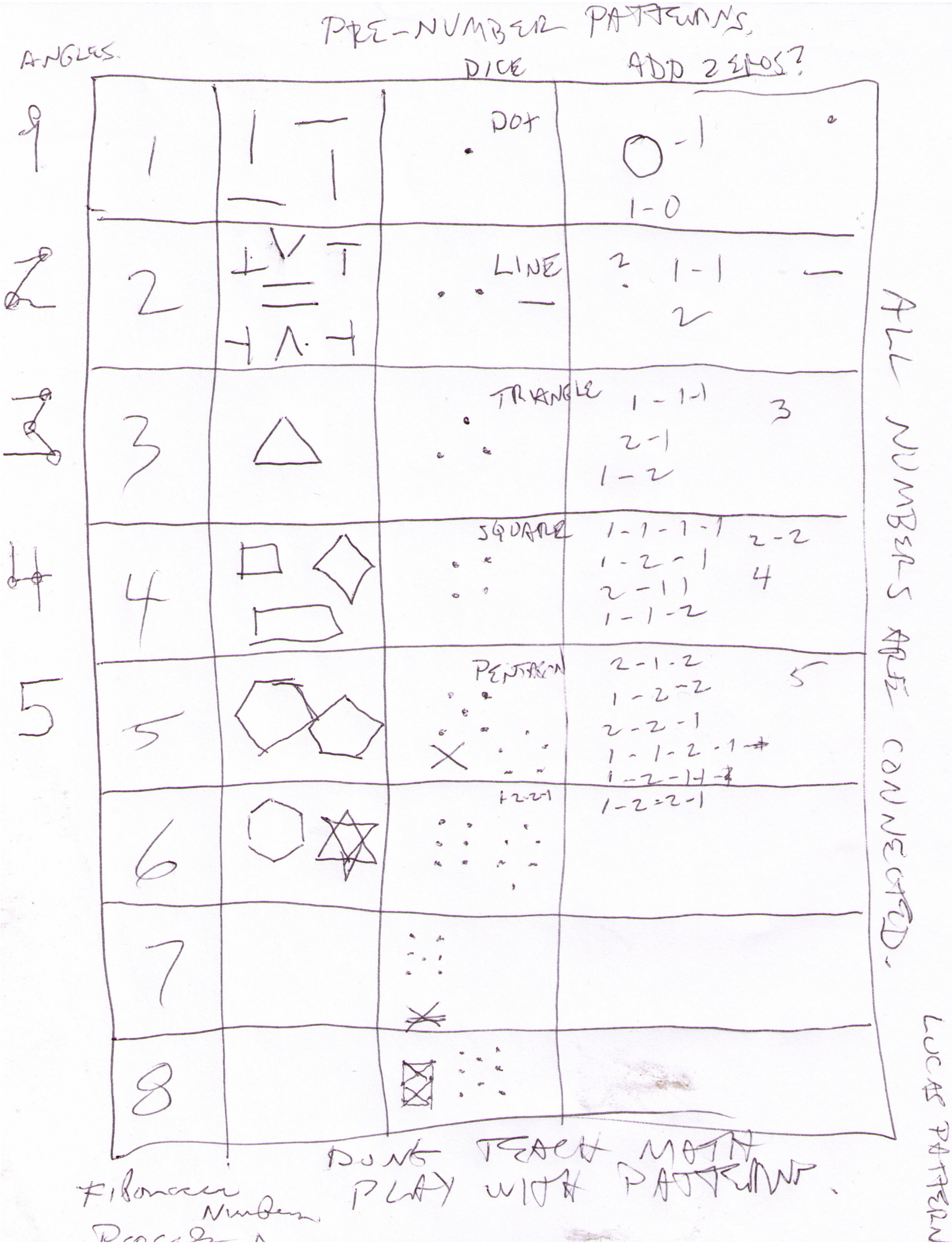
Thanks to all my friends and contributors for helping me help kids

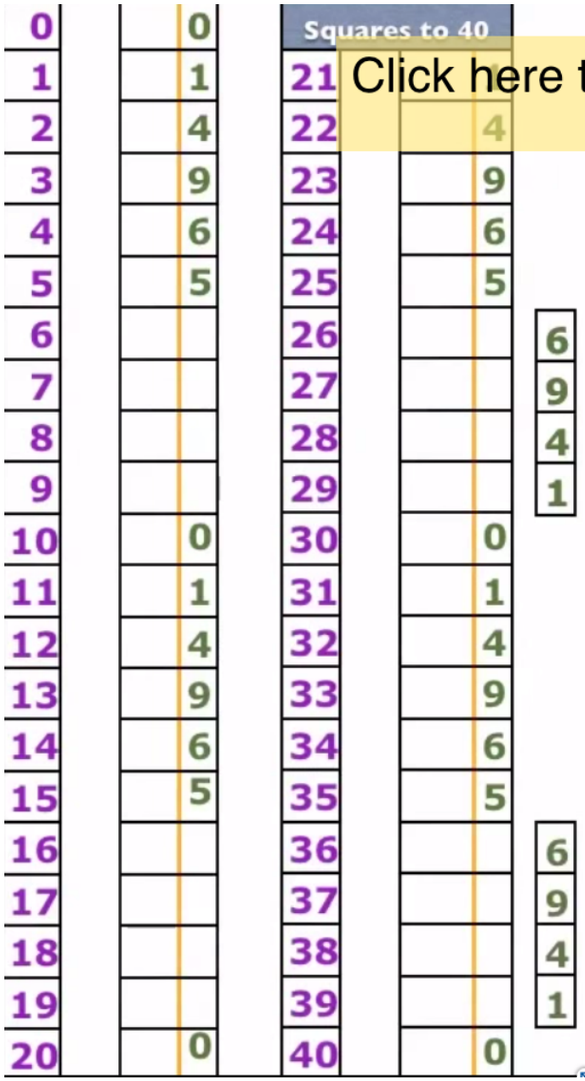
-MisterNumbers

a few MisterNumbers images included below

MisterNumbers TicTacToe Squares for 1s, 3s, 7s, and 9s




PRE-NUMBER PATTERNS
ANGLES
DICE
ADD ZEROS?
DOT
1-0
LINE
TRIANGLE
SQUARE
PENTAGON
ALL NUMBERS ARE CONNECTED.
LUCAS PATTERN
DONT TEACH MATH
PLAY WITH PATTERNS.
FIBONACCI NUMBERS



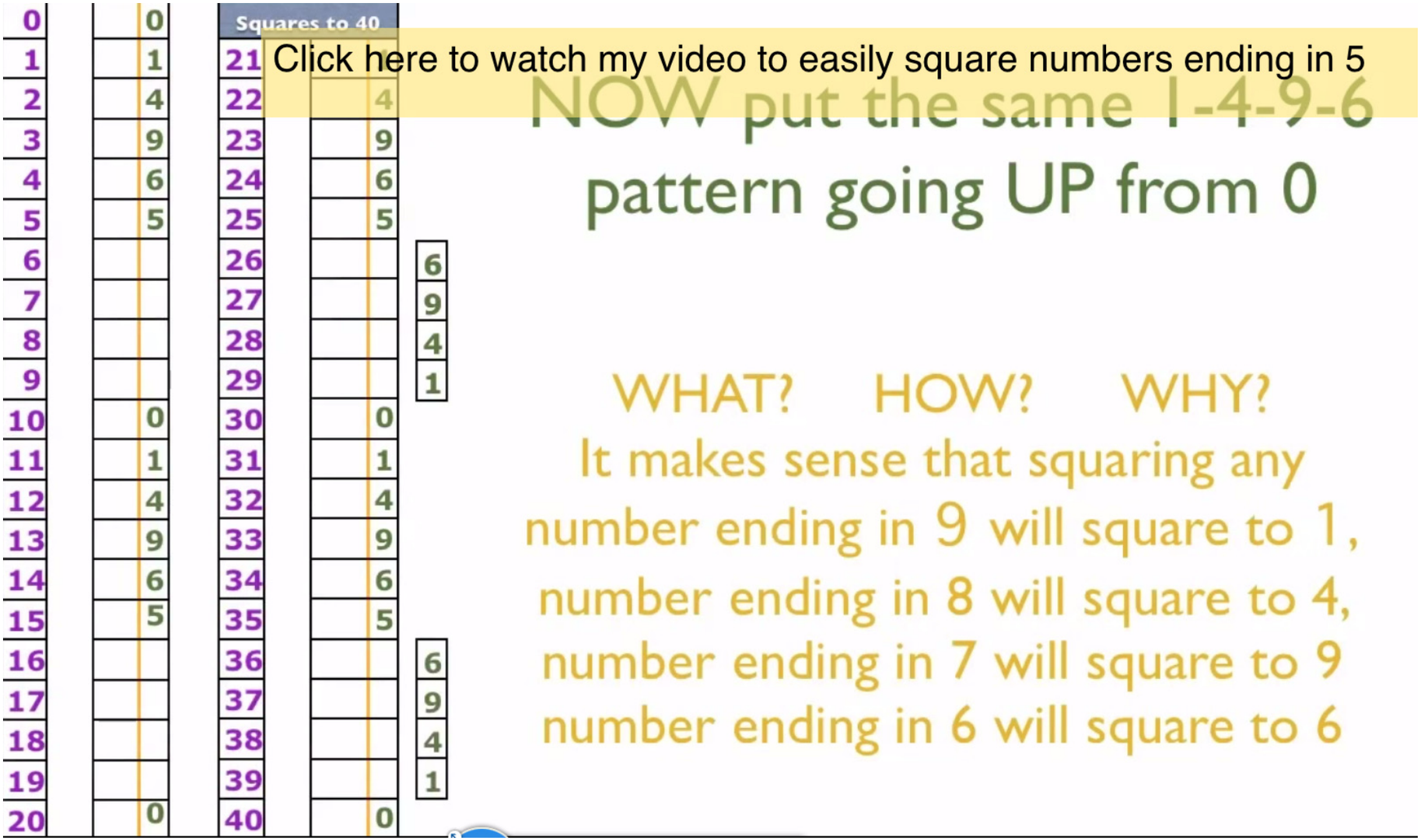
0		0	Squares to 40			
1		1	21			
2		4	22		4	
3		9	23		9	
4		6	24		6	
5		5	25		5	
6			26			6
7			27			9
8			28			4
9			29			1
10		0	30		0	
11		1	31		1	
12		4	32		4	
13		9	33		9	
14		6	34		6	
15		5	35		5	
16			36			6
17			37			9
18			38			4
19			39			1
20		0	40		0	

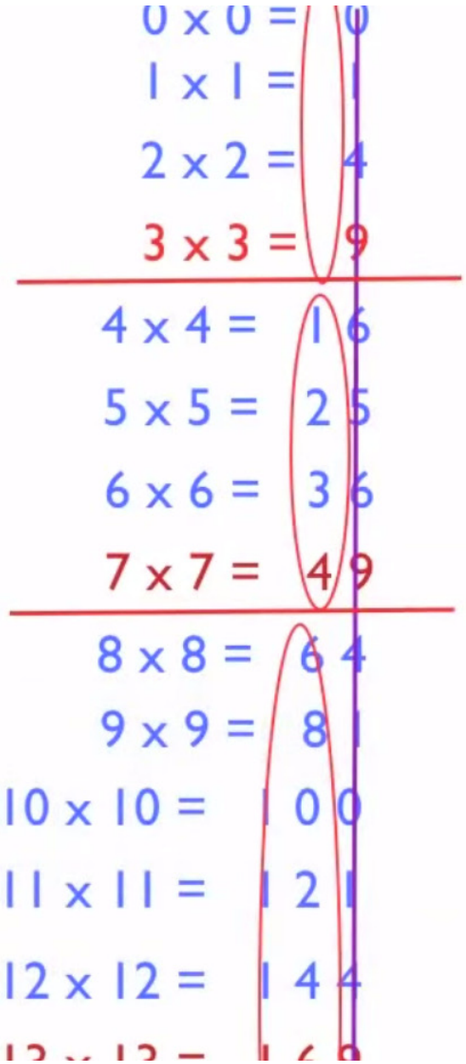
Click here to watch my video to easily square numbers ending in 5

NOW put the same 1-4-9-6 pattern going UP from 0

WHAT? HOW? WHY?

It makes sense that squaring any number ending in 9 will square to 1, number ending in 8 will square to 4, number ending in 7 will square to 9 number ending in 6 will square to 6





Let's look at the Tens pattens:

- They are 0 (go up 0) until the 9
- They go by 1 until the second 9: 1-2-3-4
- They go by 2 until the third 9 6-8-10-12-14-16

0	+0	0 0
1		0 1
2		0 4
3		0 9
4	+1	1 6
5		2 5
6		3 6
7		4 9
8	+2	6 4
9		8 1
10		10 0
11		12 1
12		14 4
13		16 9
14	+3	19 6
15		22 5
16		25 6
17		28 9
18	+4	32 4
19		36 1
20		40 0

Squares to 40		
21		44 1
22		48 4
23		52 9
24	+5	57 6
25		62 5
26		67 6
27		72 9
28	+6	78 4
29		84 1
30		90 0
31		96 1
32		102 4
33		108 9
34	+7	115 6
35		122 5
36		129 6
37		136 9
38	+8	144 4
39		1
40		0

After the 8th line, tens go up by 8:
144, 152, 160, etc
(notice all multiples of 8)

creating 1444, 1521, 1600,
Continue as high as you like

Watch this video to square ANY number: CLICK HERE

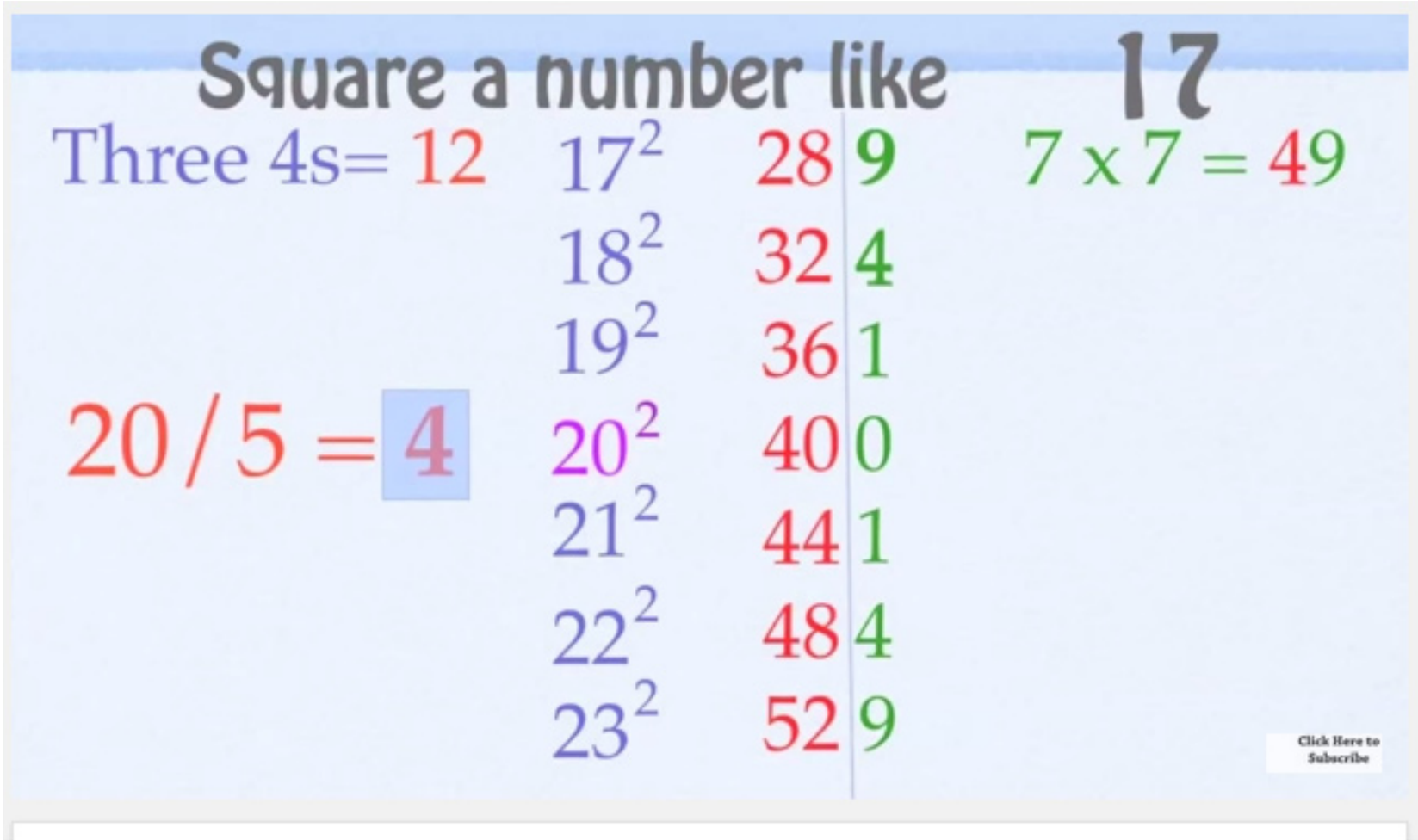
Square a number like 22

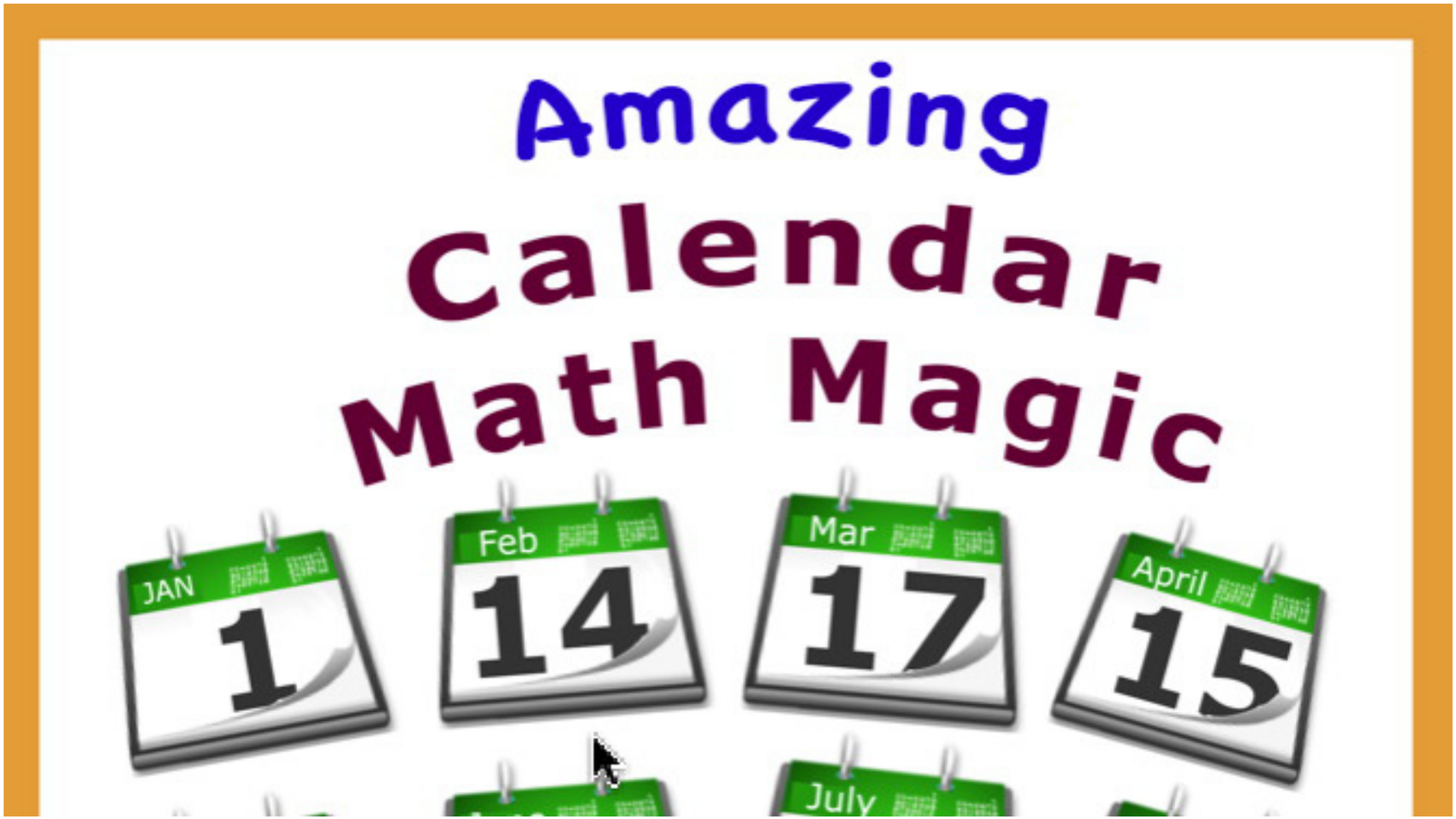
Go to a nearby multiple of 5.

The Tens-digits add or subtract 1/5 of that number.

Start from	5	10	15	20	25	30	40	50	60	75	100
Up or Down	1	2	3	4	5	6	8	10	12	15	20

22^2



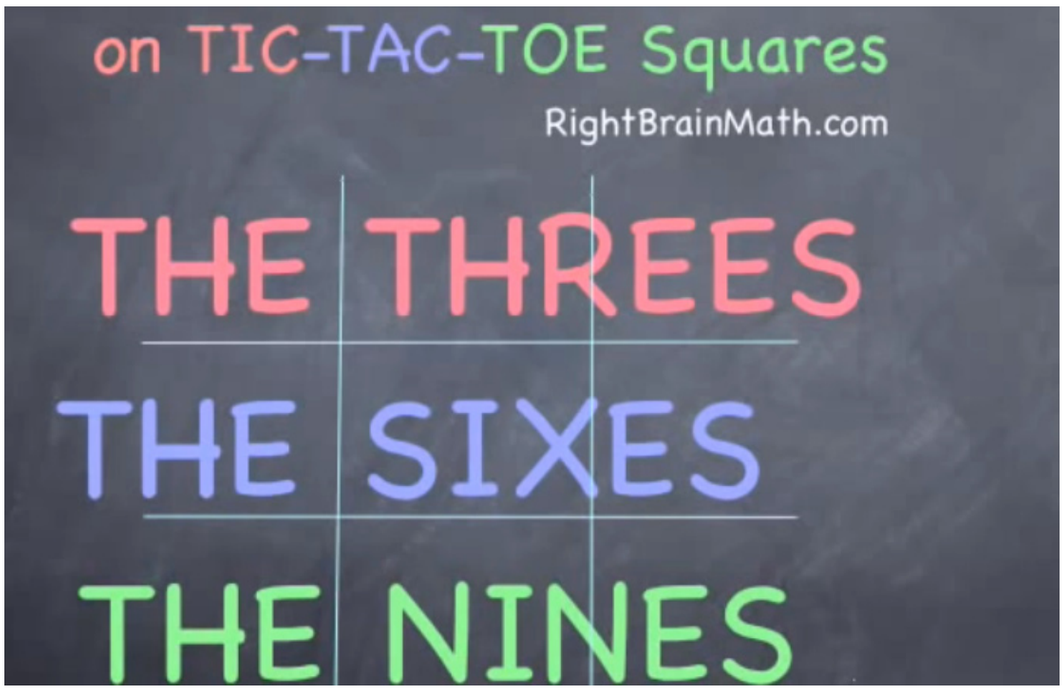


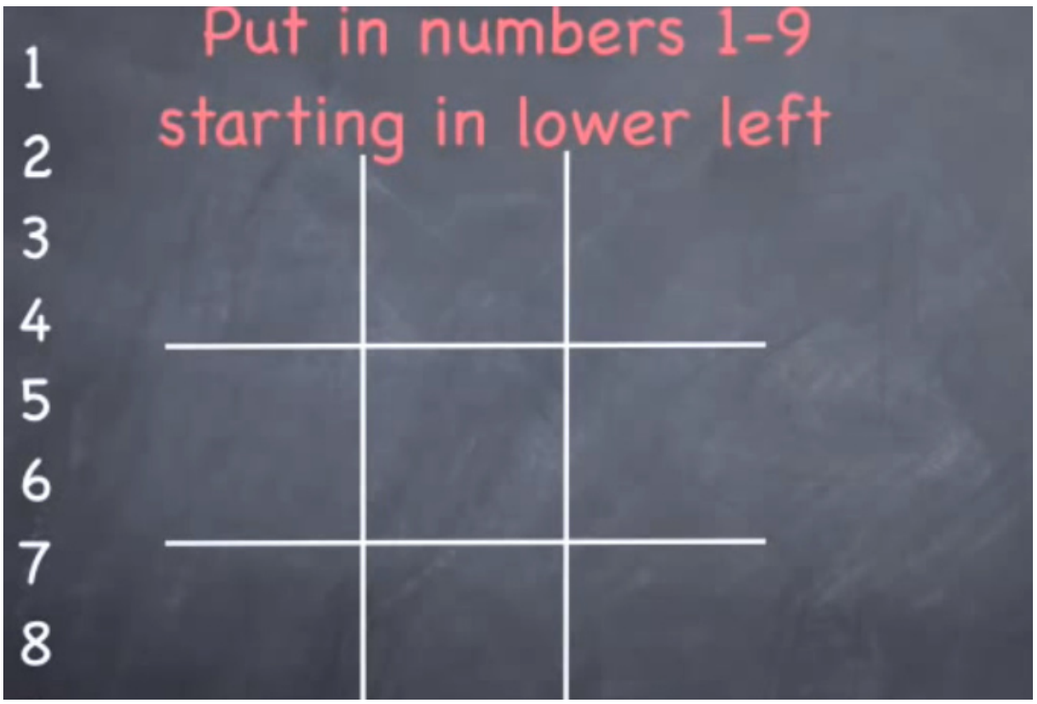
Amazing Calendar Math Magic

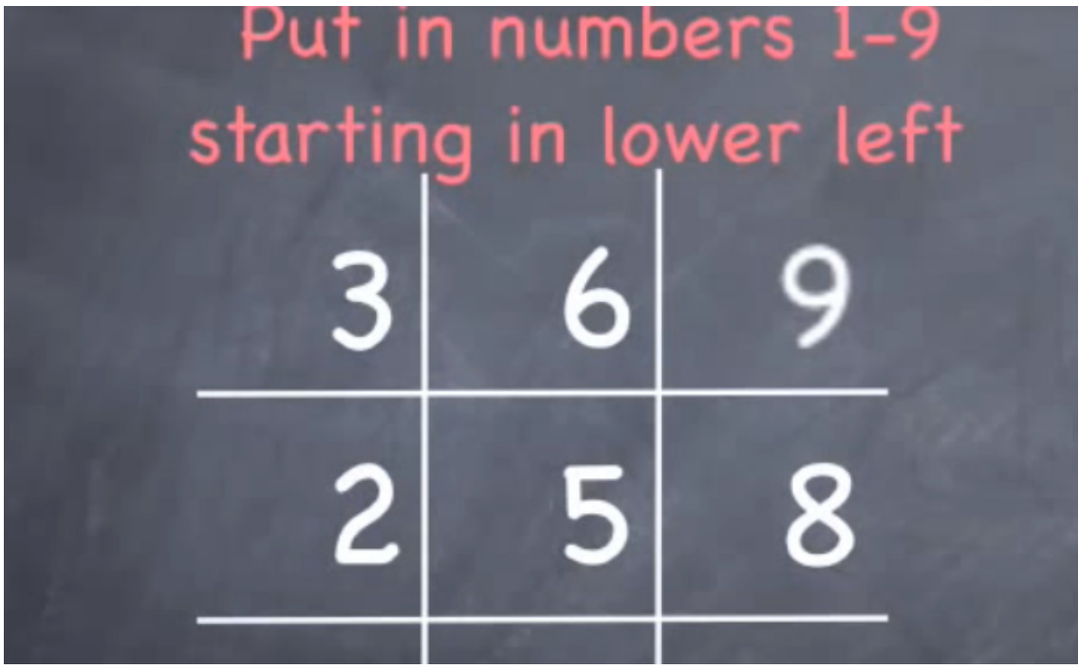
An ingenious trick and practical math tool to help you know what day any date falls on

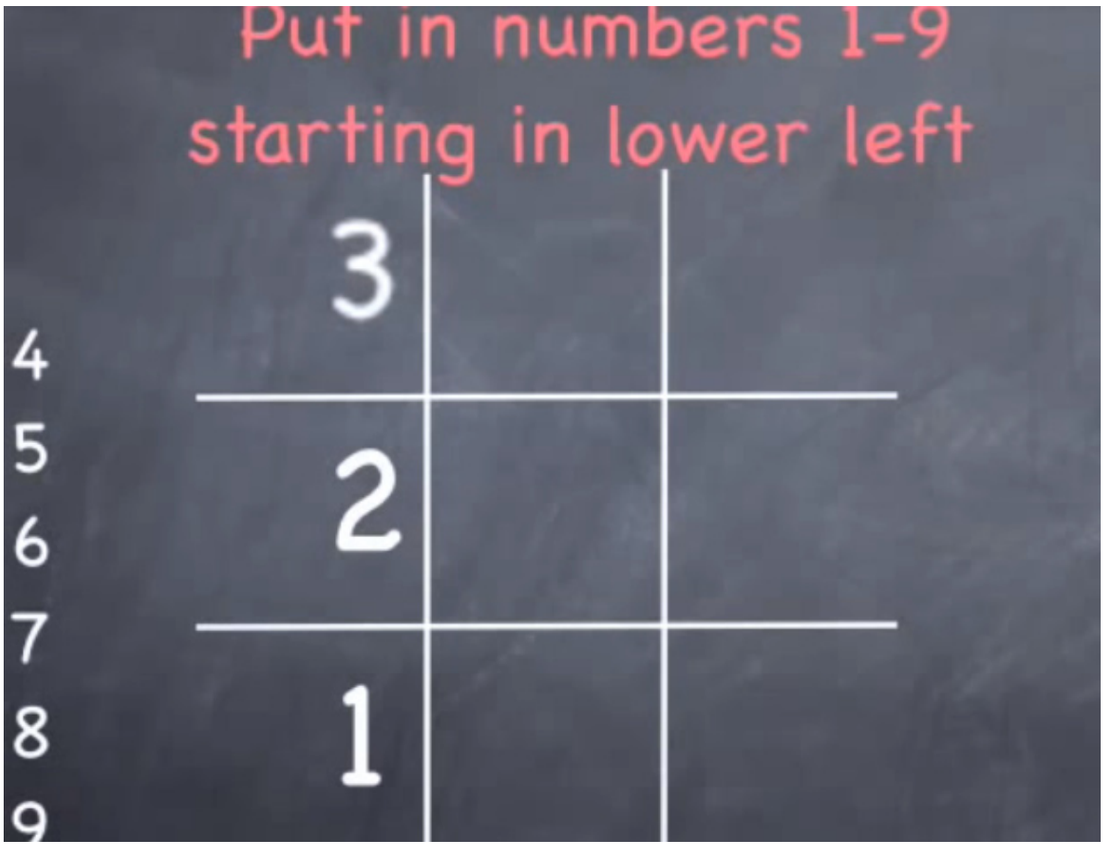
Thomas Biesanz
aka MisterNumbers
(over a million video views)

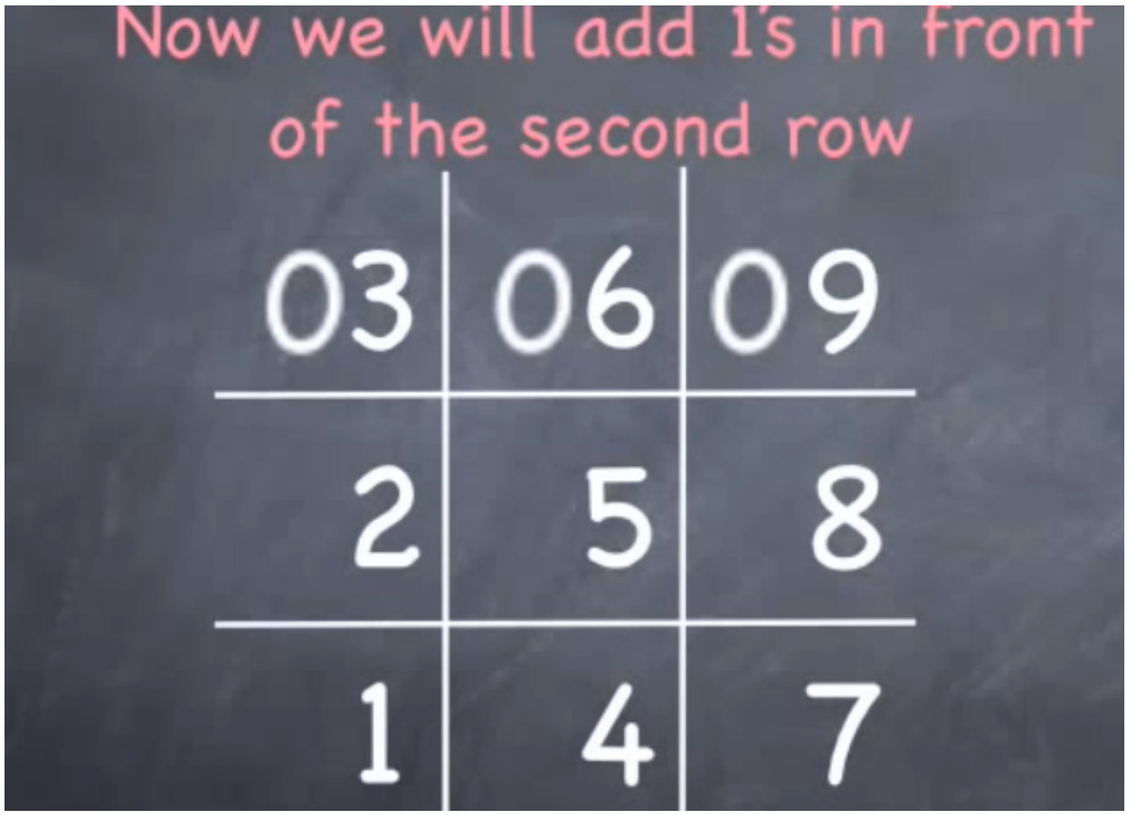
Threes, Sixes, Nines on TicTacToe Squares

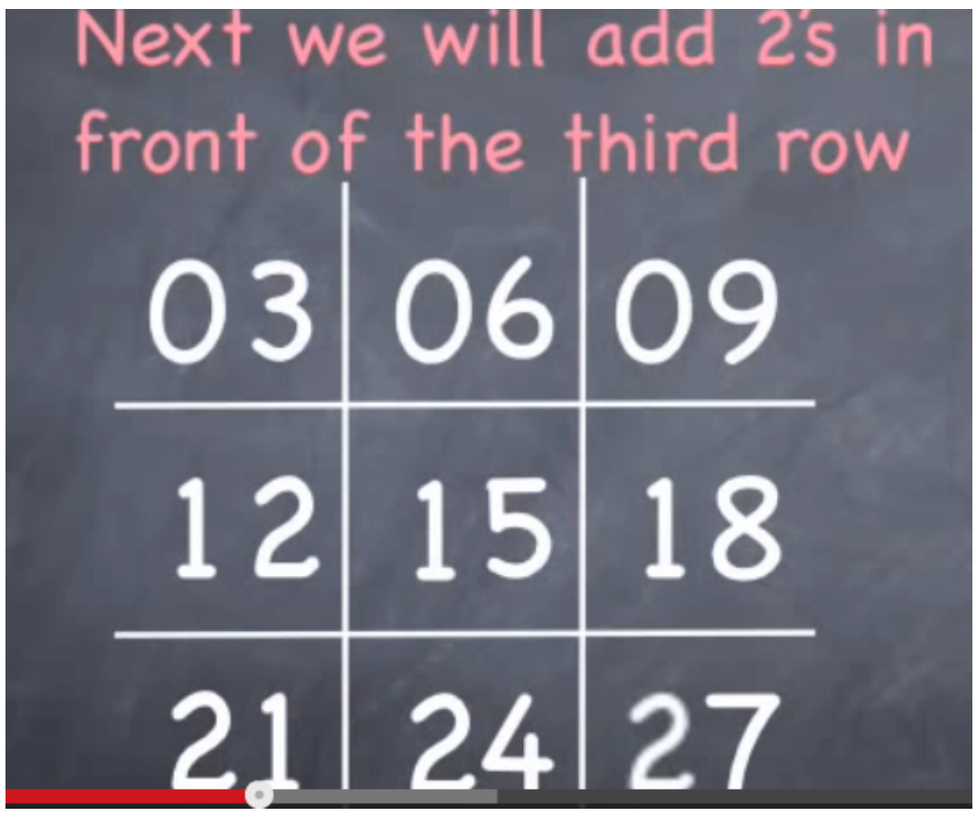


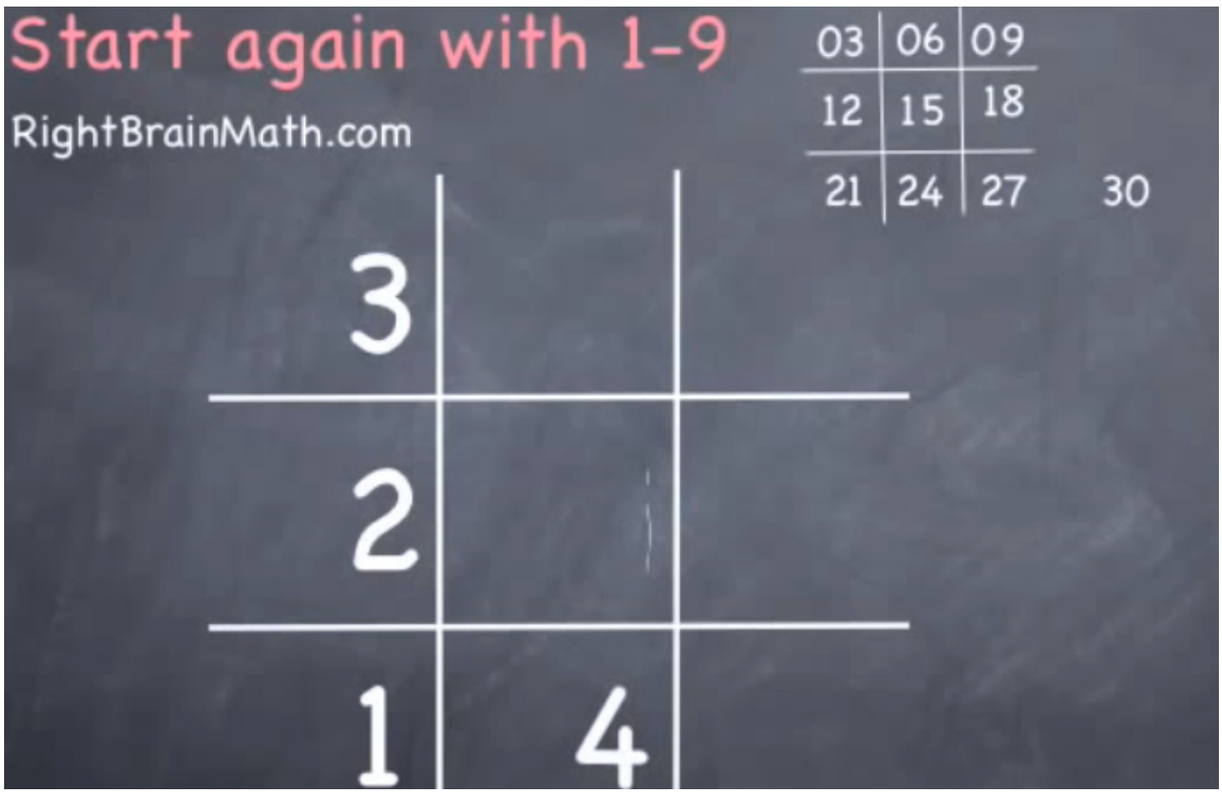


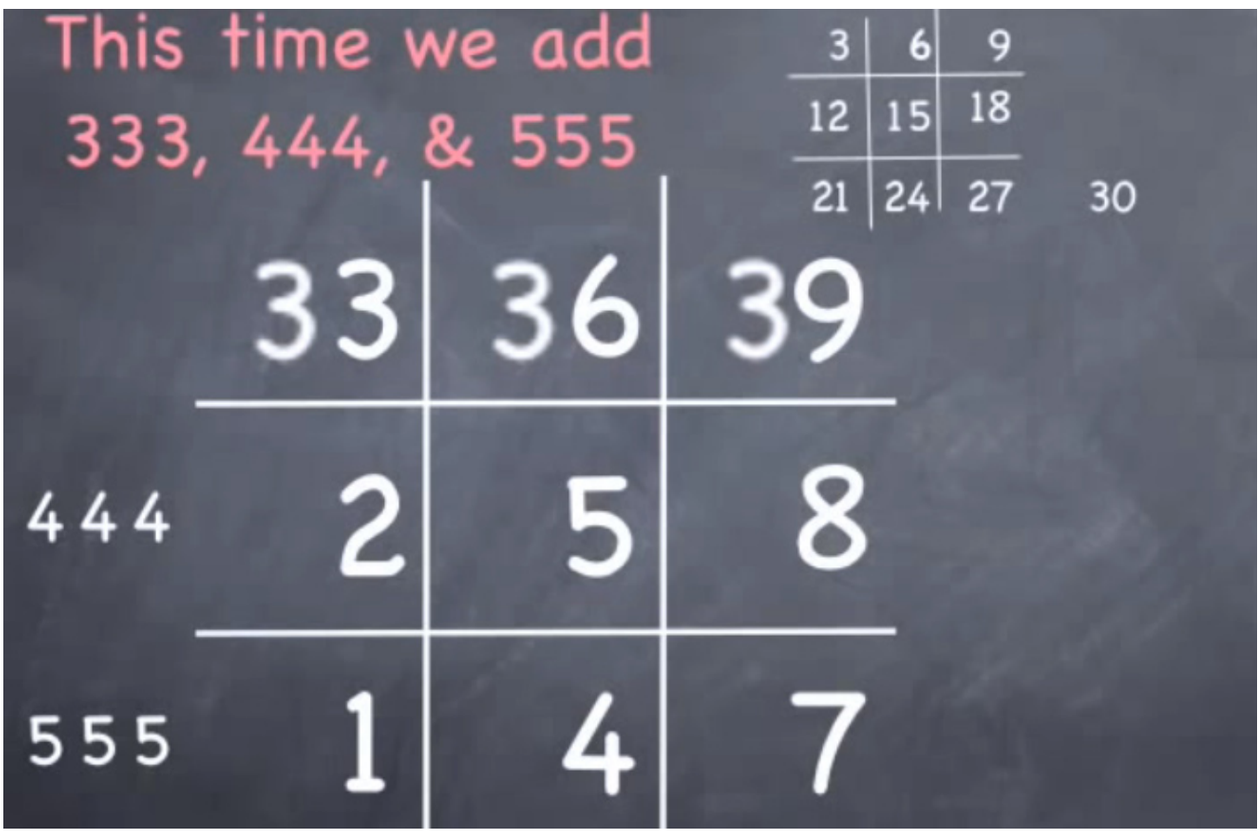

Put in numbers 1-9
starting in lower left
3 6 9
2 5 8

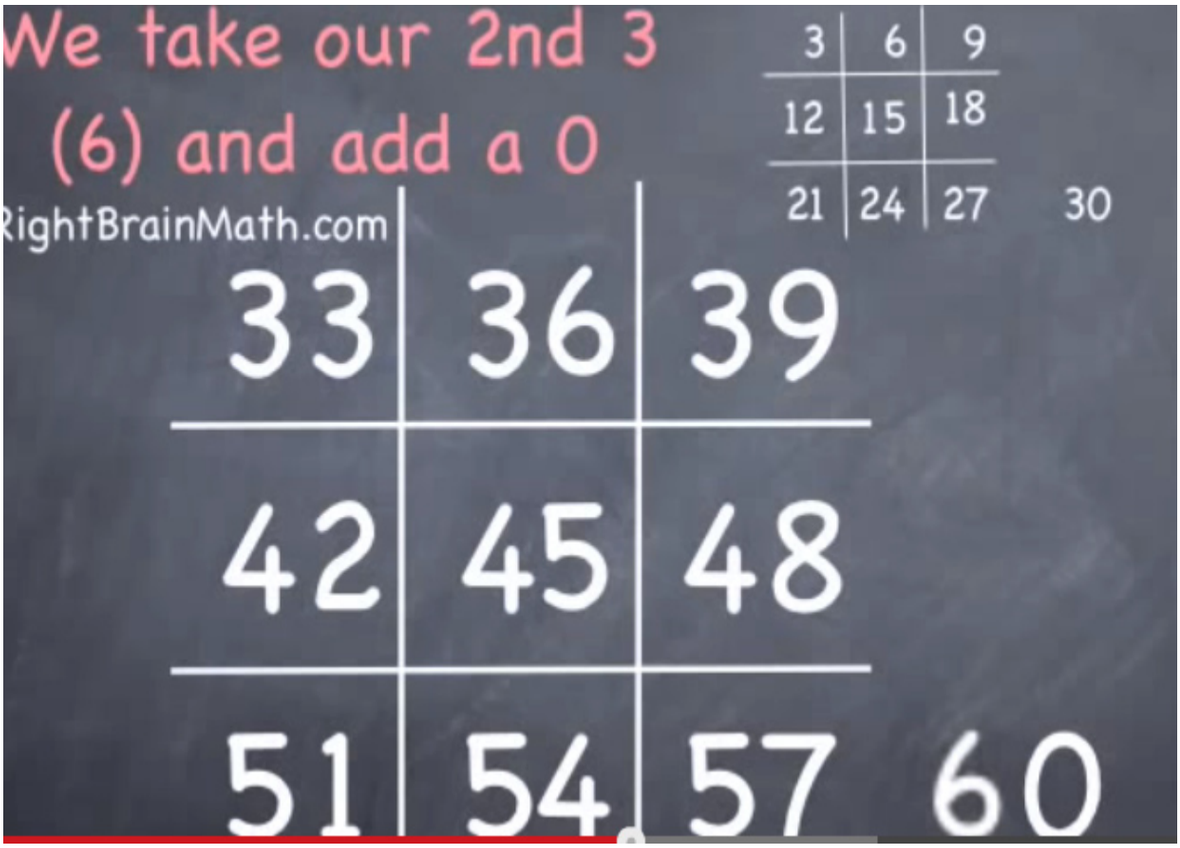

Put in numbers 1-9
starting in lower left
3
4
5
2
6
7
8
1
9

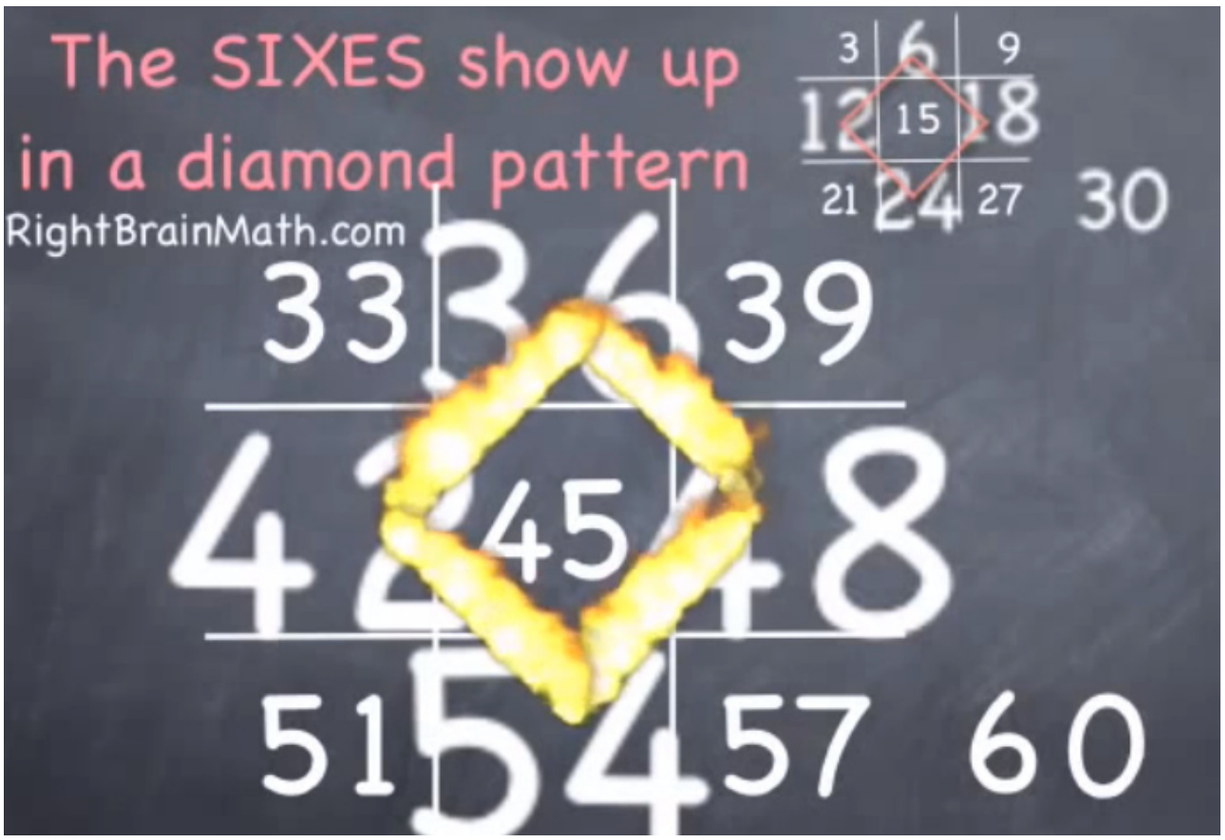

Now we will add 1's in front of the second row
03 06 09
2 5 8
1 4 7

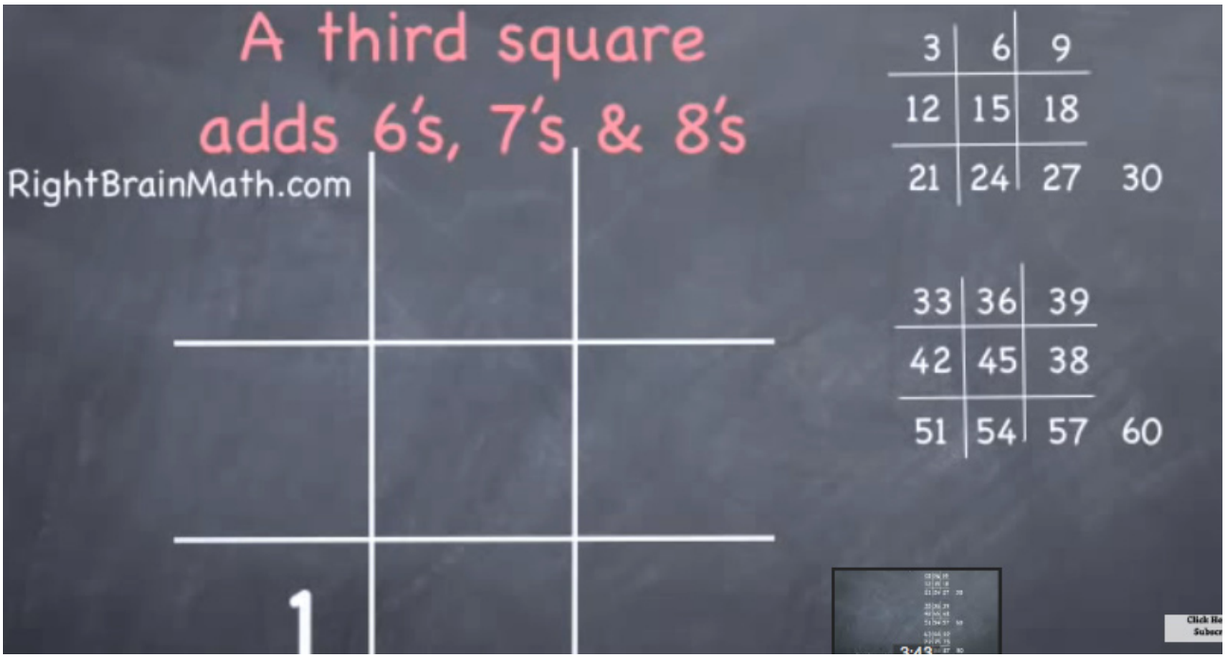

Next we will add 2's in front of the third row
03 06 09
12 15 18
21 24 27

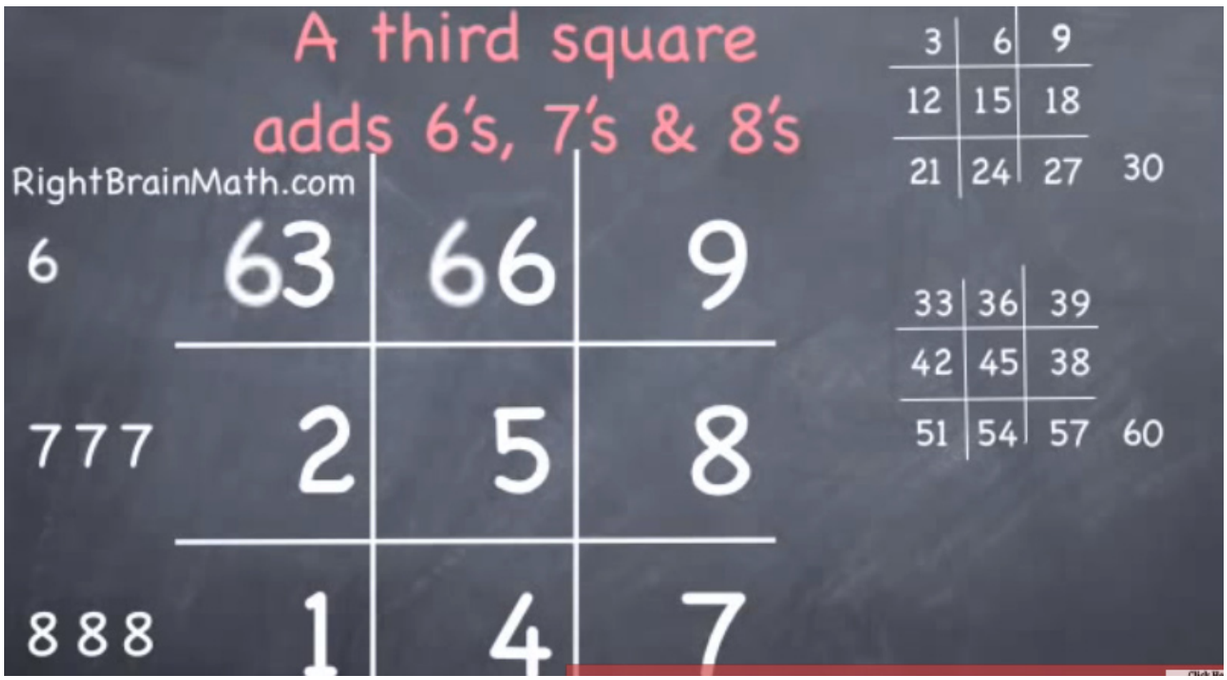

Start again with 1-9
RightBrainMath.com
03 06 09
12 15 18
21 24 27 30
3
2
1 4

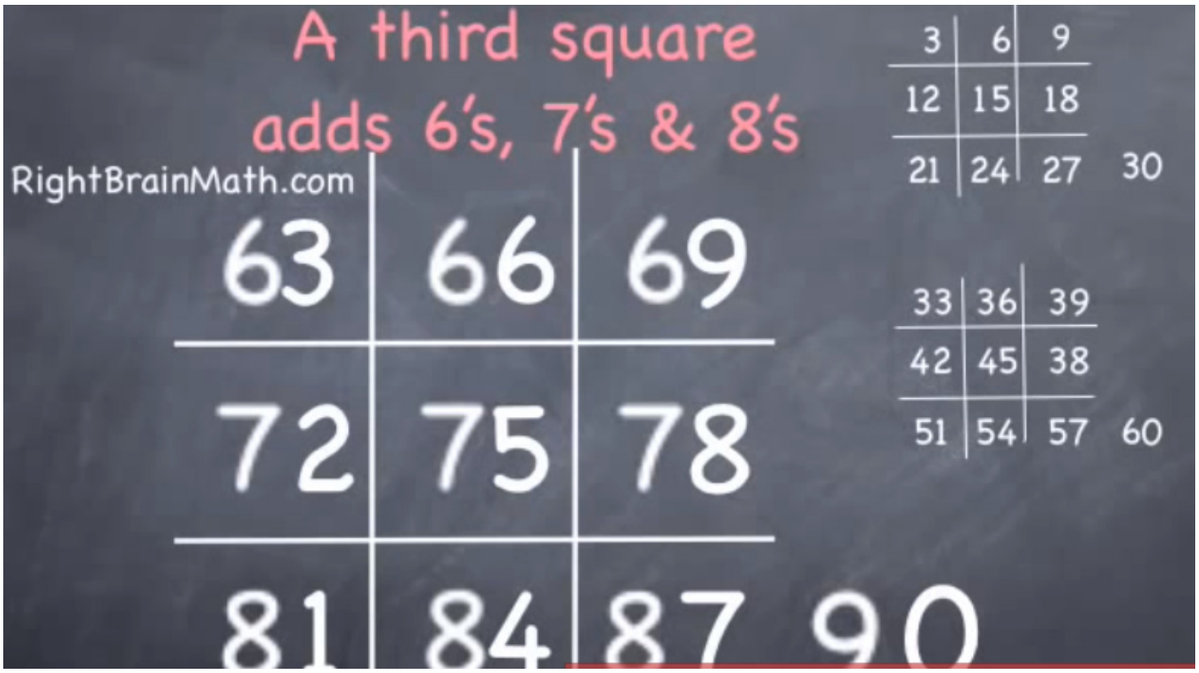

This time we add
333, 444, & 555
3 6 9
12 15 18
21 24 27 30
33 36 39
444 2 5 8
555 1 4 7

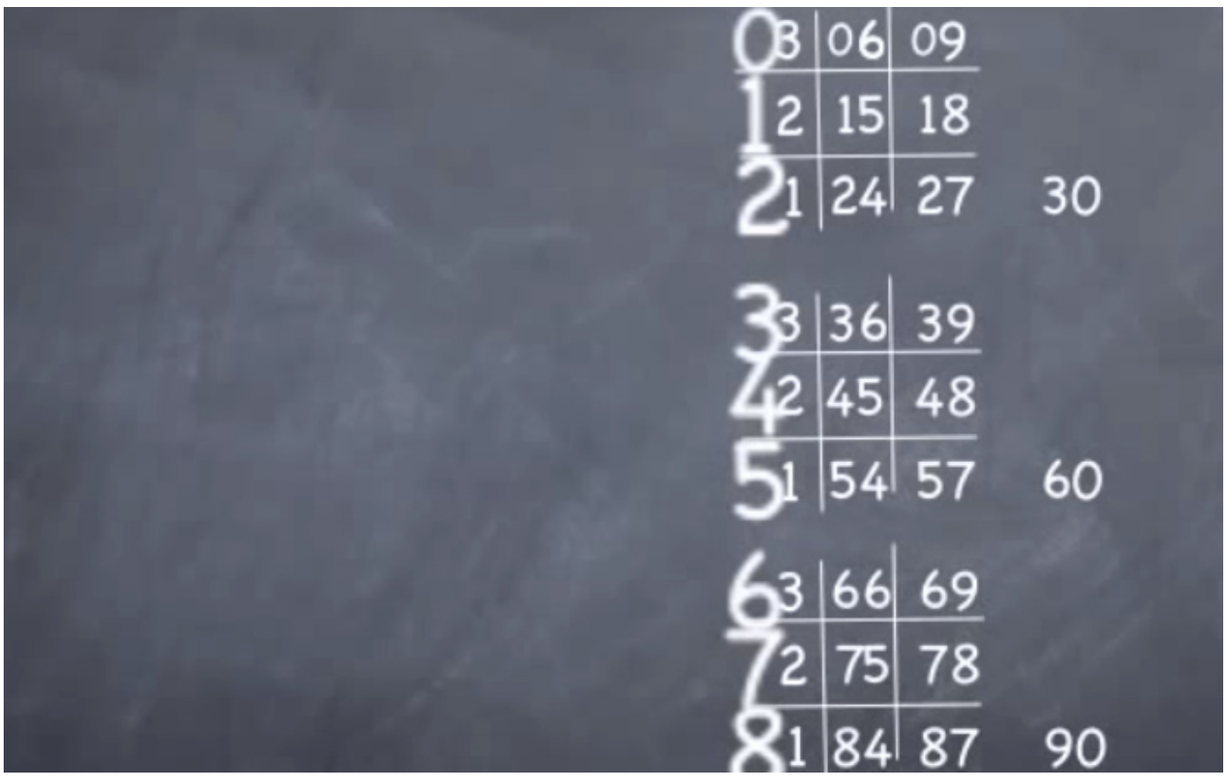

We take our 2nd 3
(6) and add a 0
RightBrainMath.com
3 6 9
12 15 18
21 24 27 30
33 36 39
42 45 48
51 54 57 60

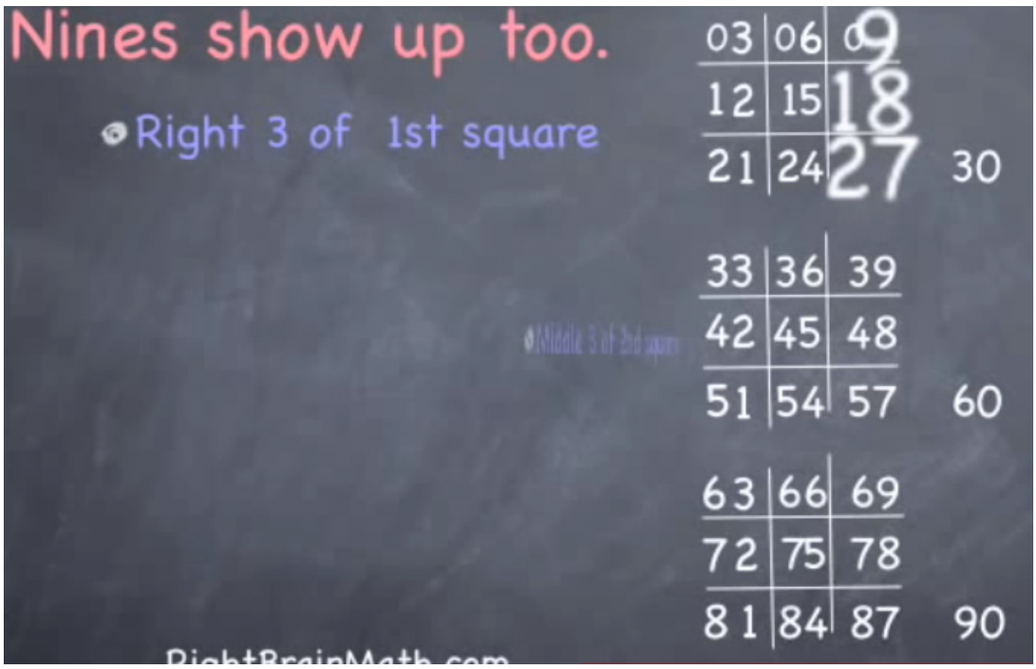

The SIXES show up
in a diamond pattern
RightBrainMath.com
3 6 9
12 15 18
21 24 27 30
33 36 39
42 45 48
51 54 57 60

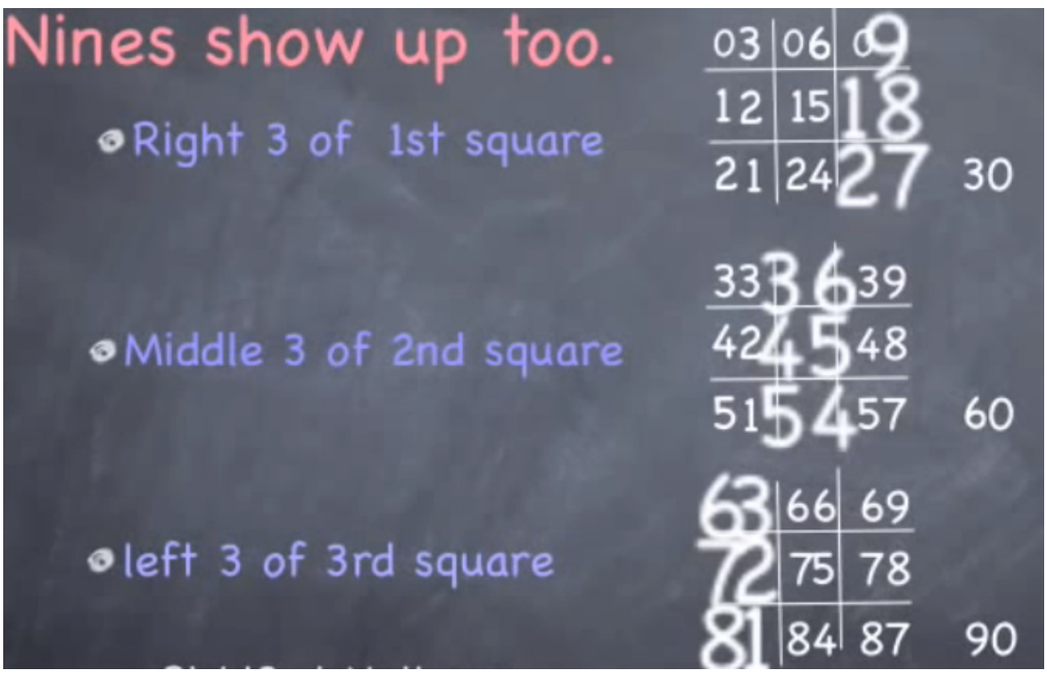

A third square
adds 6's, 7's & 8's
RightBrainMath.com
1
3 6 9
12 15 18
21 24 27 30
33 36 39
42 45 38
51 54 57 60

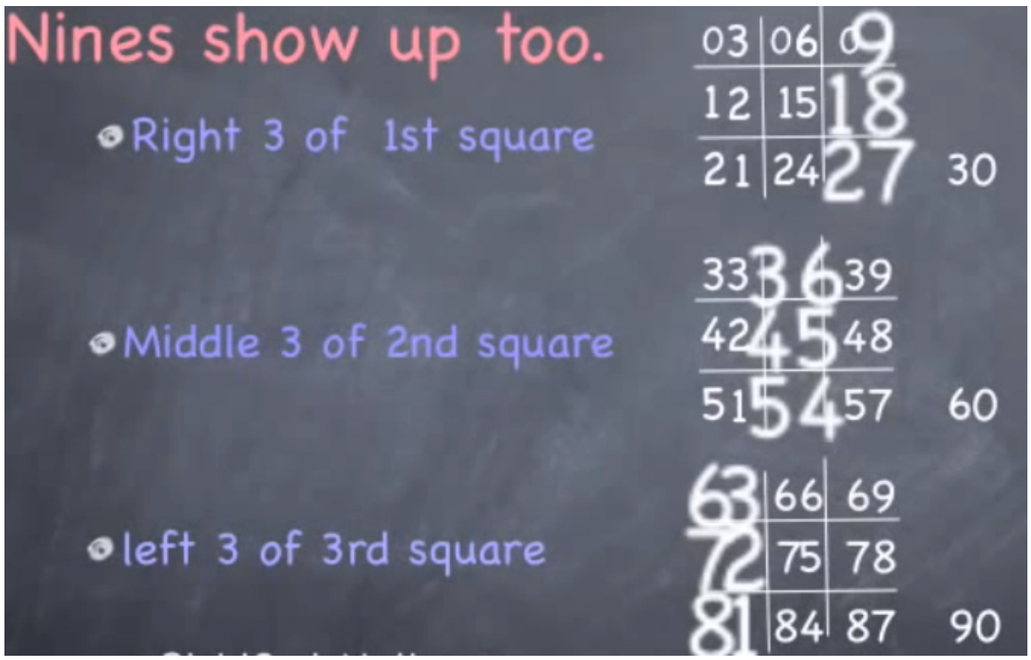

A third square
adds 6's, 7's & 8's
RightBrainMath.com
6
63 66 9
777
2 5 8
888
1 4 7
3 6 9
12 15 18
21 24 27 30
33 36 39
42 45 38
51 54 57 60

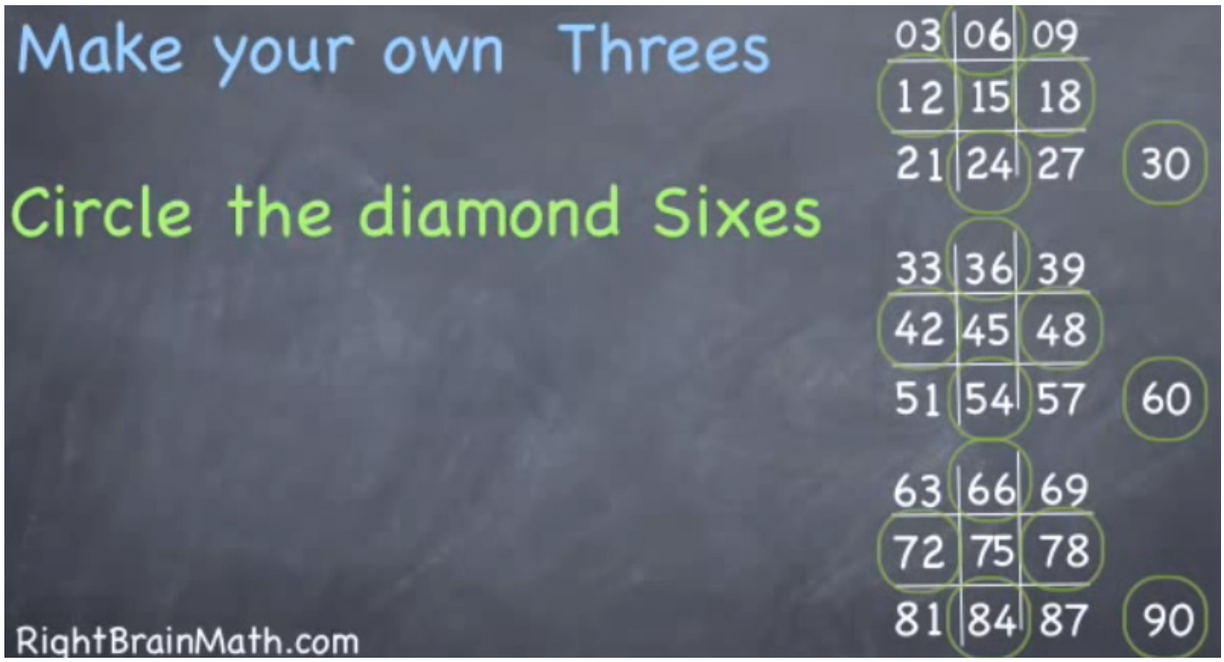

A third square
adds 6's, 7's & 8's
RightBrainMath.com
63 66 69
72 75 78
81 84 87 90
3 6 9
12 15 18
21 24 27 30
33 36 39
42 45 38
51 54 57 60

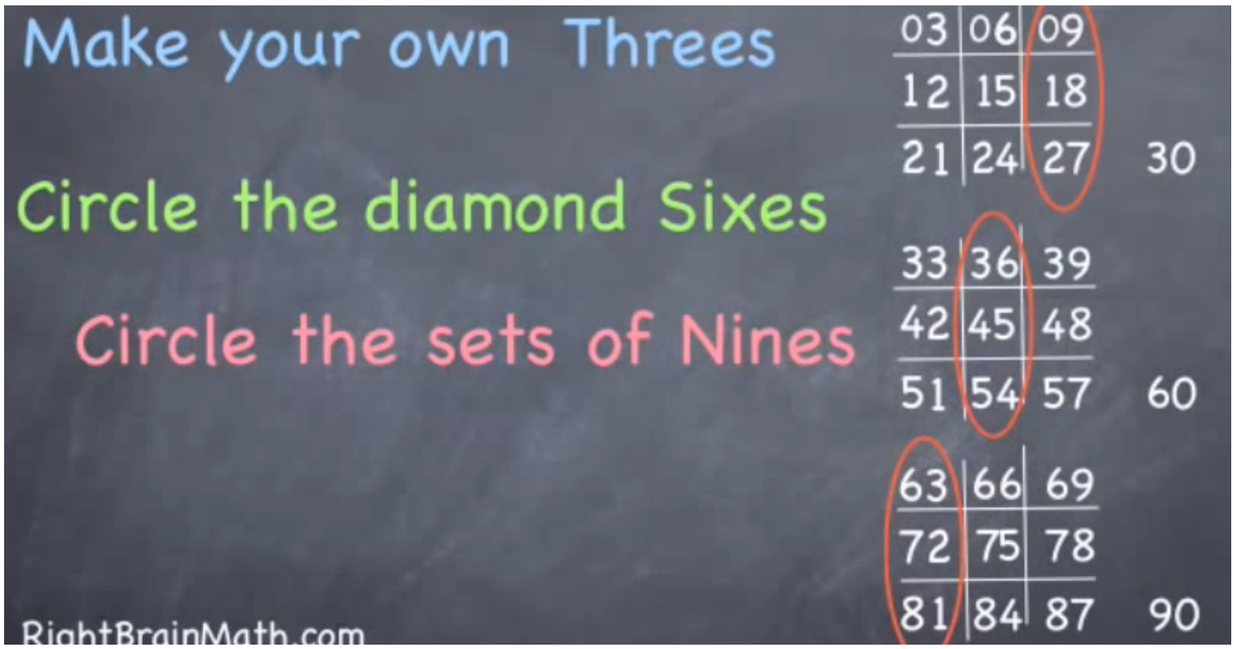

03 06 09
12 15 18
21 24 27 30
33 36 39
42 45 48
51 54 57 60
63 66 69
72 75 78
81 84 87 90


Nines show up too.
Right 3 of 1st square
03 06 09
12 15 18
21 24 27 30
33 36 39
42 45 48
51 54 57 60
63 66 69
72 75 78
81 84 87 90

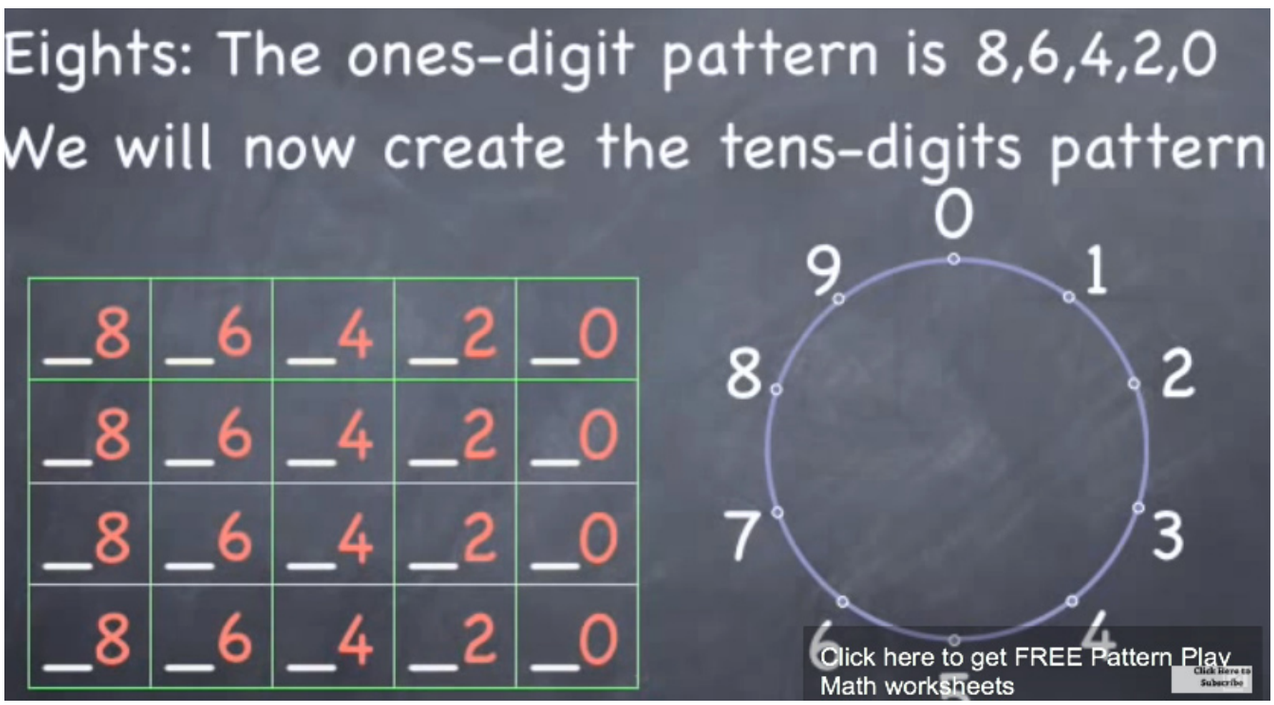

Nines show up too.
Right 3 of 1st square
Middle 3 of 2nd square
left 3 of 3rd square
03 06 09
12 15 18
21 24 27 30
33 36 39
42 45 48
51 54 57 60
63 66 69
72 75 78
81 84 87 90

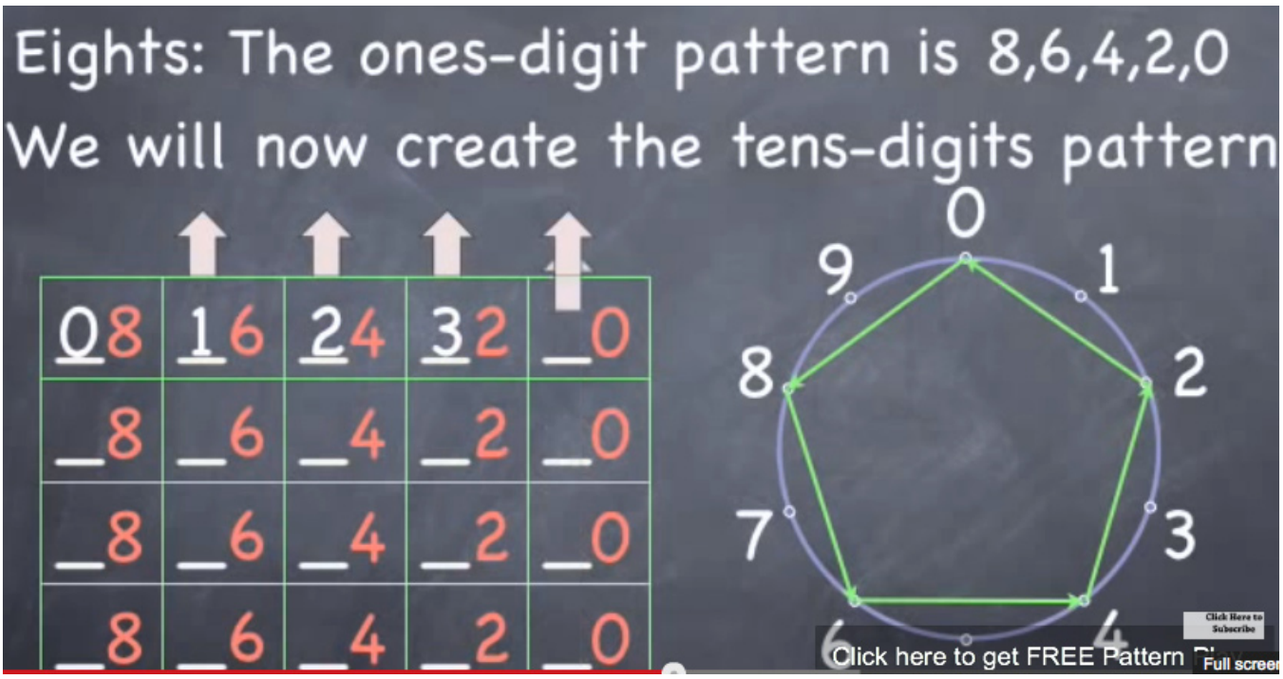

Nines show up too.
Right 3 of 1st square
Middle 3 of 2nd square
left 3 of 3rd square
03 06 09
12 15 18
21 24 27 30
33 36 39
42 45 48
51 54 57 60
63 66 69
72 75 78
81 84 87 90

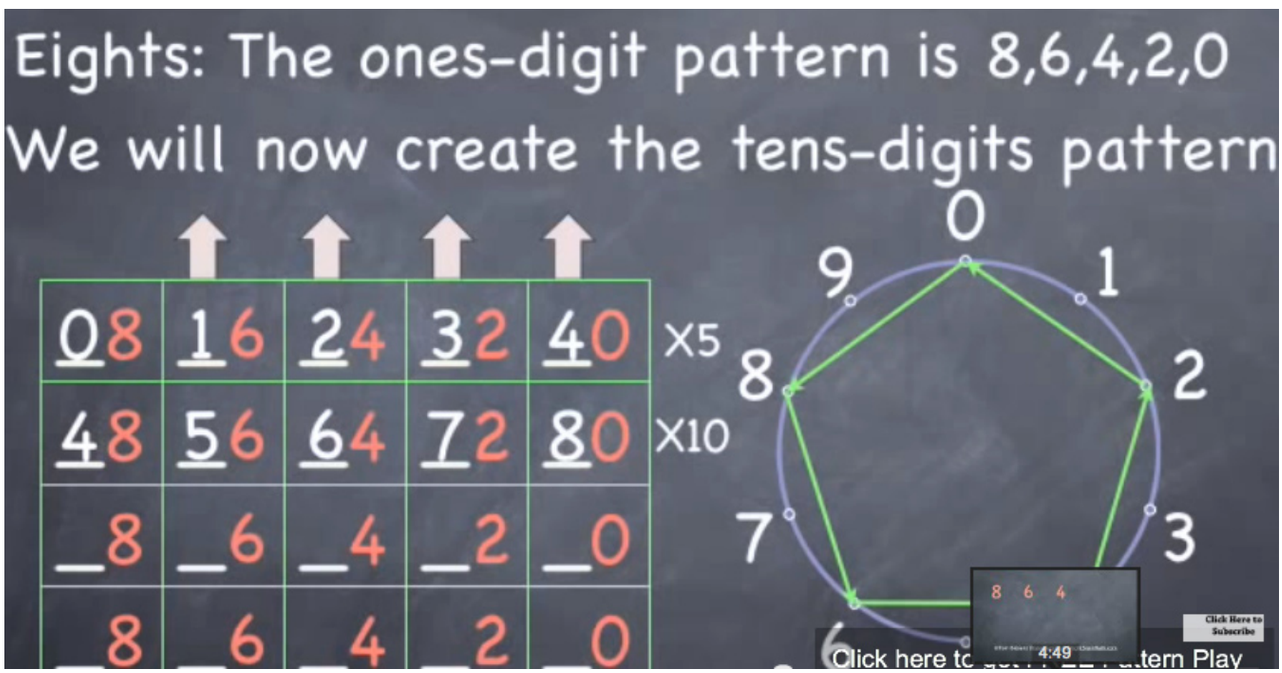

Make your own Threes
Circle the diamond Sixes
RightBrainMath.com
03 06 09
12 15 18
21 24 27 30
33 36 39
42 45 48
51 54 57 60
63 66 69
72 75 78
81 84 87 90

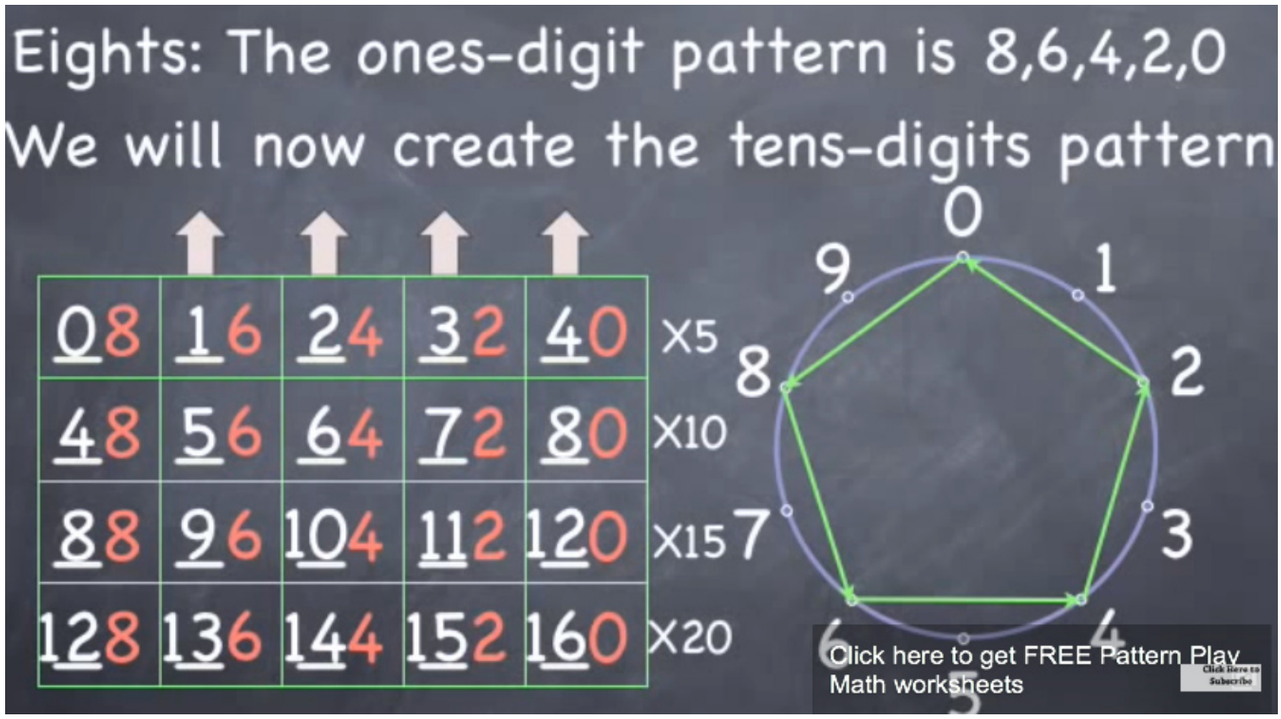


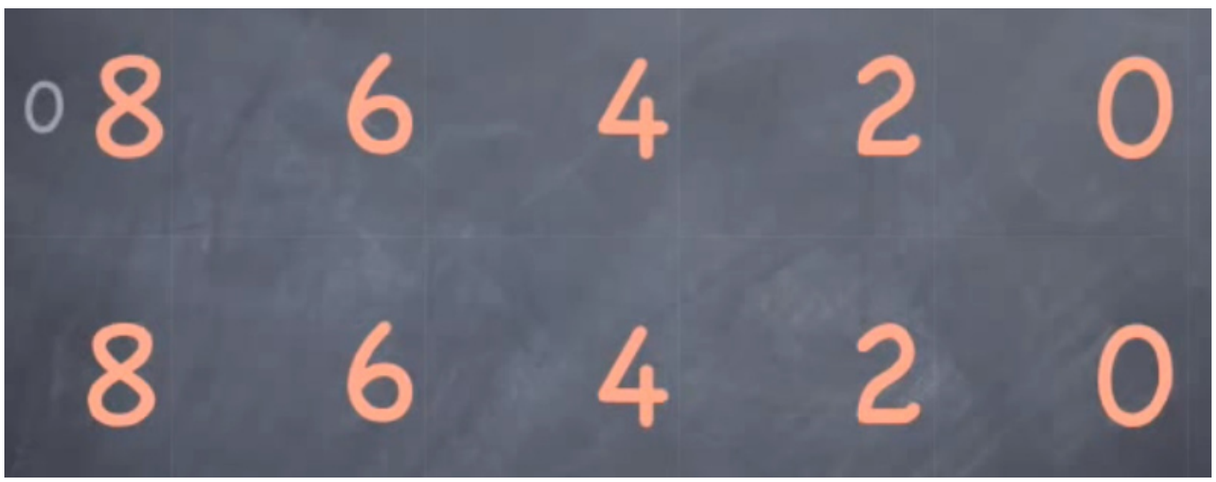
Eights on a Number Wheel w/ Table

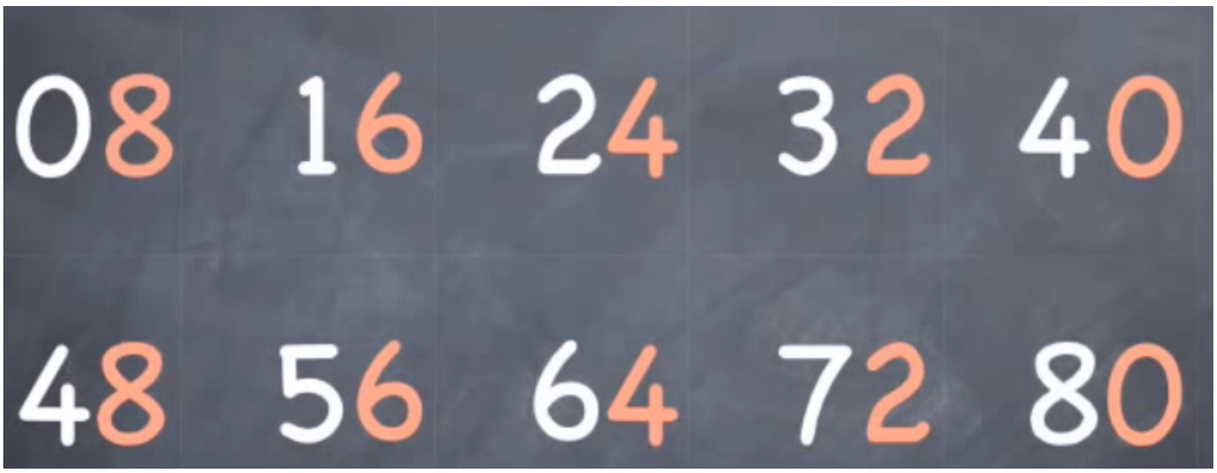



Eights: The ones-digit pattern is 8,6,4,2,0
We will now create the tens-digits pattern
08 16 24 32 _0
_8 _6 _4 _2 _0
_8 _6 _4 _2 _0
_8 _6 _4 _2 _0
0
1
2
3
4
6
7
8
9
Click here to get FREE Pattern
Full screen

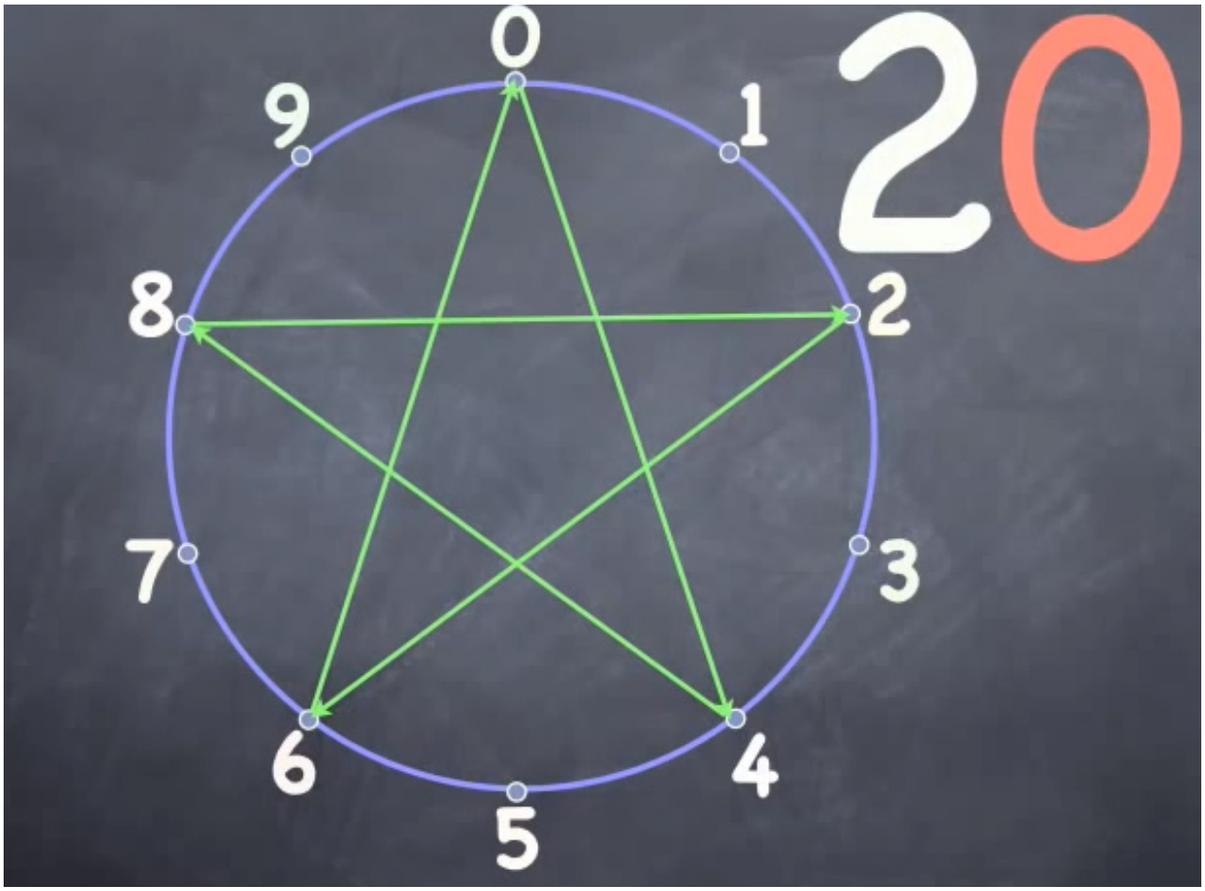

Eights: The ones-digit pattern is 8,6,4,2,0
We will now create the tens-digits pattern
08 16 24 32 40
48 56 64 72 80
_8 _6 _4 _2 _0
_8 _6 _4 _2 _0
X5
X10
0
1
2
3
6
7
8
9
8 6 4
4:49
Click here to

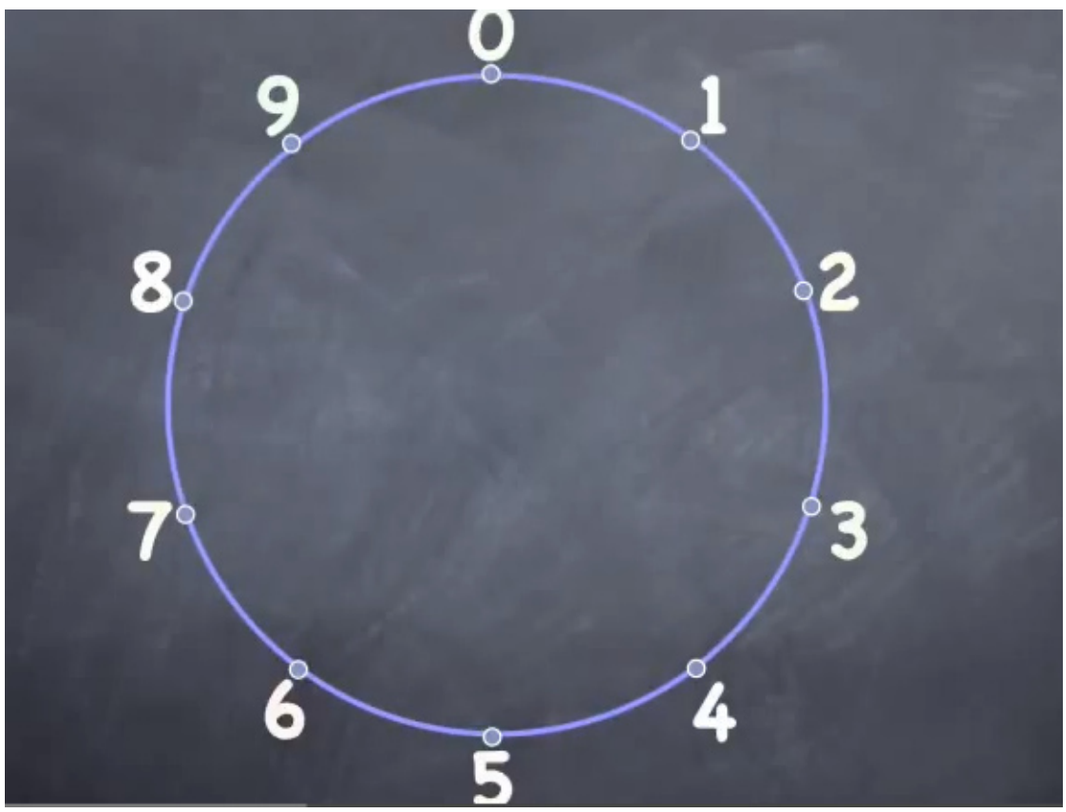

Eights: The ones-digit pattern is 8,6,4,2,0
We will now create the tens-digits pattern
08 16 24 32 40 X5
48 56 64 72 80 X10
88 96 104 112 120 X15
128 136 144 152 160 X20
0
1
2
3
4
5
6
7
8
9
Click here to get FREE Pattern Play Math worksheets

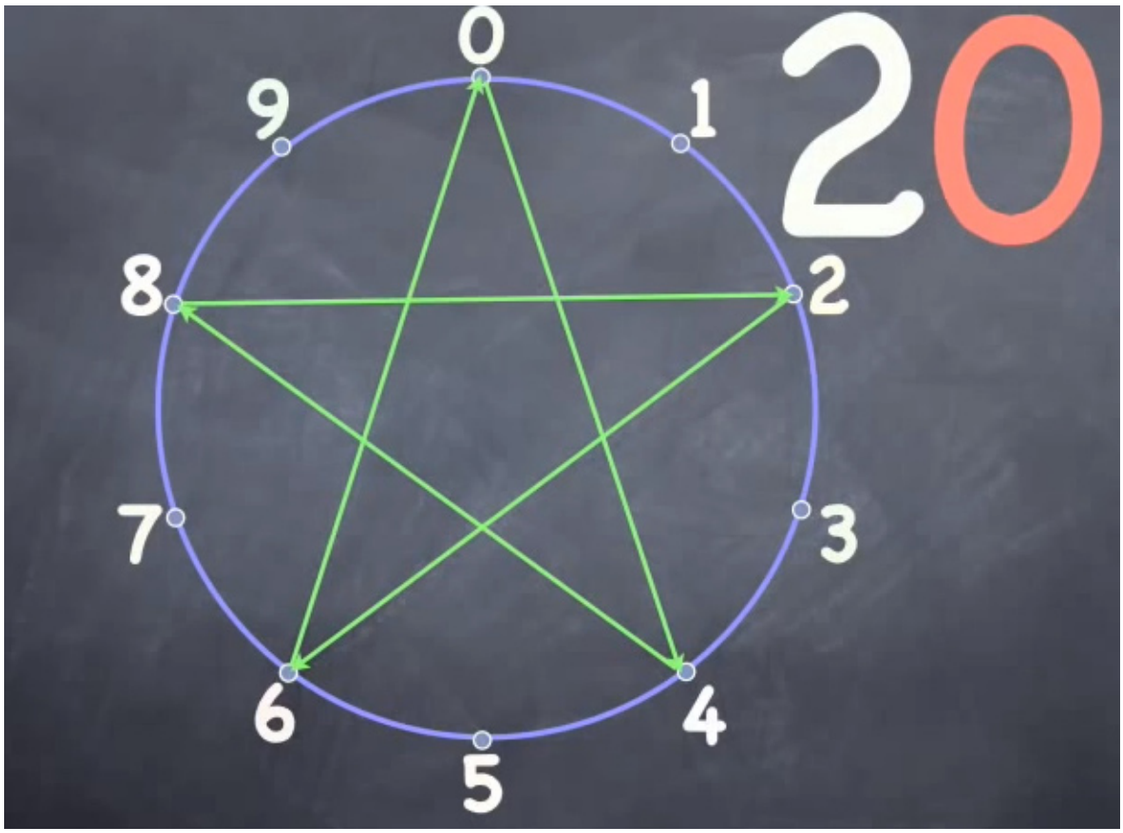

0 8 6 4 2 0
8 6 4 2 0

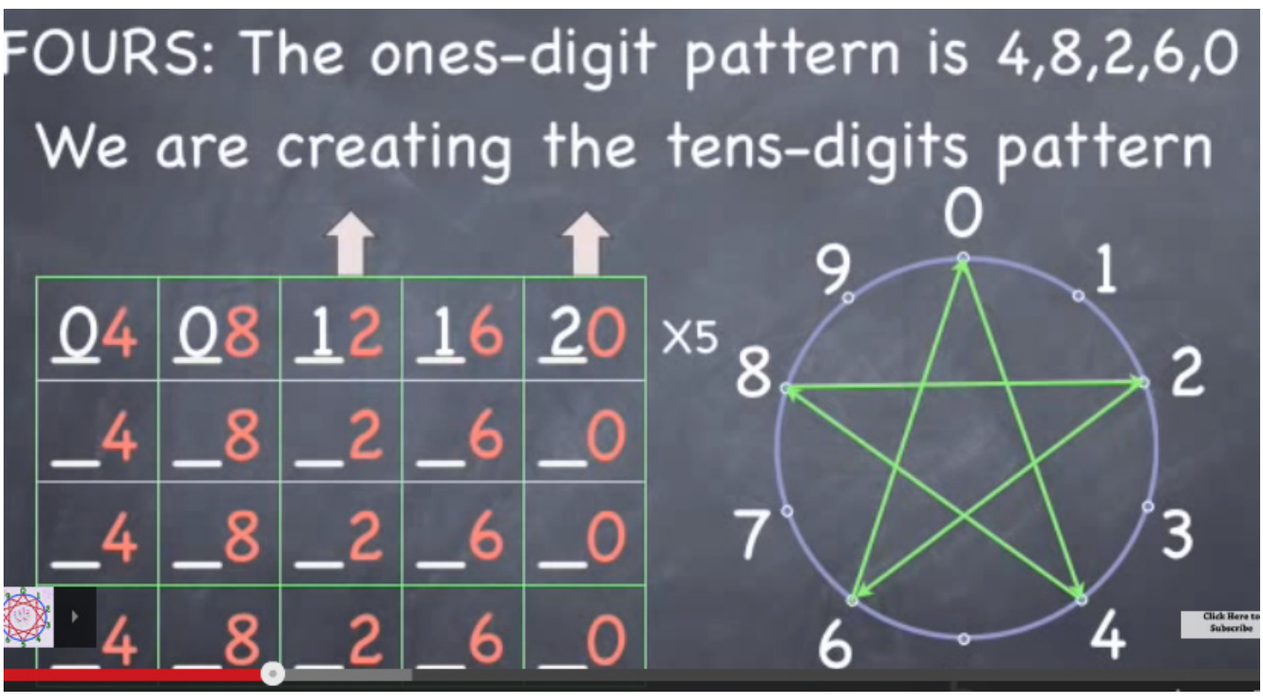

08 16 24 32 40
48 56 64 72 80

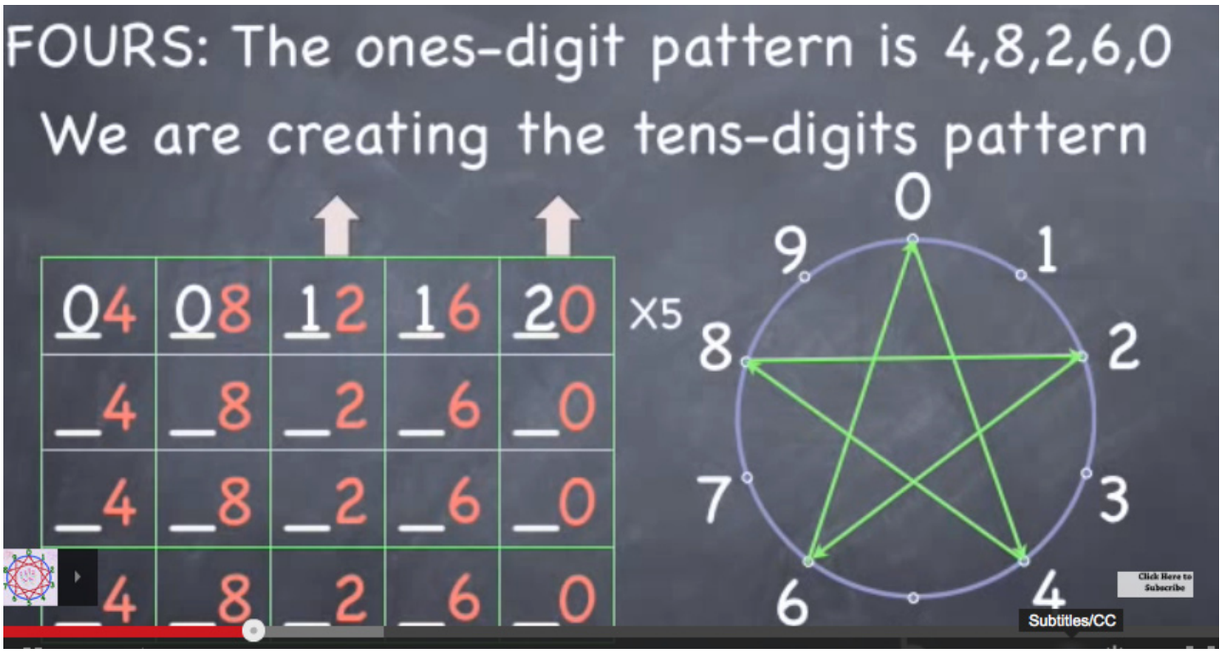
Fours on a Number Wheel

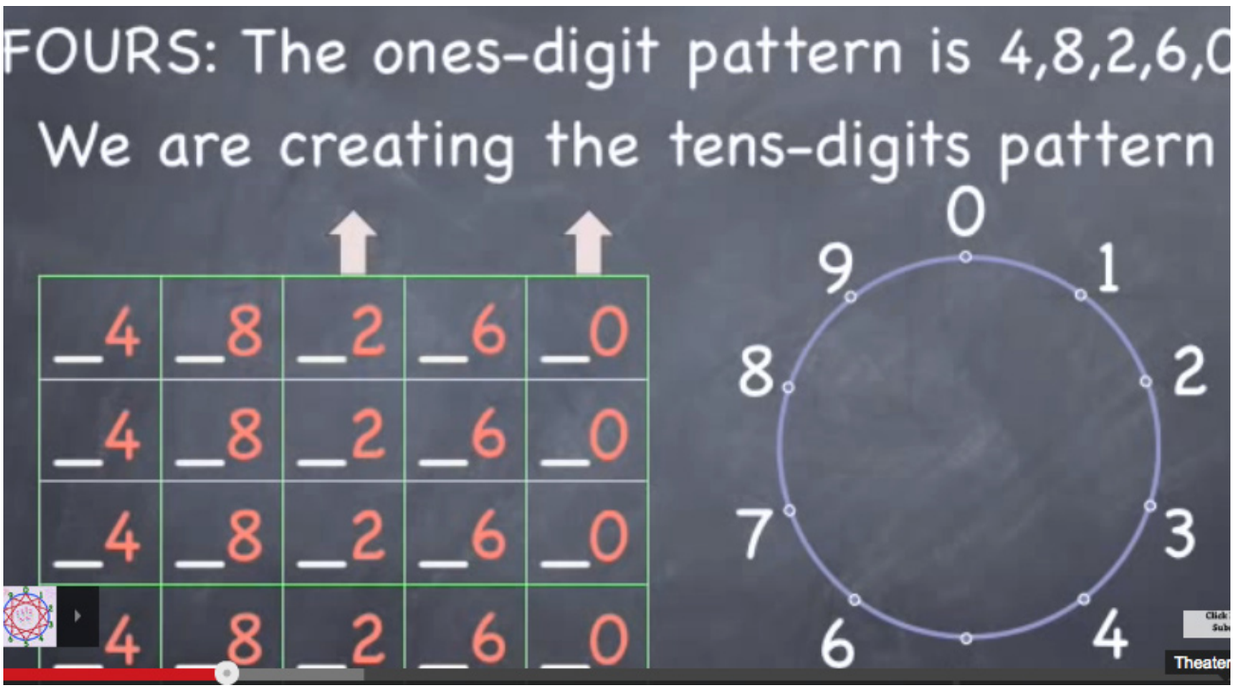


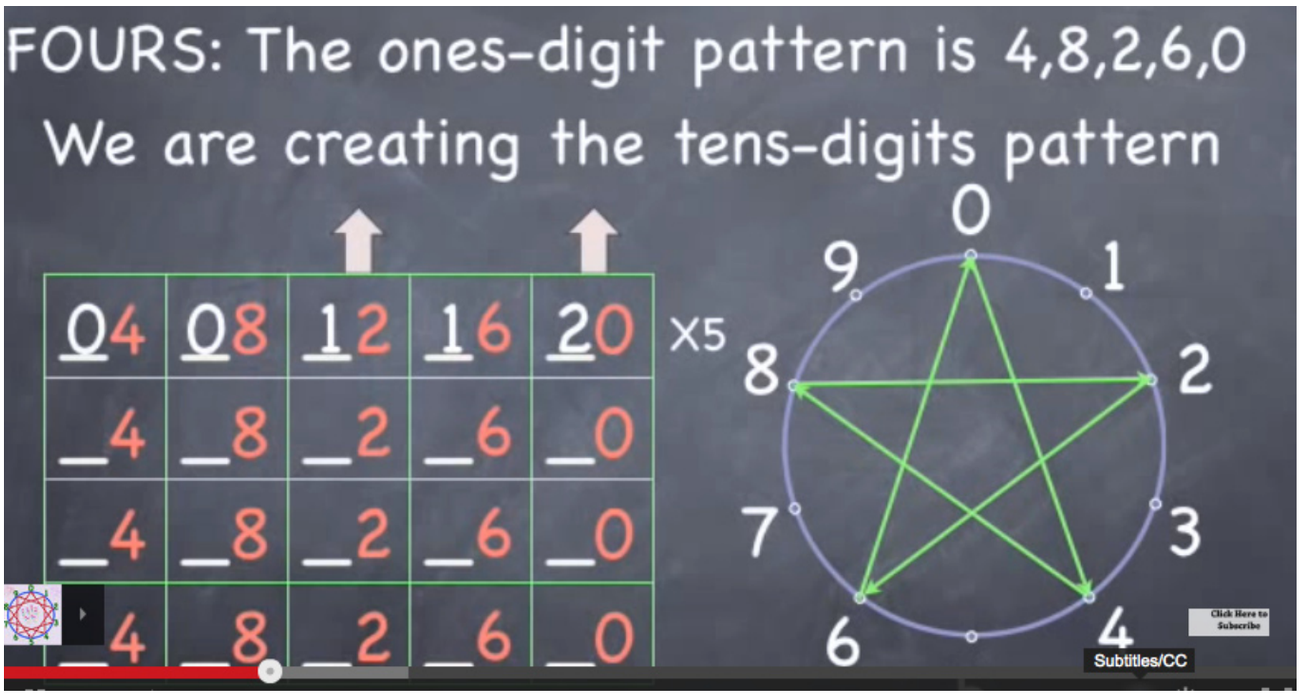


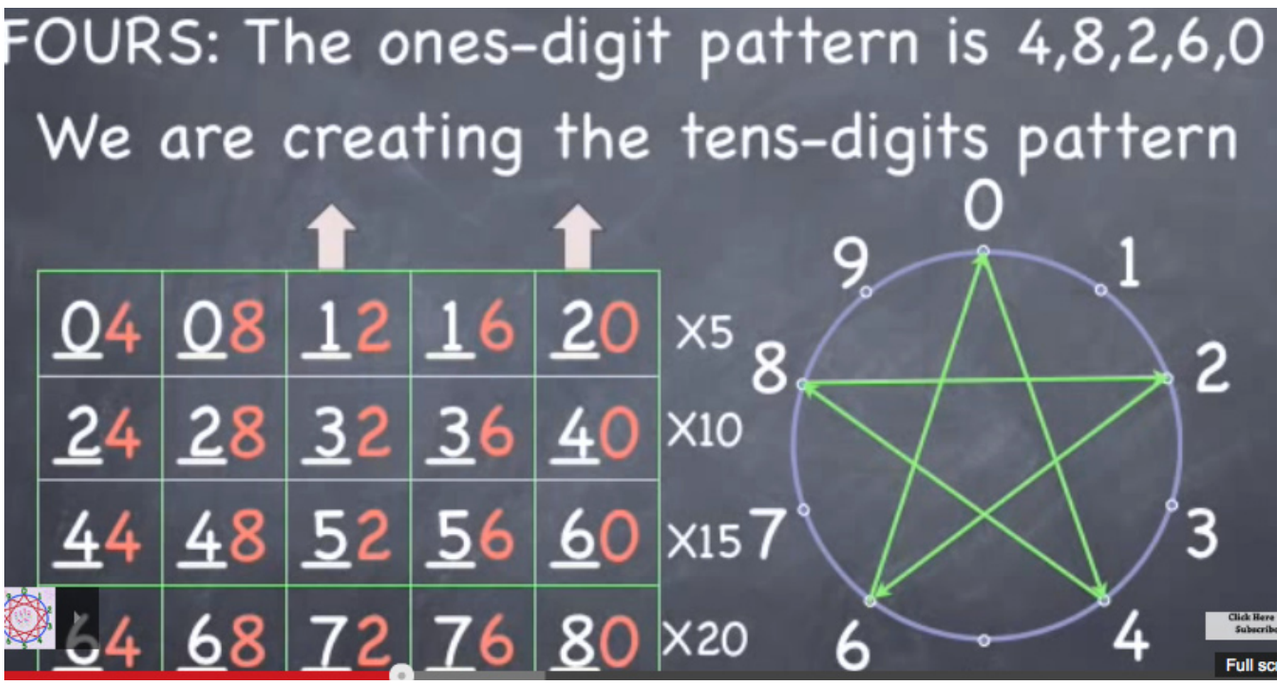

0
1
2
3
4
5
6
7
8
9
20

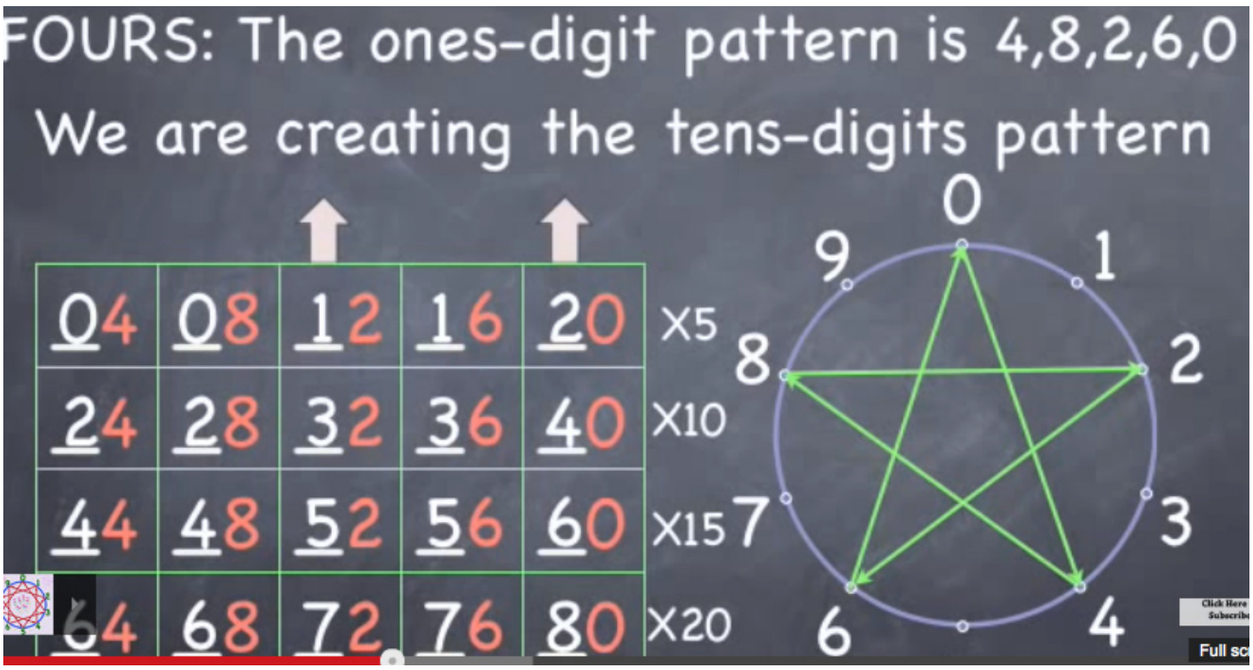

FOURS: The ones-digit pattern is 4,8,2,6,0
We are creating the tens-digits pattern
04 08 12 16 20
X5
_4 _8 _2 _6 _0
_4 _8 _2 _6 _0
_4 _8 _2 _6 _0
0
1
2
3
4
6
7
8
9

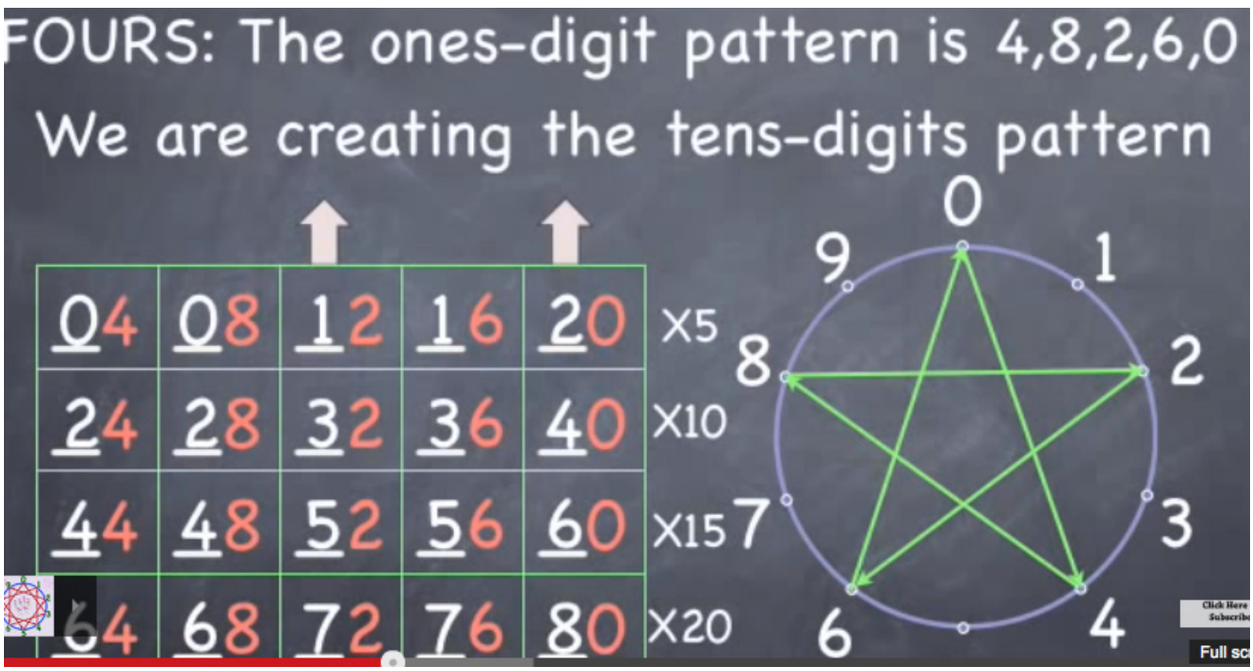

FOURS: The ones-digit pattern is 4,8,2,6,0
We are creating the tens-digits pattern
04 08 12 16 20
X5
_4 _8 _2 _6 _0
_4 _8 _2 _6 _0
_4 _8 _2 _6 _0
0 1 2 3 4 6 7 8 9
Click Here to Subscribe
Subtitles/CC

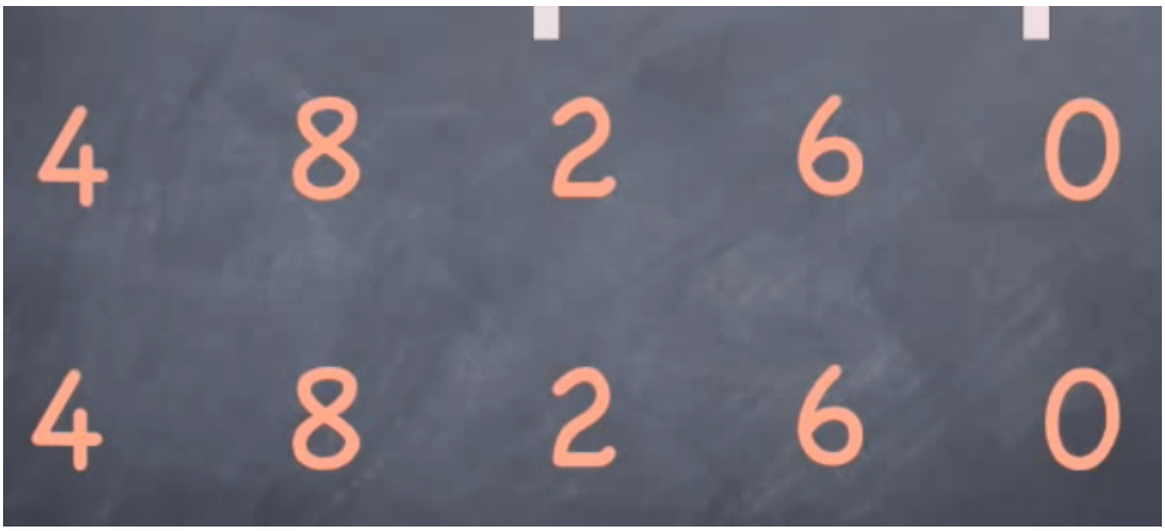

FOURS: The ones-digit pattern is 4,8,2,6,0
We are creating the tens-digits pattern
_4 _8 _2 _6 _0
_4 _8 _2 _6 _0
_4 _8 _2 _6 _0
0 1 2 3 4 6 7 8 9
Theater

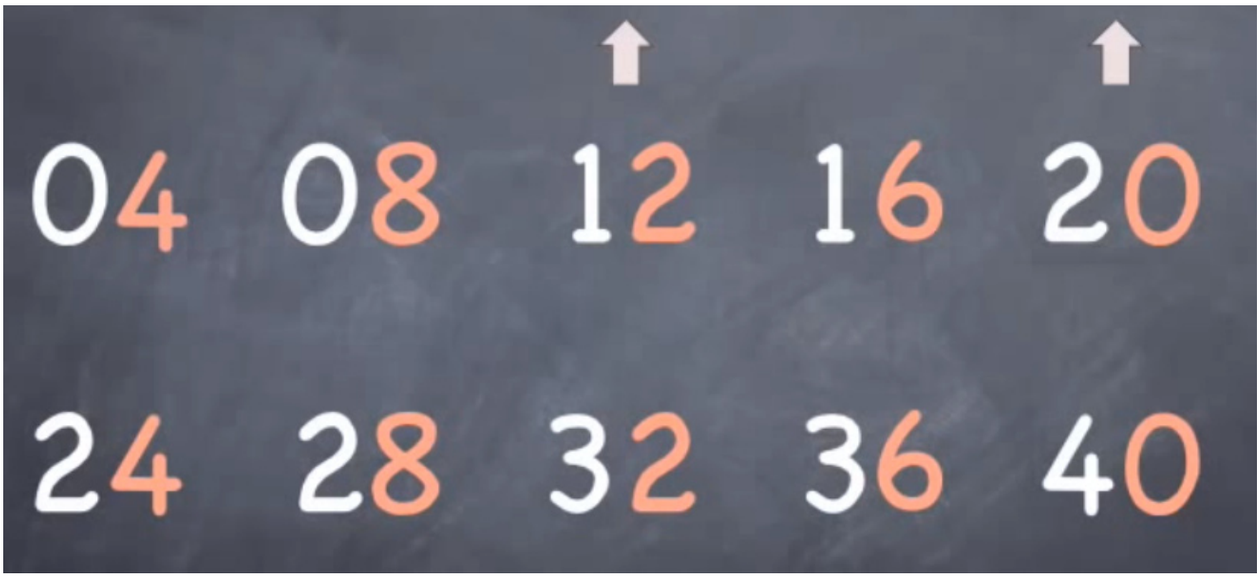

FOURS: The ones-digit pattern is 4,8,2,6,0
We are creating the tens-digits pattern
04 08 12 16 20 X5
_4 _8 _2 _6 _0
_4 _8 _2 _6 _0
_4 _8 _2 _6 _0
0 1 2 3 4 6 7 8 9
Subtitles/CC


FOURS: The ones-digit pattern is 4,8,2,6,0
We are creating the tens-digits pattern
04 08 12 16 20 X5
24 28 32 36 40 X10
44 48 52 56 60 X15
64 68 72 76 80 X20
0 1 2 3 4 6 7 8 9

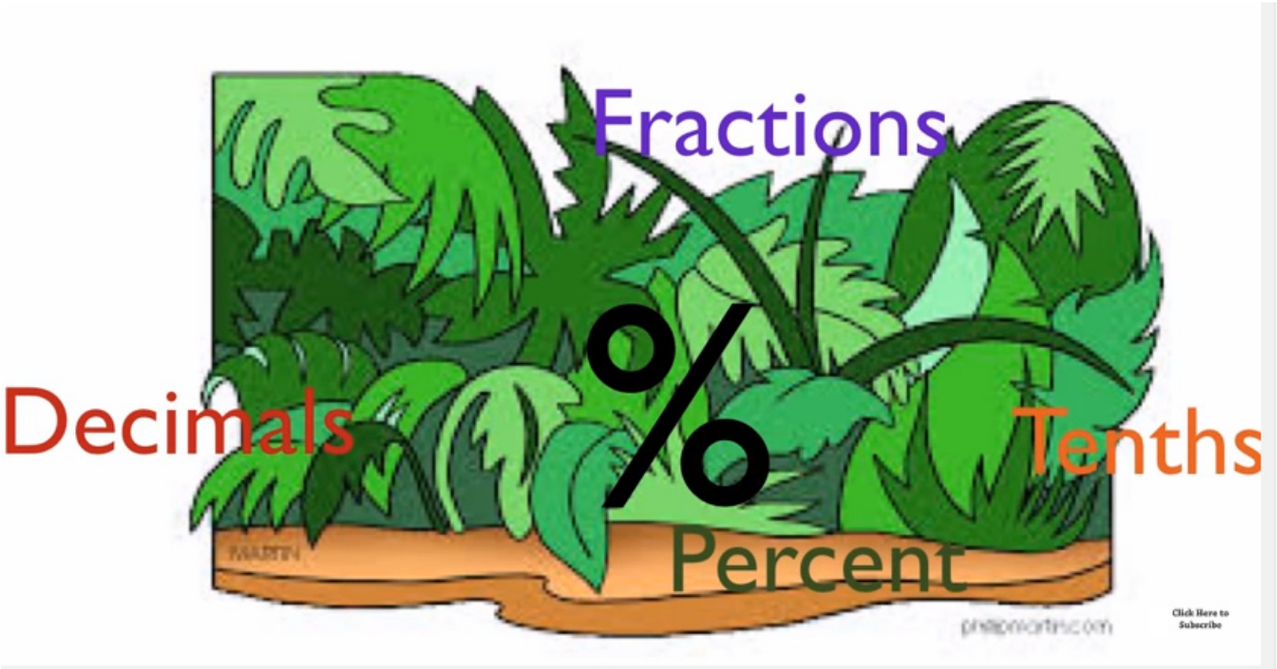

FOURS: The ones-digit pattern is 4,8,2,6,0
We are creating the tens-digits pattern
04 08 12 16 20 X5
24 28 32 36 40 X10
44 48 52 56 60 X15
64 68 72 76 80 X20
0
1
2
3
4
6
7
8
9

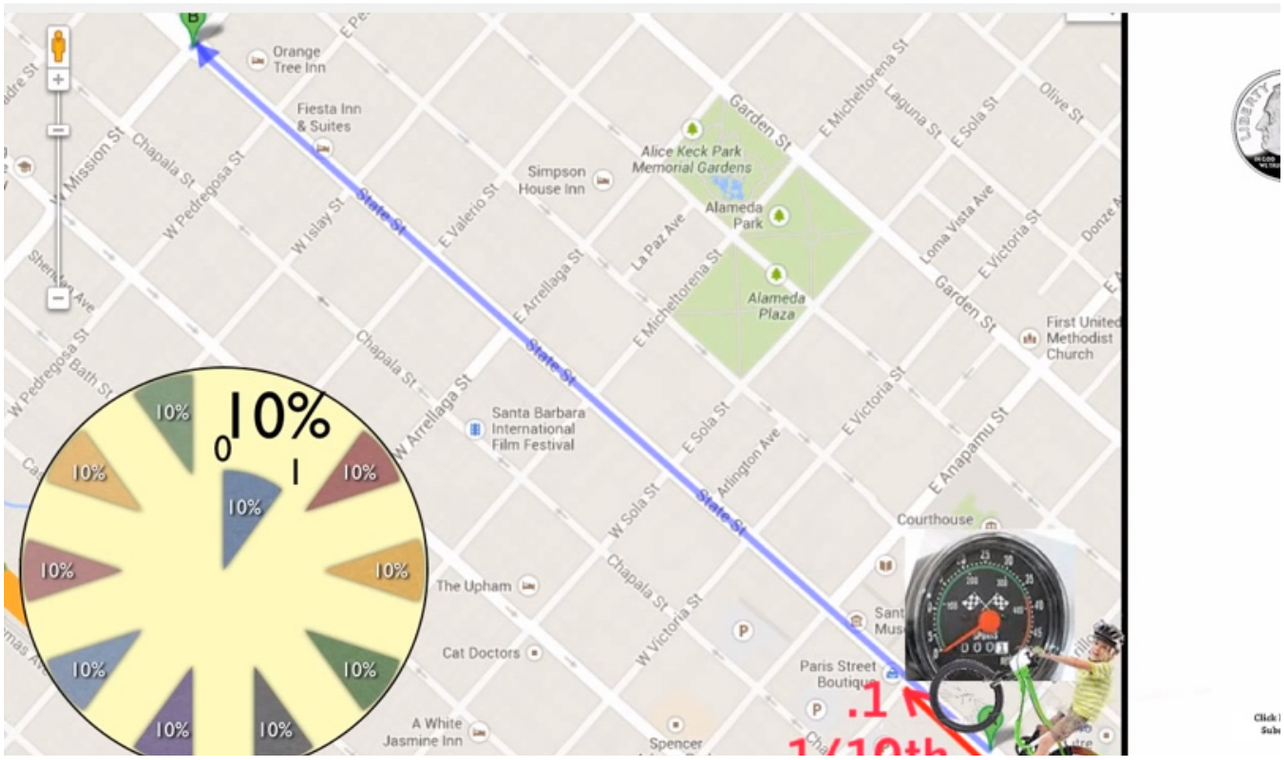

FOURS: The ones-digit pattern is 4,8,2,6,0
We are creating the tens-digits pattern
04 08 12 16 20 X5
24 28 32 36 40 X10
44 48 52 56 60 X15
64 68 72 76 80 X20
0
1
2
3
4
6
7
8
9


4 8 2 6 0
4 8 2 6 0

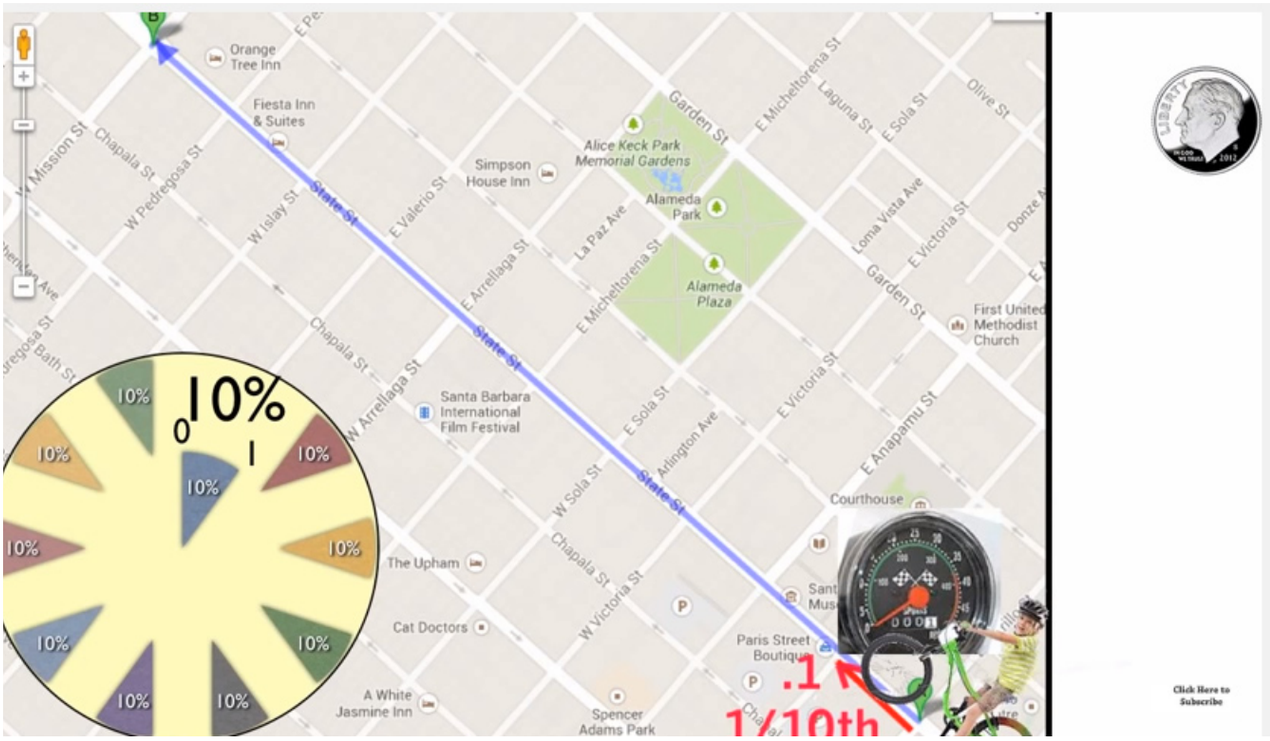

04 08 12 16 20
24 28 32 36 40

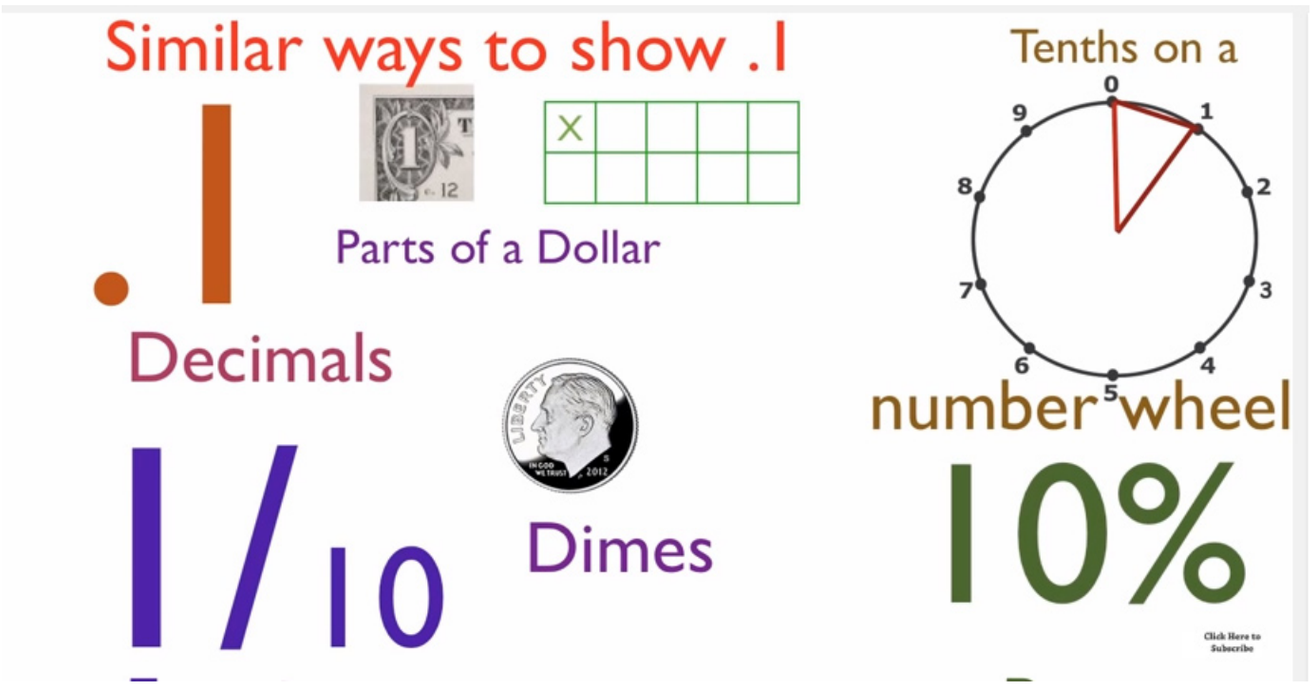
Fractions, Decimals, PerCent



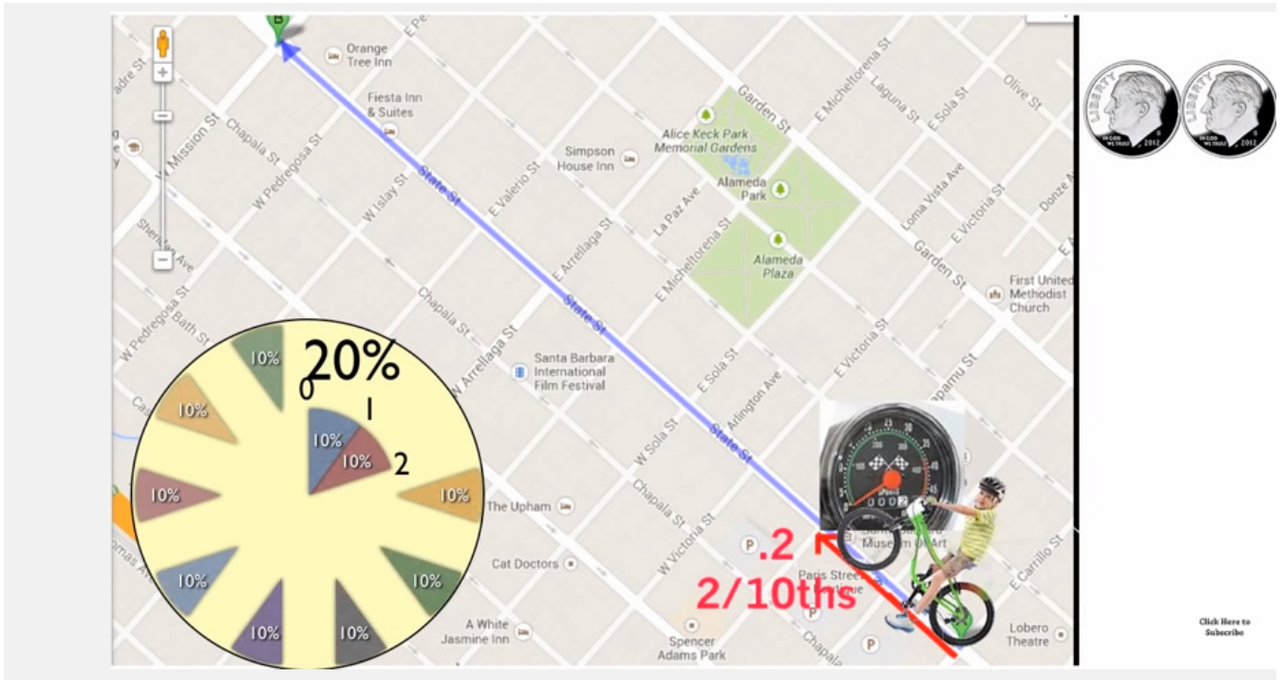


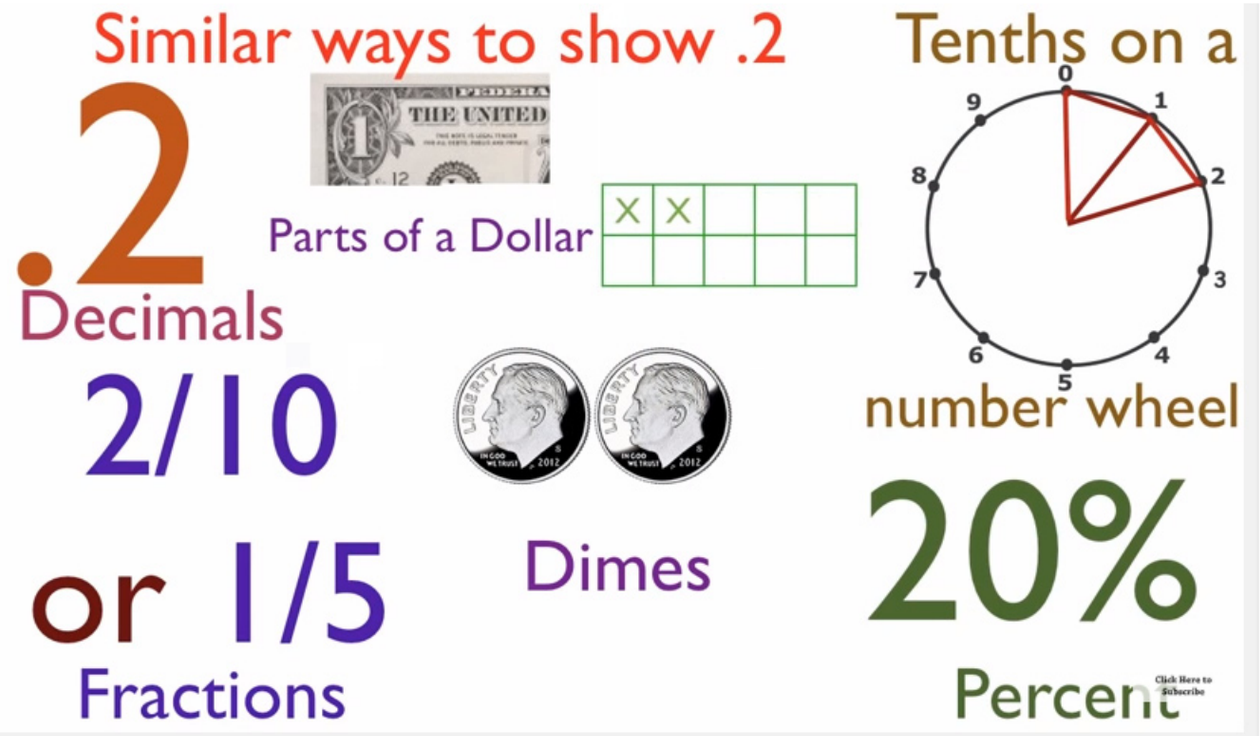
Ten PerCent, 1/10th, one dime



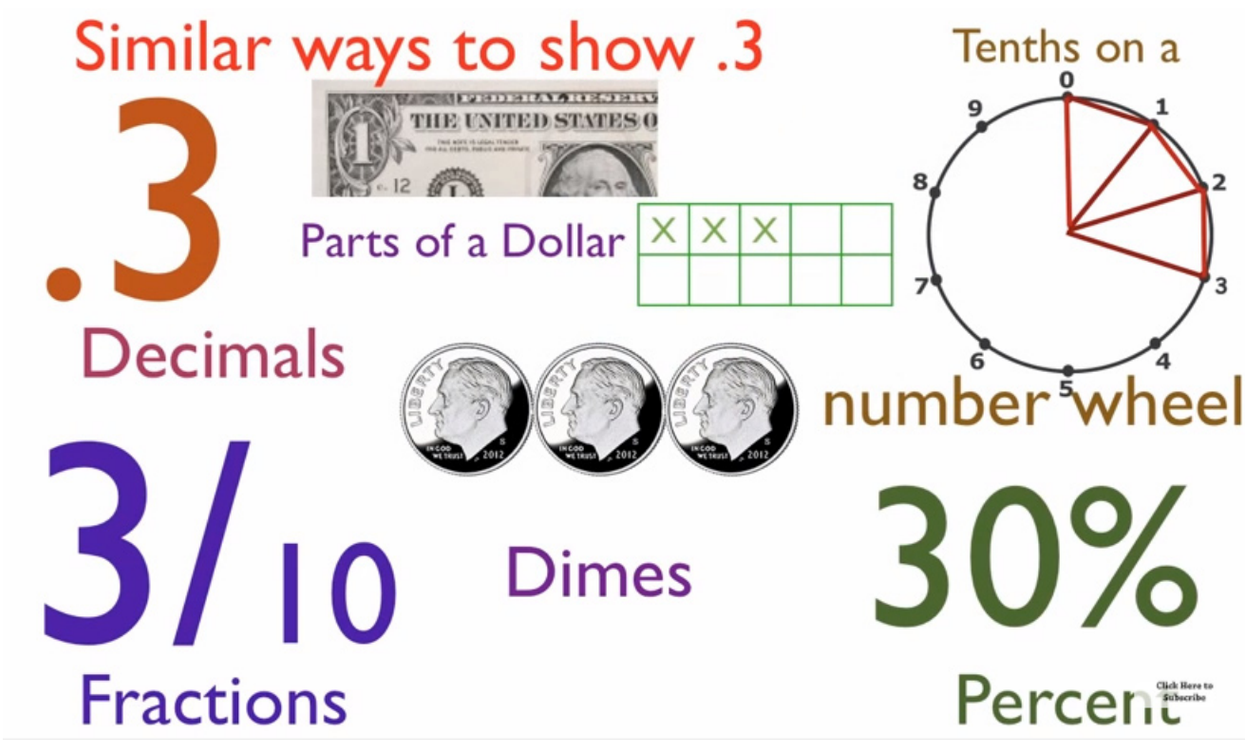


Twenty PerCent, 2/10th, two dimes

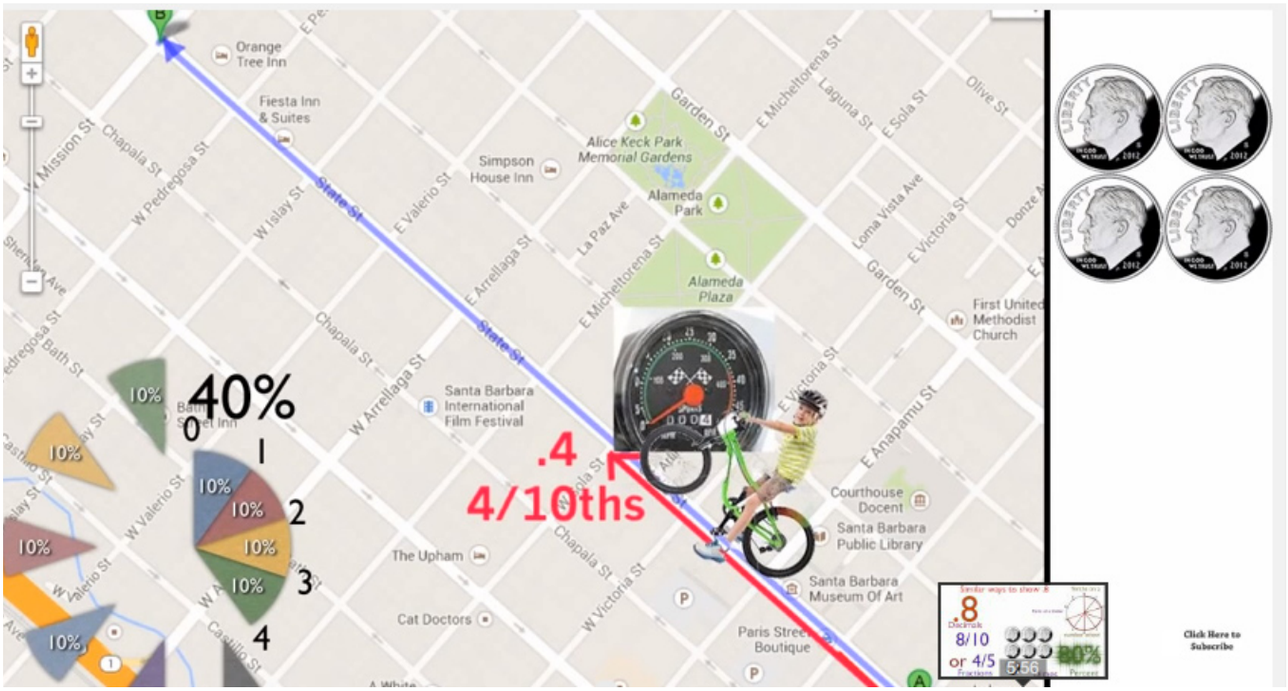


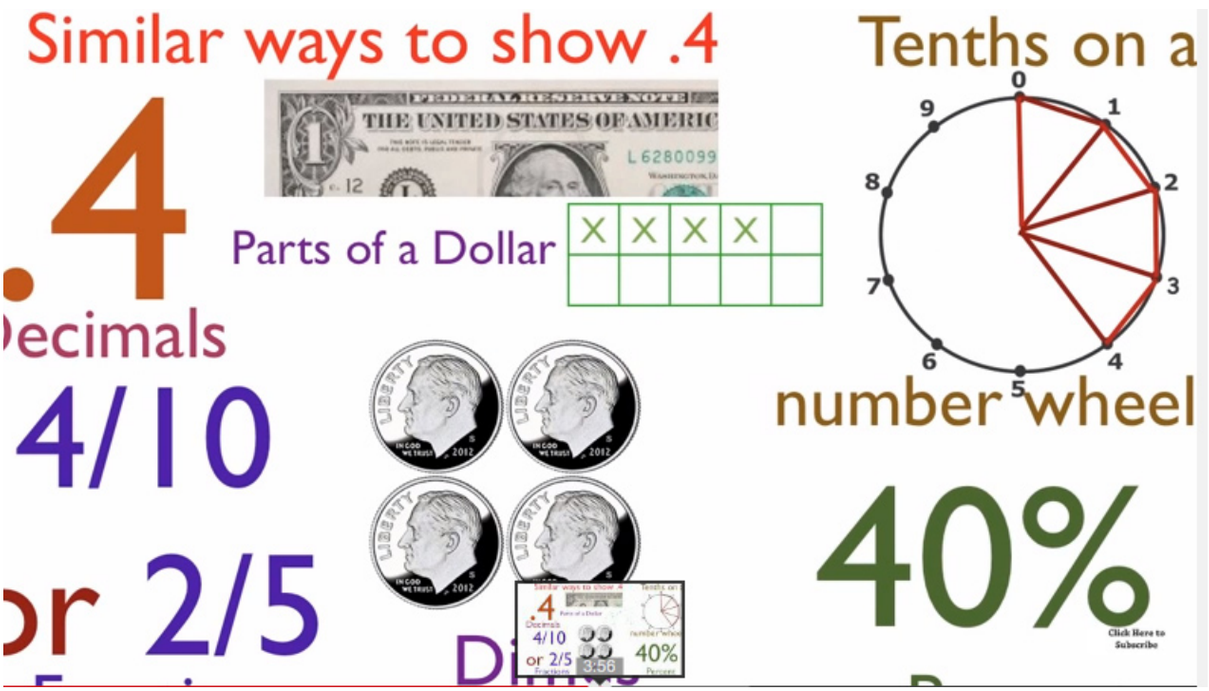


Thirty Per Cent,3/10th, three dimes



Forty Per Cent, 4/10th, Four dimes






Orange Tree Inn
Fiesta Inn & Suites
Simpson House Inn
Alice Keck Park Memorial Gardens
Alameda Park
State St
Garden St
Chapala St
W Mission St
W Pedregosa St
W Islay St
E Valerio St
E Arrellaga St
Loma Vista Ave
E Victoria St
First United Methodist Church
E Anapamu St
W Sola St
Courthouse Docent
Santa Barbara Public Library
Santa Barbara Museum Of Art
The Upham
Cat Doctors
Paris Street Boutique
A White Jasmine Inn
Spencer Adams Park
Lobero Theatre
5
5/10ths
50%
10%
0
1
2
3
4
5
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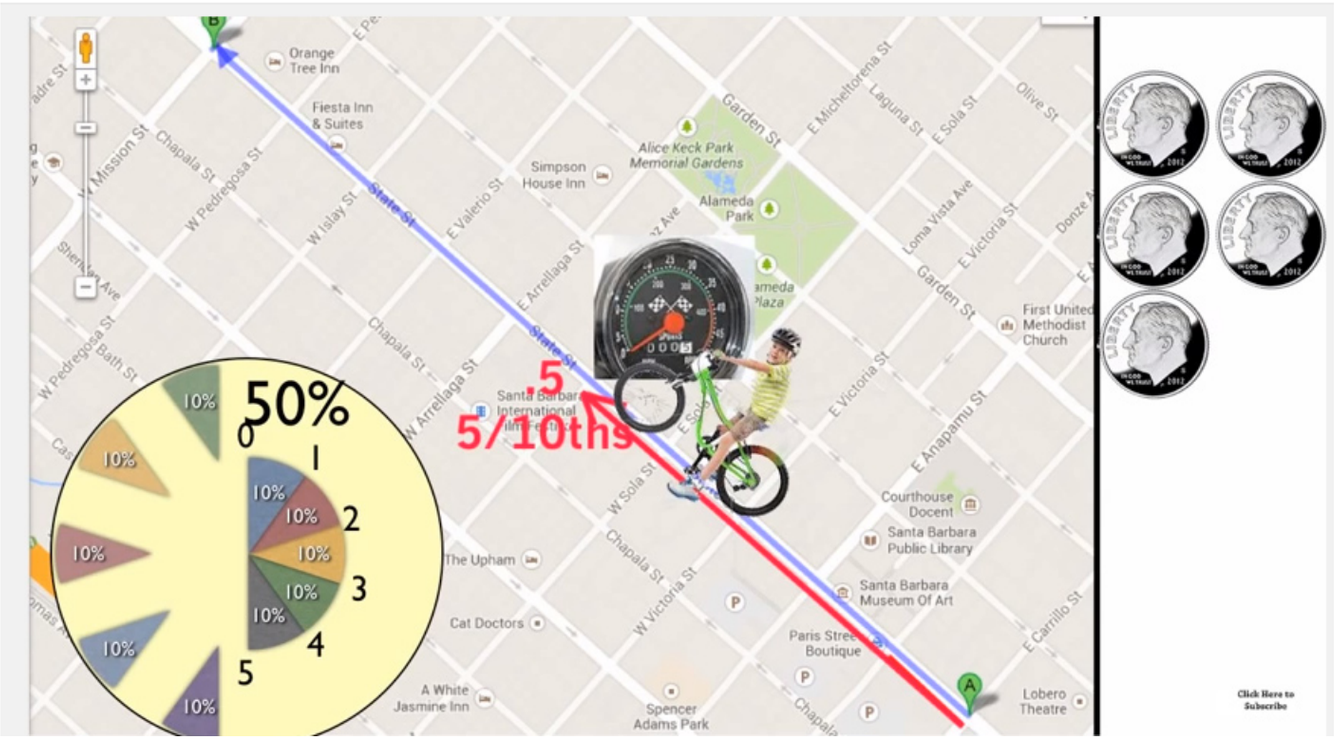
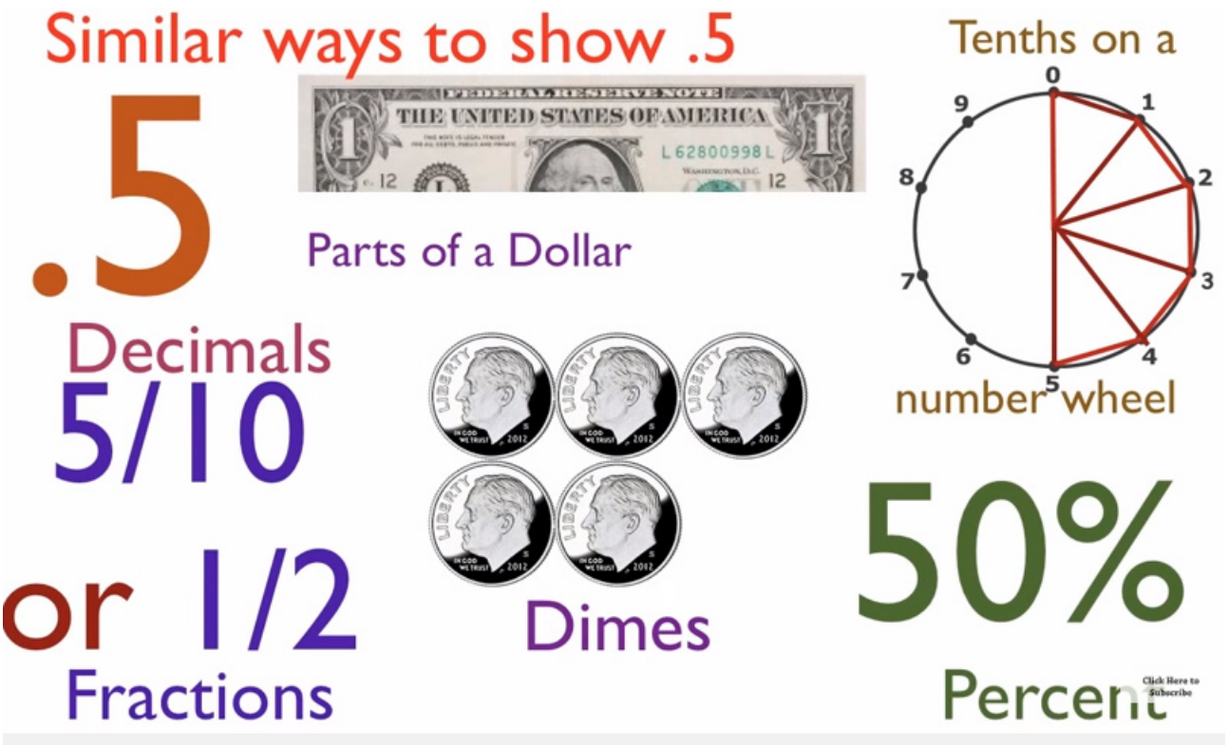
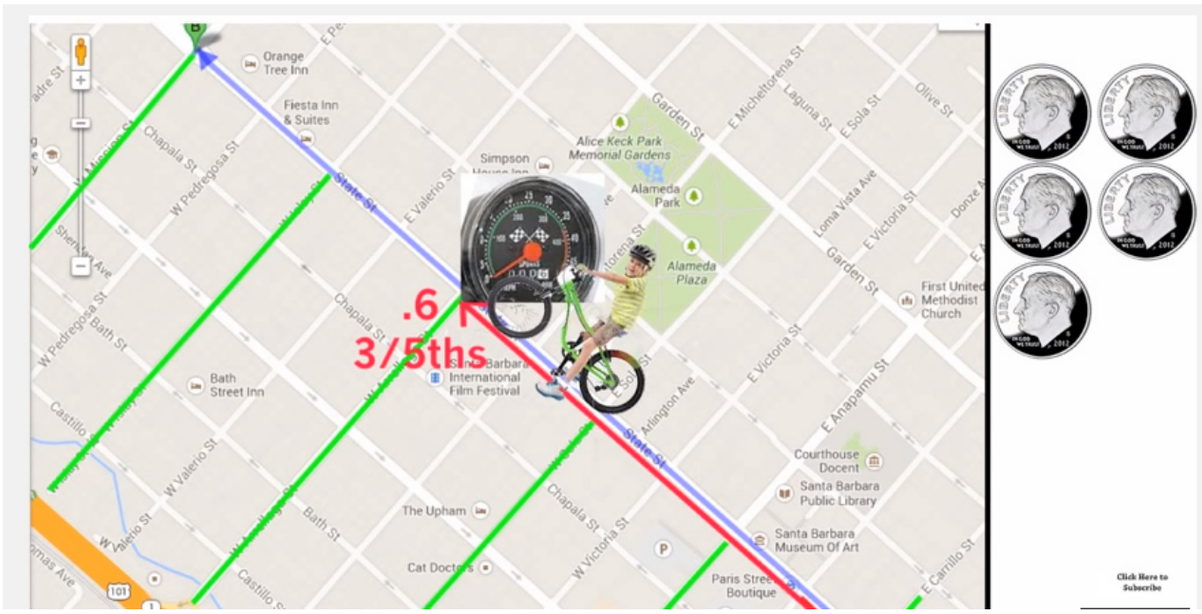
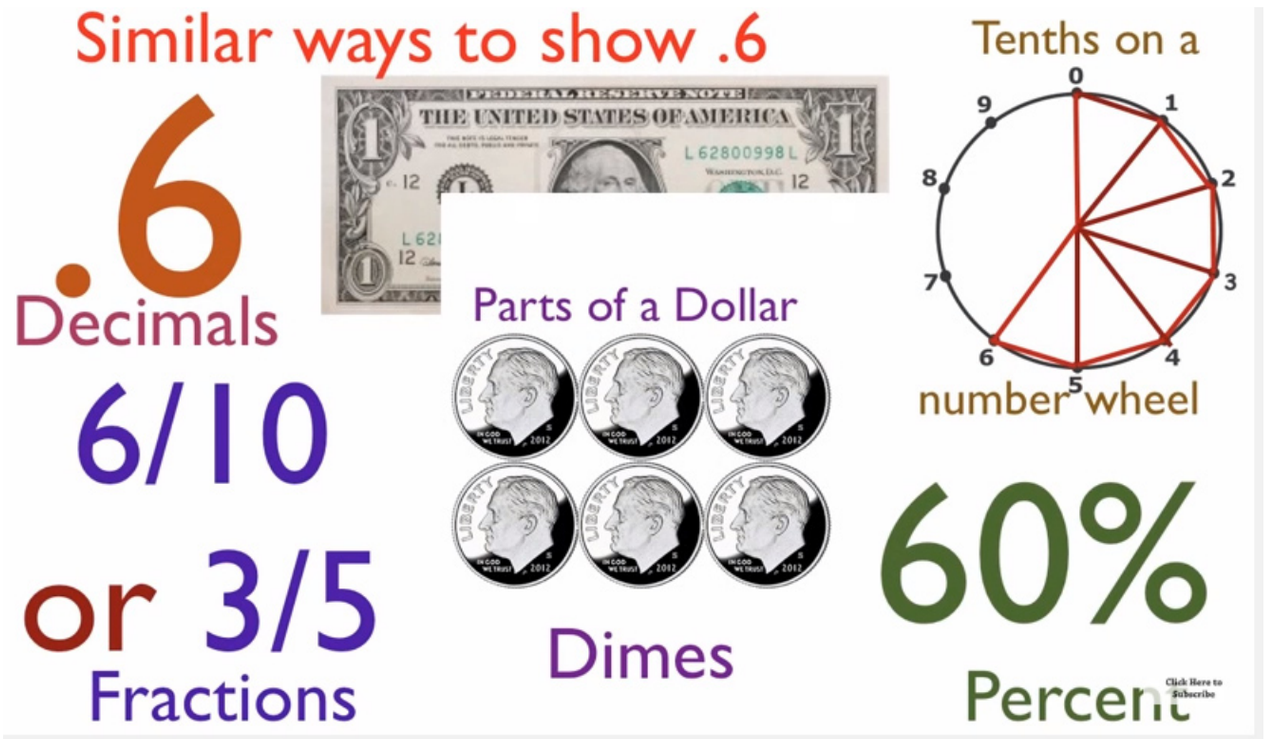
Fifty Per Cent, 5/10th, Five dimes



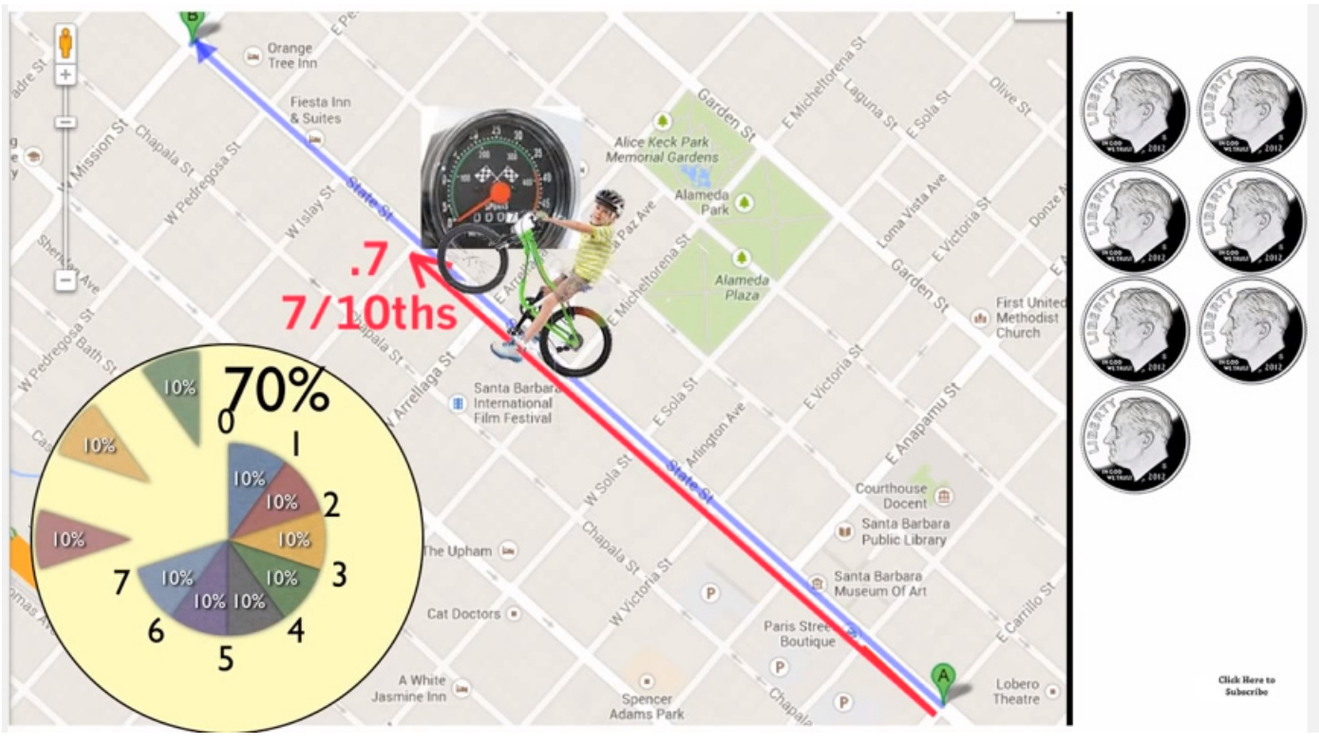


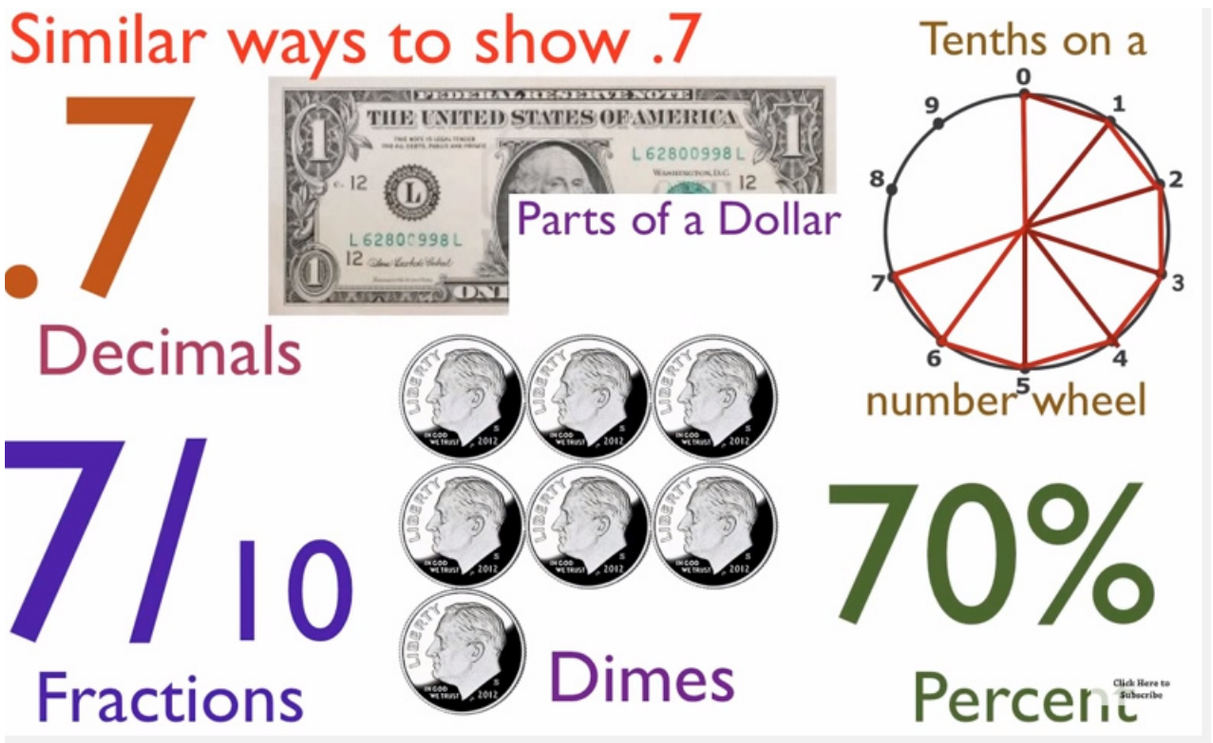
Sixty Per Cent, 6/10th, Six dimes



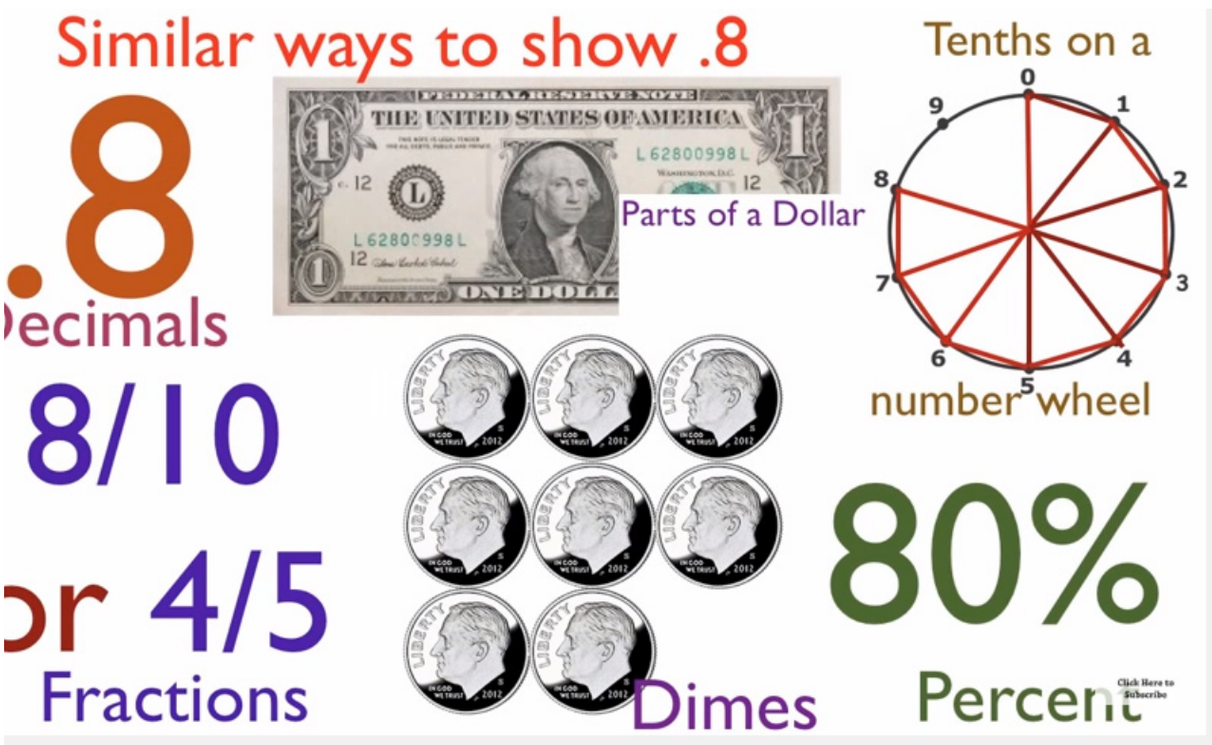


Seventy Per Cent, 7/10th, Seven dimes

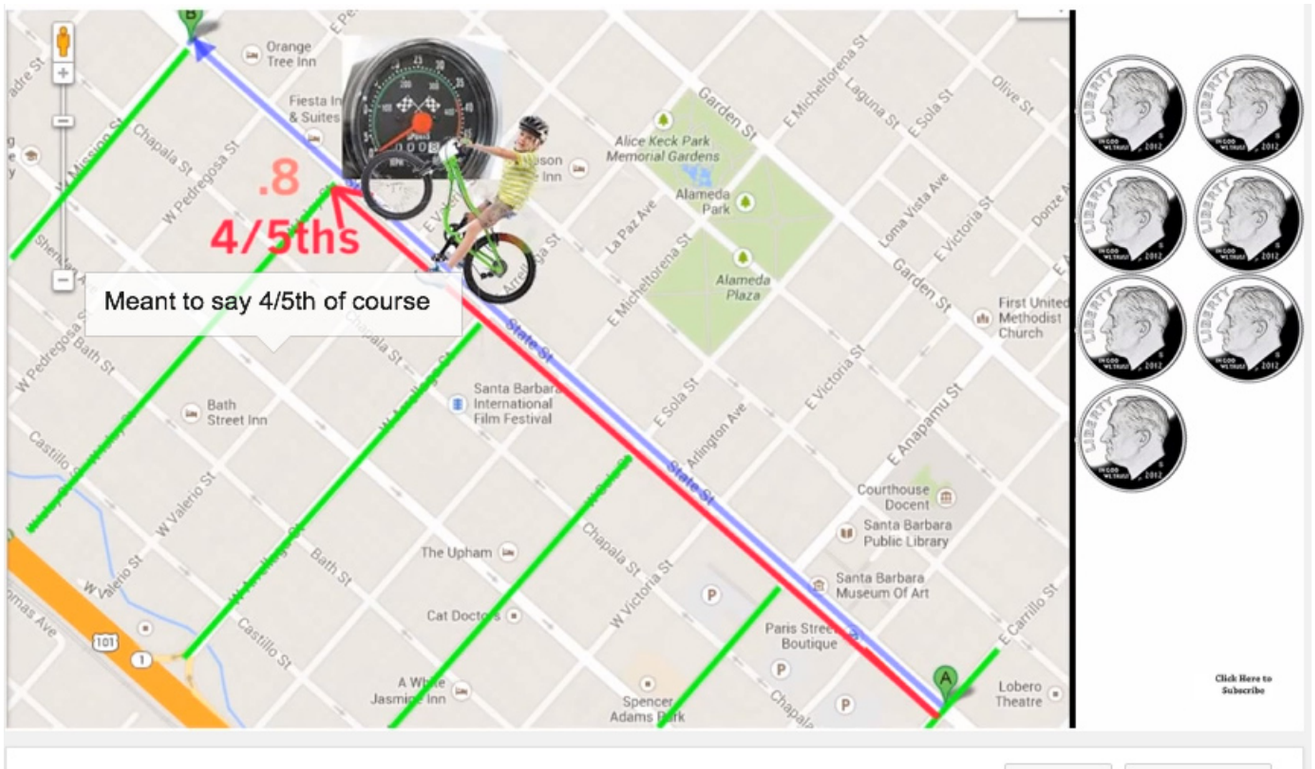




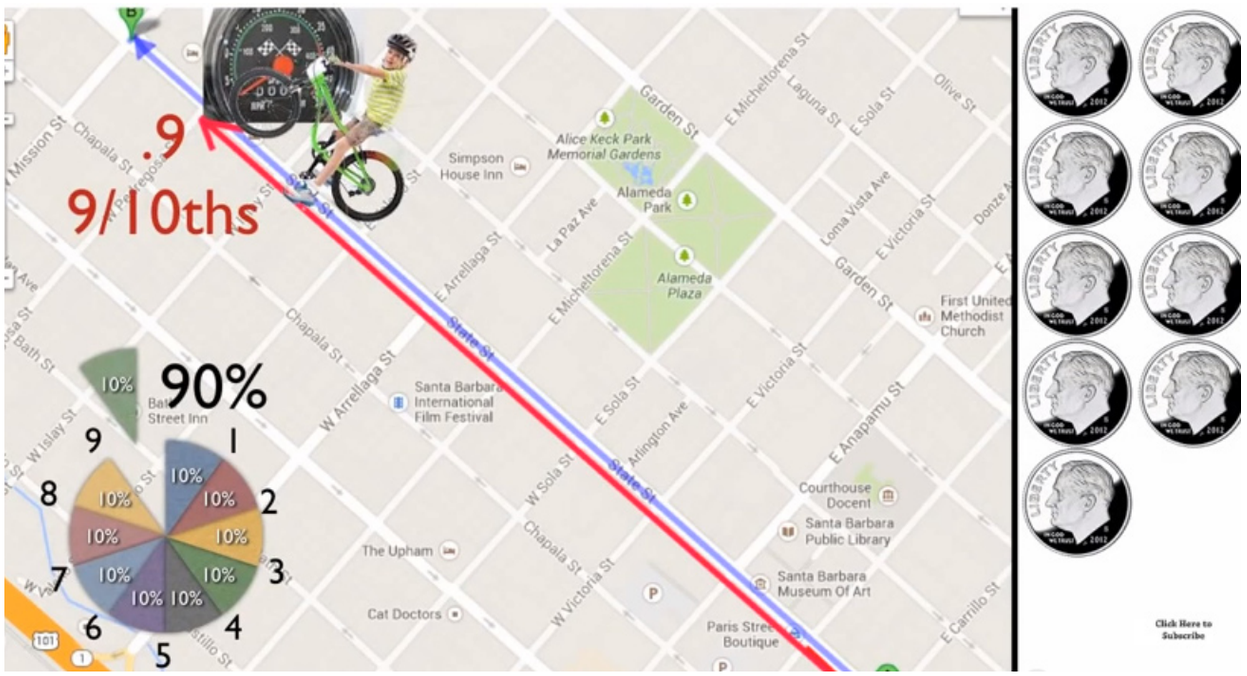
Eighty Per Cent, 8/10th, Eight dimes



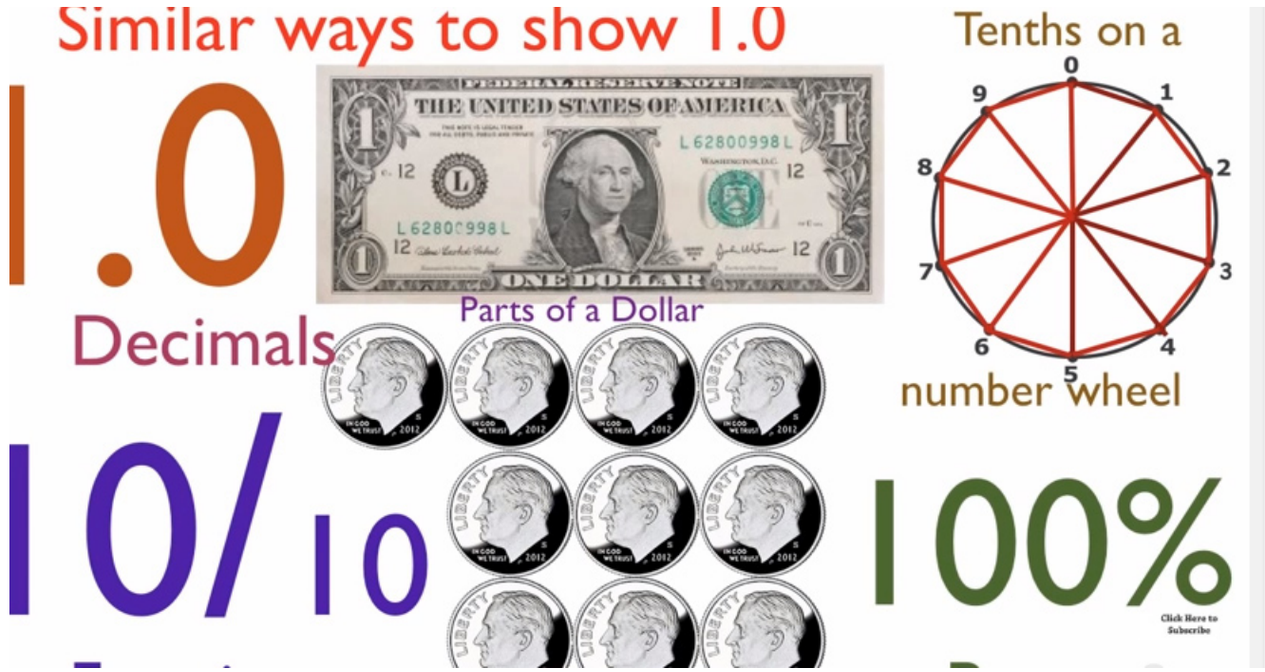
Eighty Per Cent, 4/5th, Eight dimes



Ninety Per Cent, 9/10th, Nine dimes



One Hundred Per Cent, 10/10th, Ten dimes

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Summer Solstice Celebration
MisterNumbers
with Maria, Eleanor,

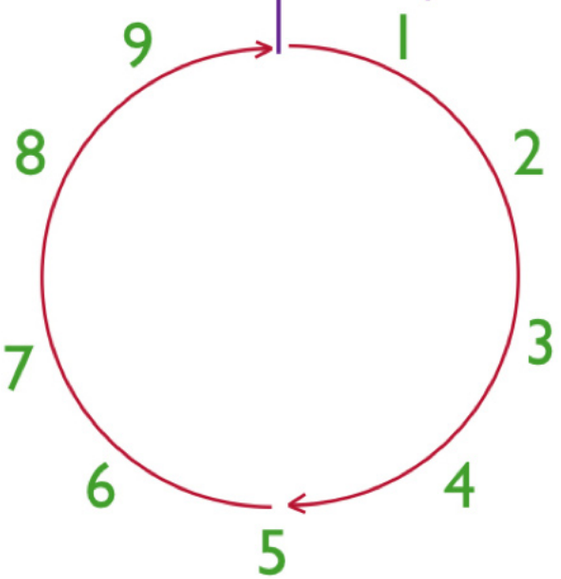
Rule of Tens

Numbers that add up to 10
use the same patterns

1 and 9 3 and 7

2 and 8 4 and 6

Number Line



Threes

03	06	09
12	15	18
21	24	27
	30	

Red & Green together

1	2	3
4	5	6
7	8	9
	0	

Phone Rotated Left

3	6	9
2	5	8
1	4	7
	0	

7s are opposite of 3s

1	2	3
4	5	6
7	8	9
	0	

Phone Rotated Right

7	4	1
8	5	2
9	6	3
	0	

Testimonials

My daughter absolutely loves it! I think all children would benefit from this approach to math whether they are right or left brain learners. This approach offers a different way of looking at numbers and the way they work. You are actually able to see patterns, which makes learning addition, subtraction, multiplication, and division easier.

—Shannon Mendez, Homeschooler

Testimonials

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—Shannon Mendez, Homeschooler

Testimonials

LOVE IT, LOVE IT, LOVE IT, LOVE IT...I have a third grader and this is working like a charm. I, myself have learned the times tables better. Thank you so very much.

—Tiffany Larkin

Testimonials

My child responded to the right brain math DVD the same way I did, with absolute amazement. Everyone I have shown it to has been amazed. The visual presentation of times tables in patterns was so powerful to me as an adult who has been through the old school method of just memorizing.

— Cheryl Rafferty, mom of 3 elementary students

Testimonials

I received your book yesterday, It's totally amazing, I'm 34 years old and for the first time in my life I am finally understanding how numbers work and slowly my fear of numbers is lessening... Thank you Mister Numbers, You have just opened up a whole new world to me and I am so grateful.

—Clare Price

Testimonials

Everything about your program is just fantastic! We have thoroughly enjoyed learning Right Brain Math. I teach 3rd and 4th graders at a small school for children with learning differences: dyslexia, ADD, processing issues. I couldn't believe their reaction the first time we did a number wheel. Their eyes lit up and they were so excited to see the pattern they created! "WOW and AWESOME" were two words used a lot during that math lesson. They immediately wanted to do more and had the same reaction to each one.

—Donna Talbot

Testimonials

I strongly recommend EZ Times Tables created by Tom Biesanz as an innovative way to teach multiplication and division. This wonderful visual tool helps students make friends with numbers. Both students who have had trouble memorizing their multiplication tables and students who are just being introduced to multiplication and division respond with enthusiasm to this system.

—Bev Abrams, Santa Barbara Charter School principal

Testimonials

I love it! I got the DVD and EZ times tables for my daughter. She'll pause a math video game and reference her EZ times tables for the answer. She no longer has tantrums when learning math! 5 stars all the way!

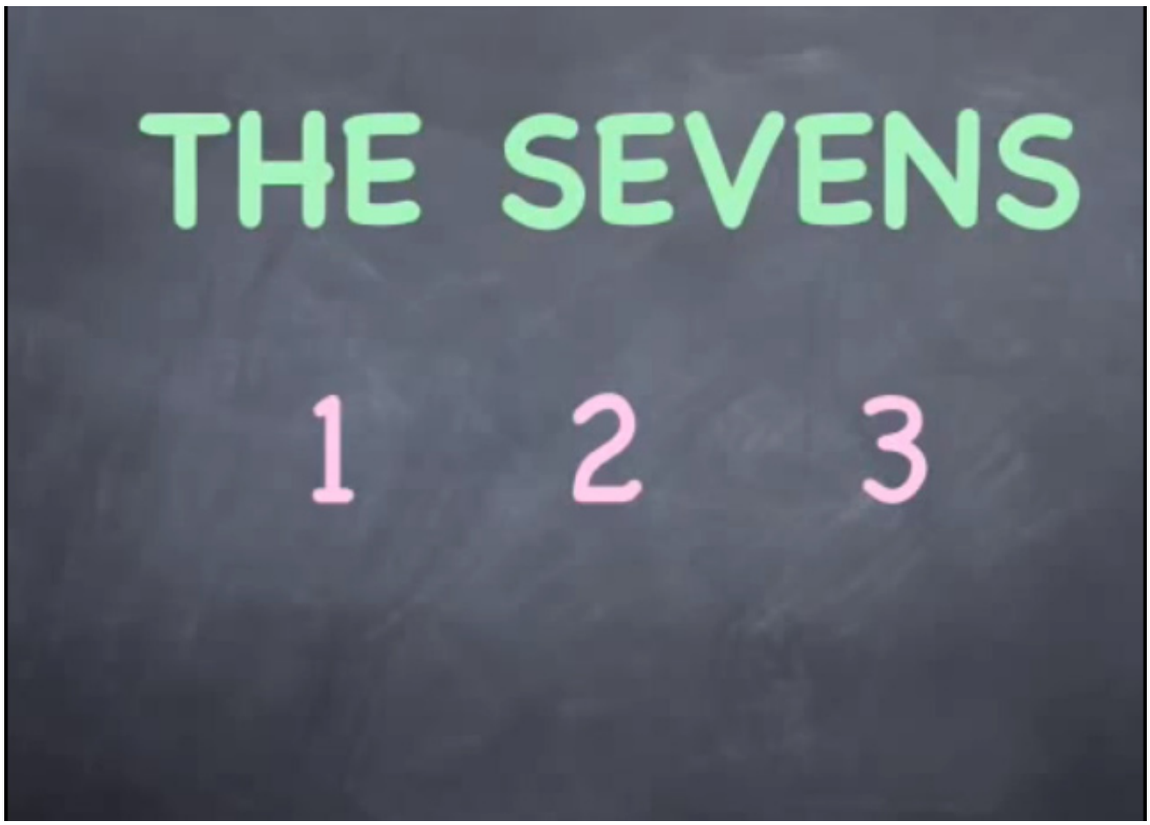
—Mary Dearborn

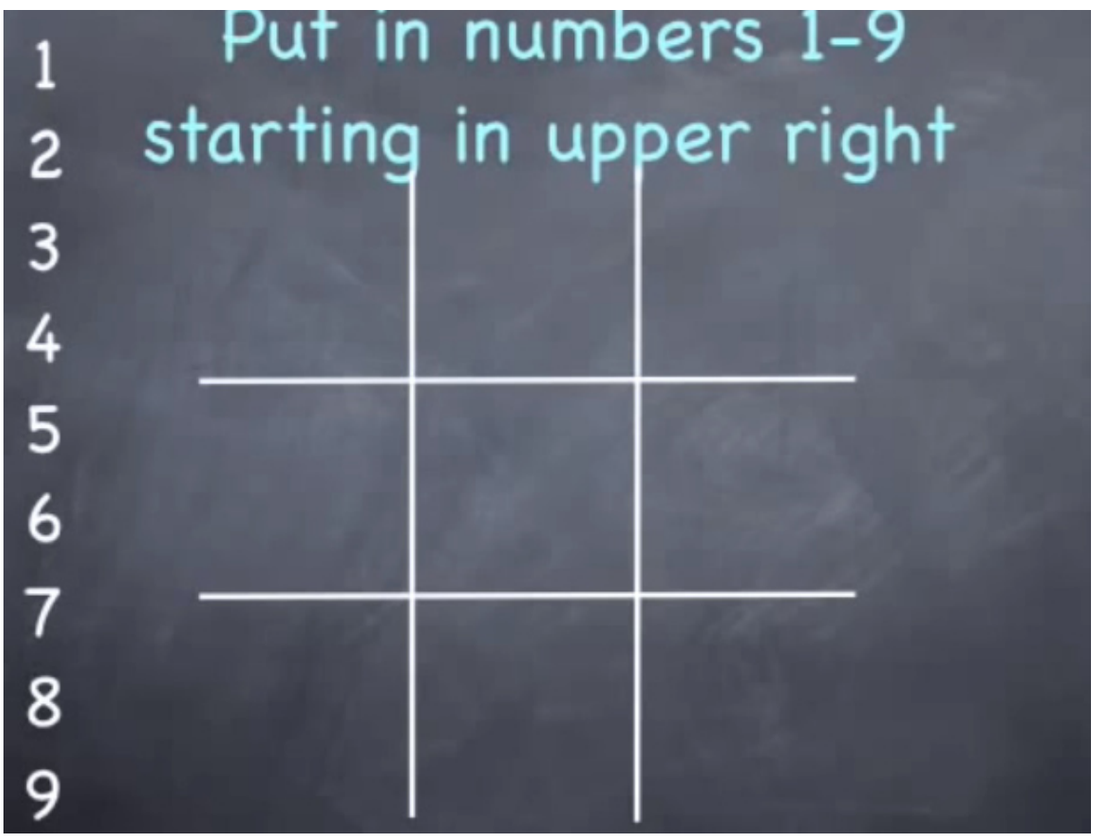
Testimonials

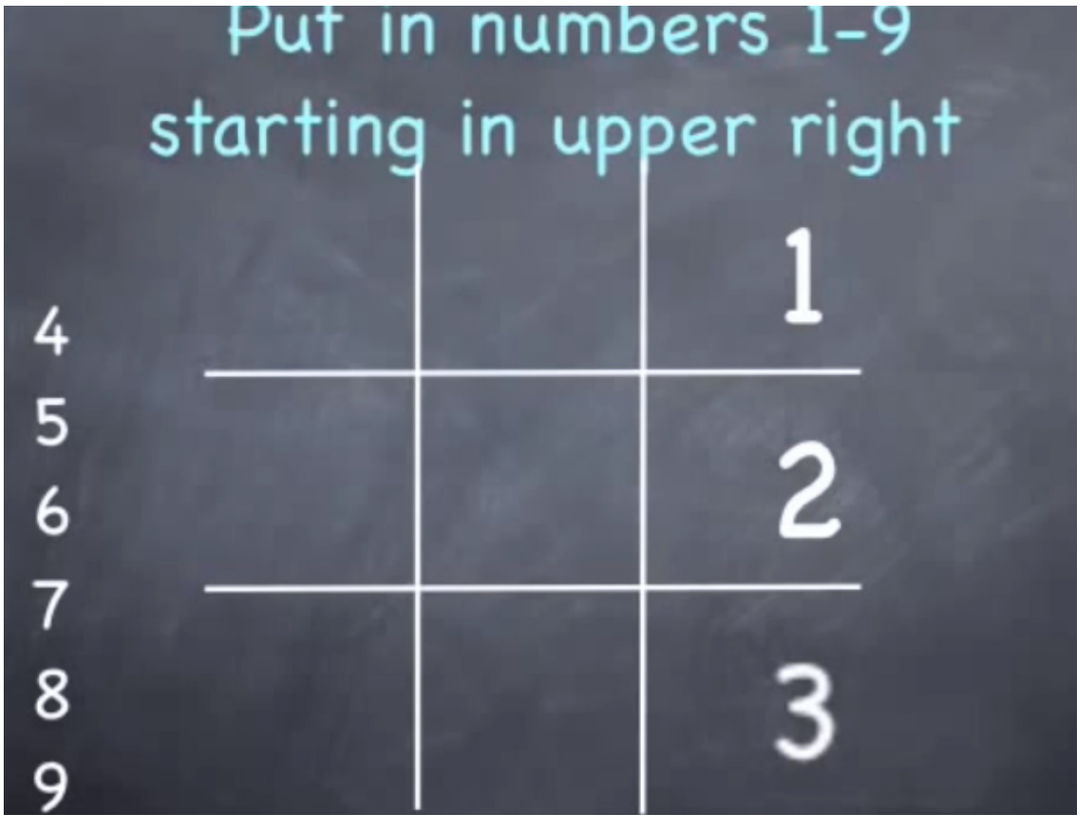
Tic-Tac-Toe was a HIT!!!! My daughter writes them quickly on the math homework sheets. This DVD and Workbook (Right Brain Math Book) could be a great tool to add in Math TEXTBOOKS.

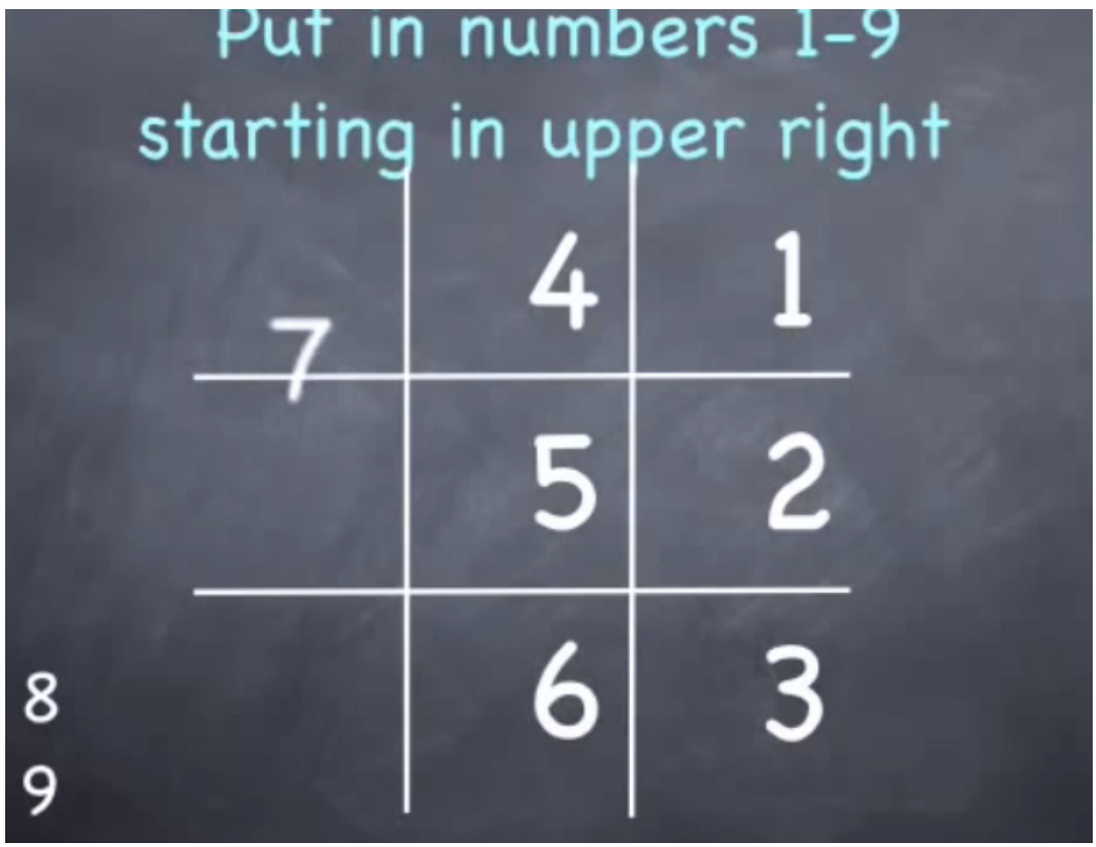
—Judy Reston

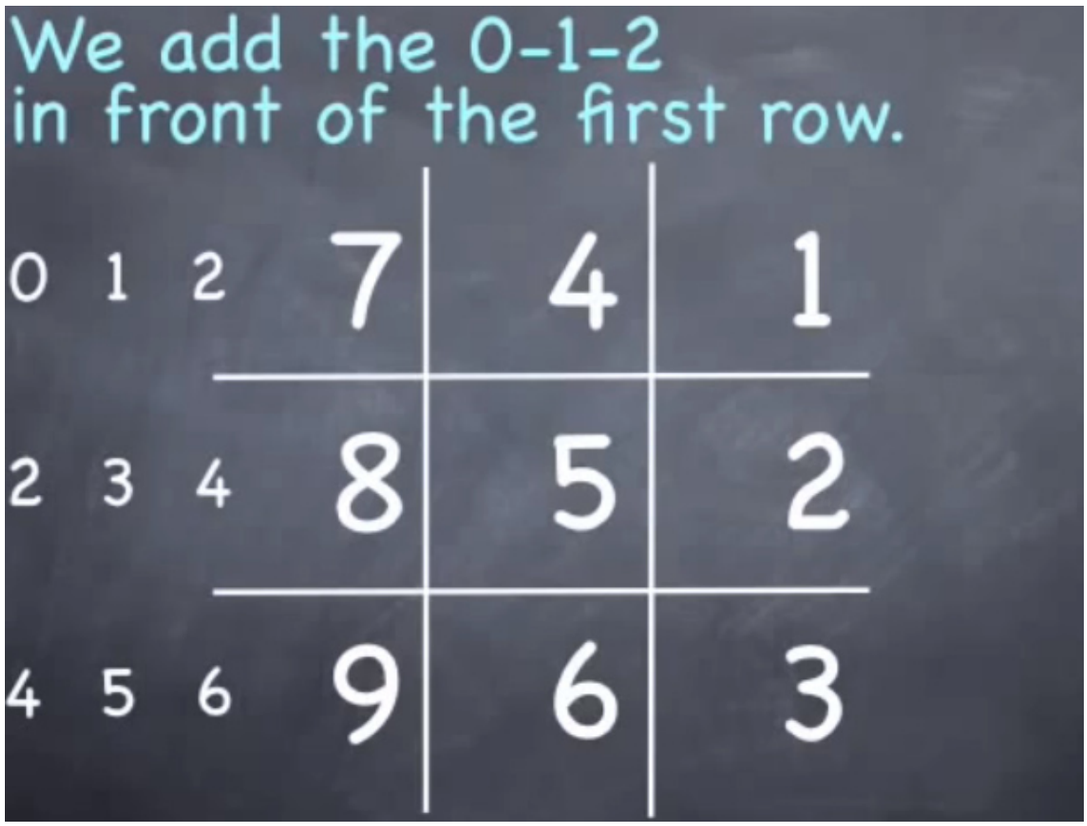
Sevens on Tic Tac Toe Squares

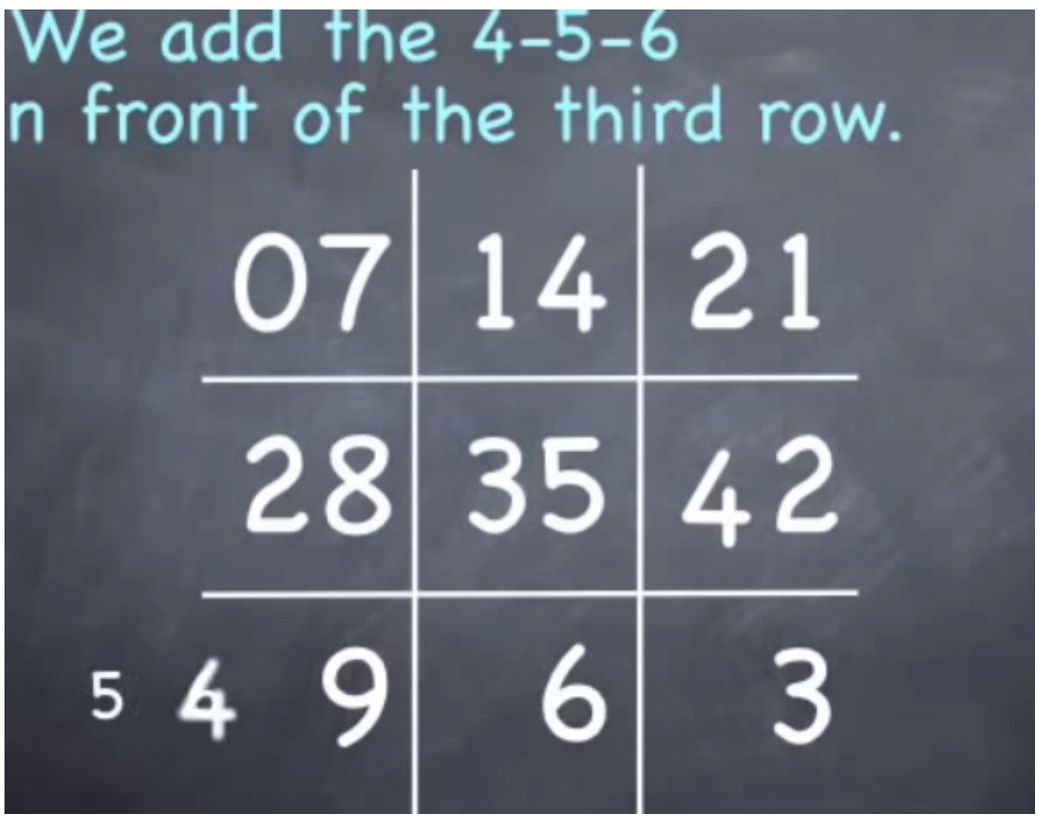


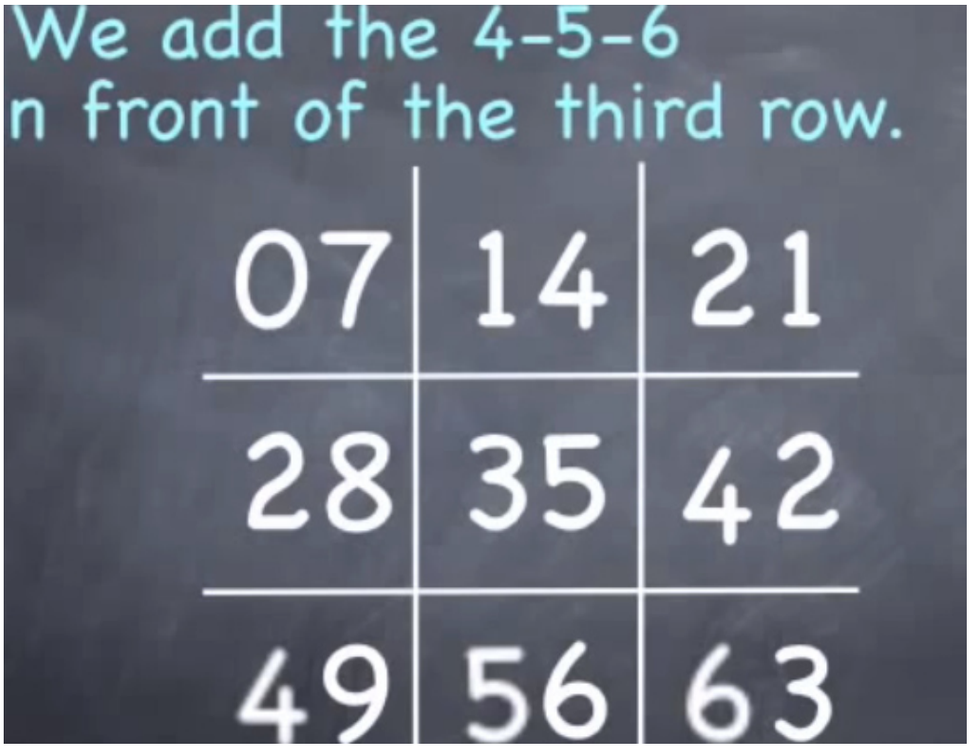


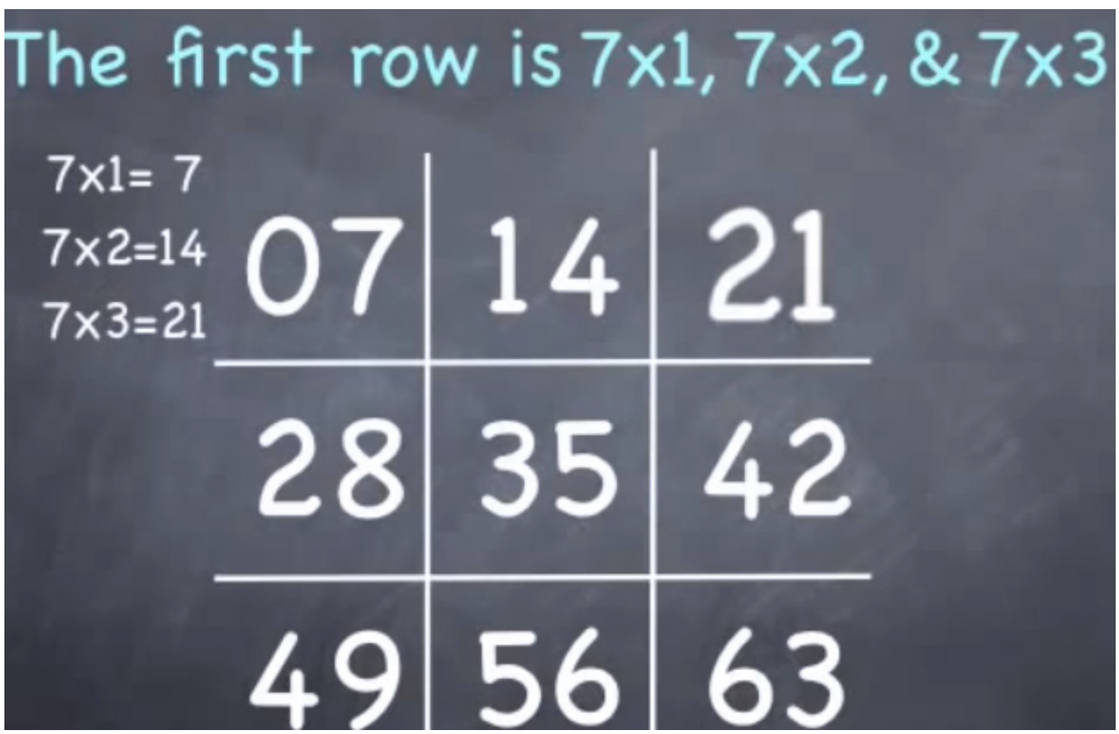

Put in numbers 1-9
starting in upper right
1
4
5
2
6
7
3
8
9

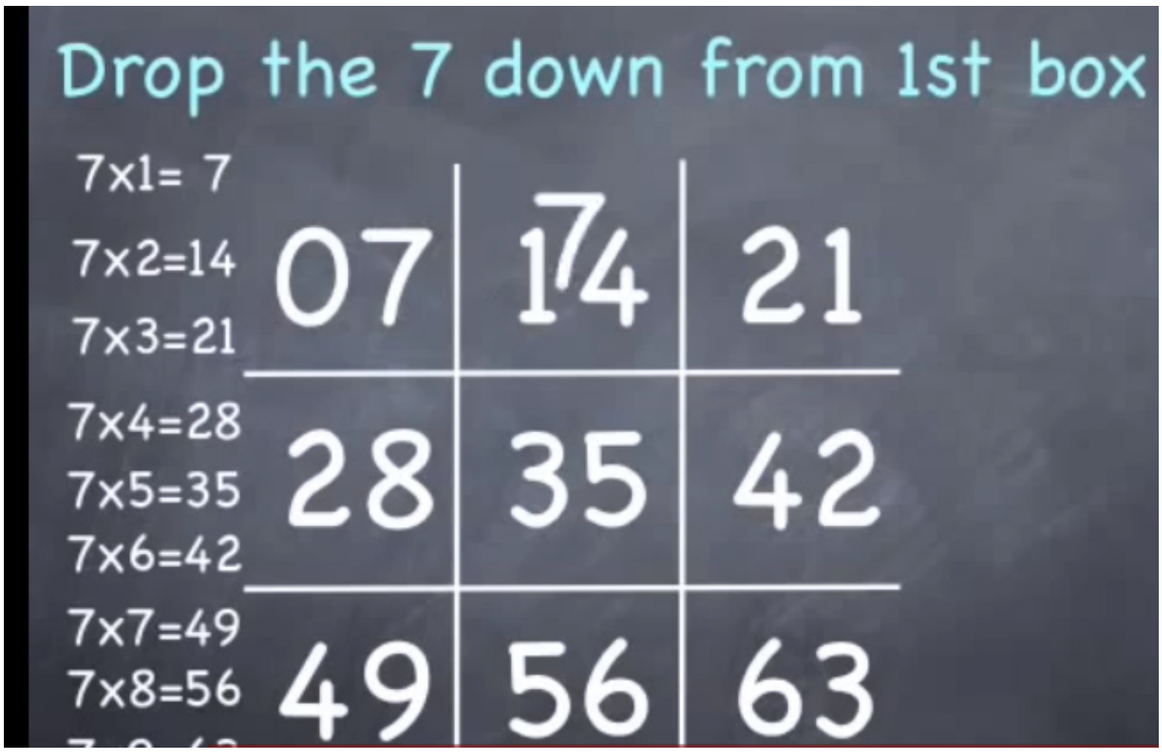

Put in numbers 1-9
starting in upper right
4
1
7
5
2
8
6
3
9

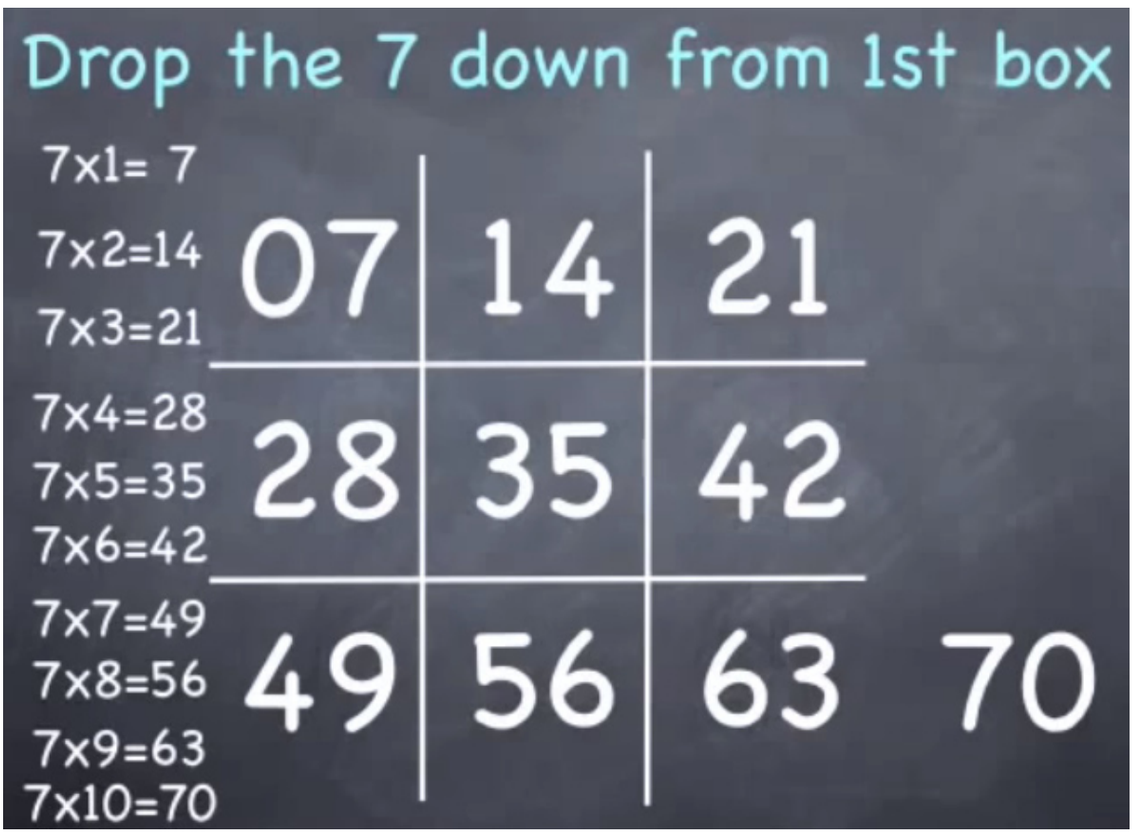

We add the 0-1-2
in front of the first row.
0 1 2 7 4 1
2 3 4 8 5 2
4 5 6 9 6 3


We add the 4-5-6
n front of the third row.
07 14 21
28 35 42
5 4 9 6 3

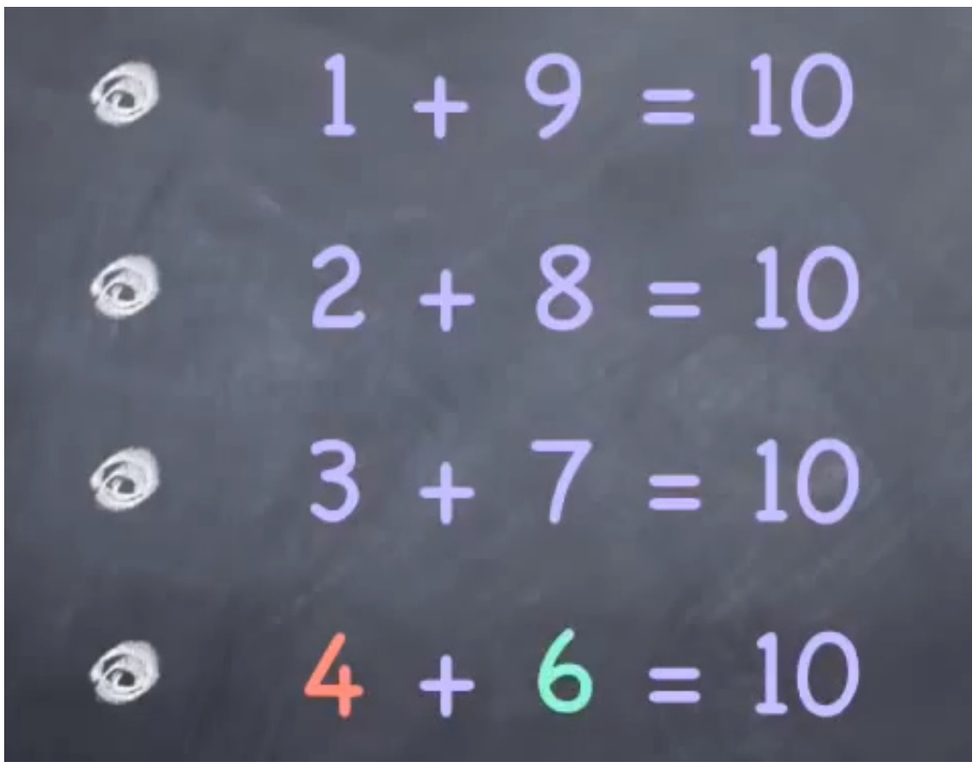

We add the 4-5-6
n front of the third row.
07 14 21
28 35 42
49 56 63

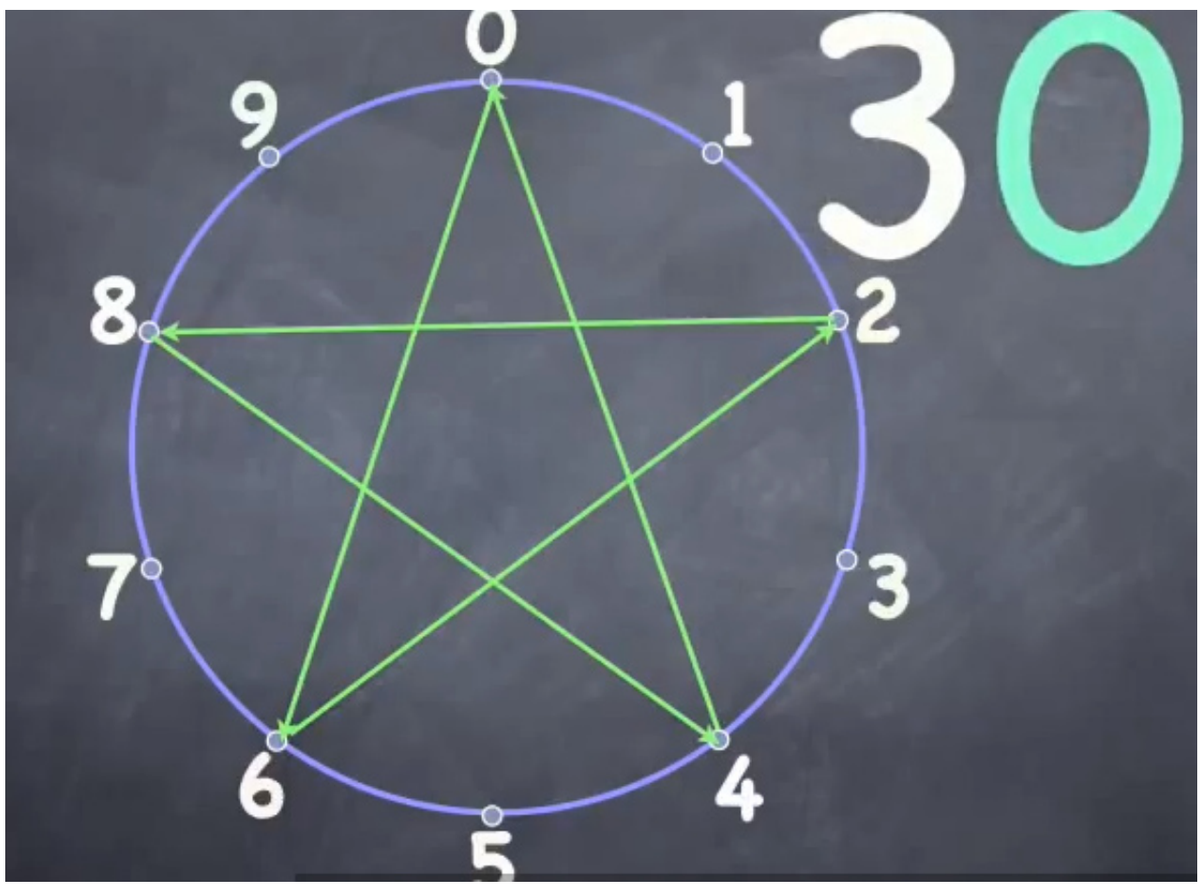

The first row is 7x1, 7x2, & 7x3
7x1= 7
7x2=14
7x3=21
07 14 21
28 35 42
49 56 63

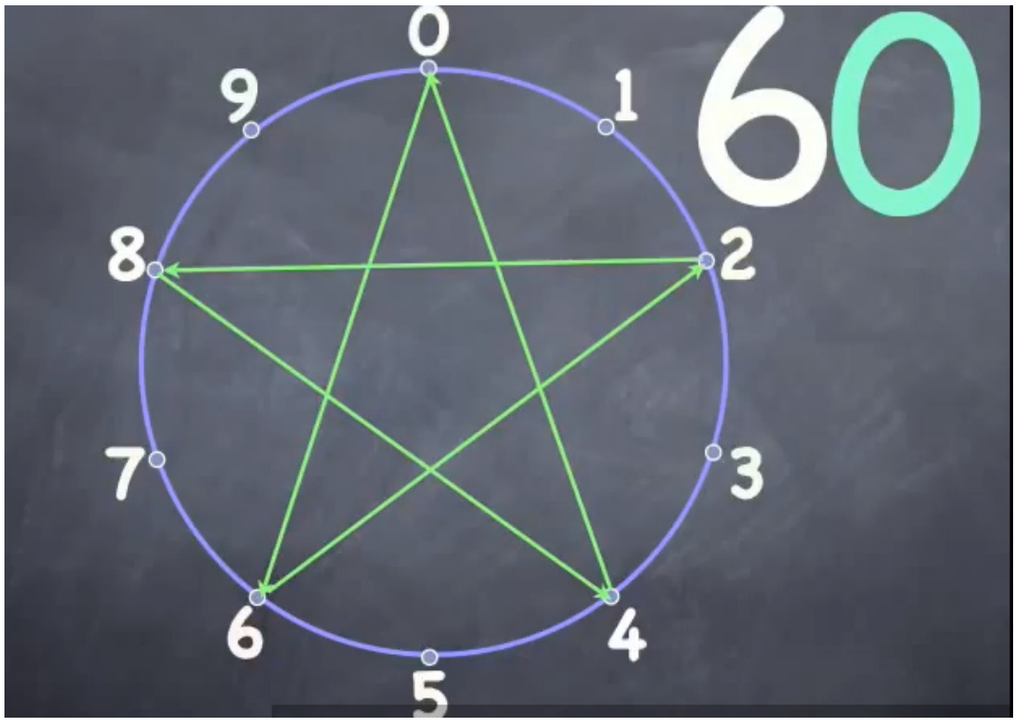

Drop the 7 down from 1st box
7x1= 7
7x2=14
7x3=21
07
14
21
7x4=28
7x5=35
7x6=42
28
35
42
7x7=49
7x8=56
49
56
63

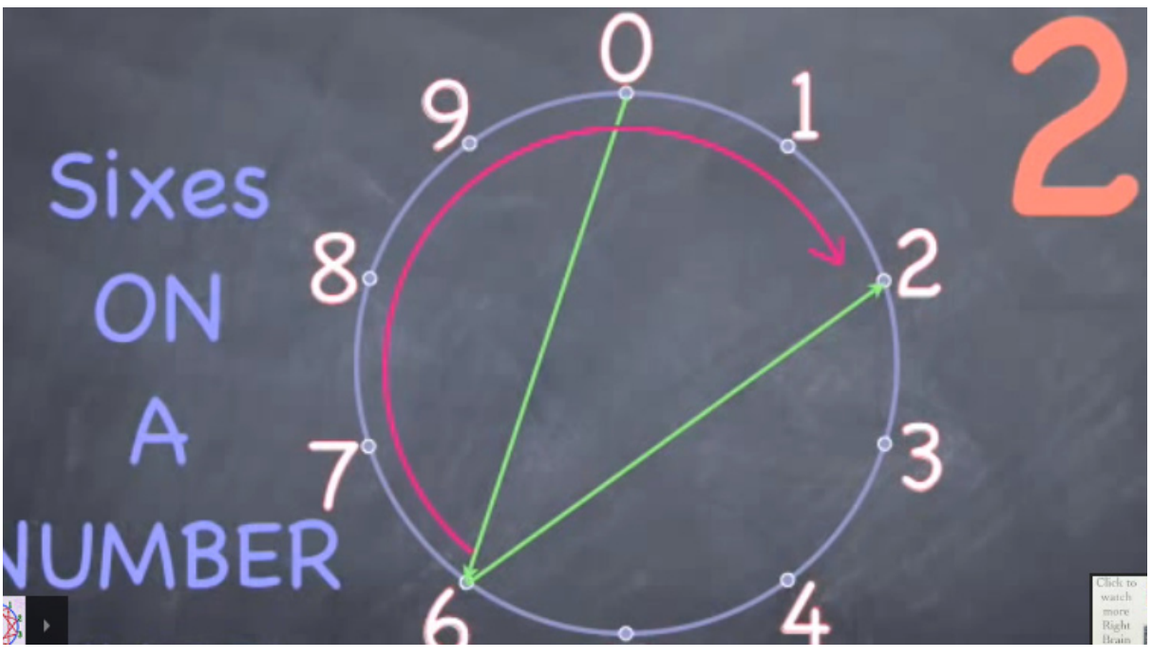

Drop the 7 down from 1st box
7x1= 7
7x2=14
7x3=21
07
14
21
7x4=28
7x5=35
7x6=42
28
35
42
7x7=49
7x8=56
7x9=63
7x10=70
49
56
63
70

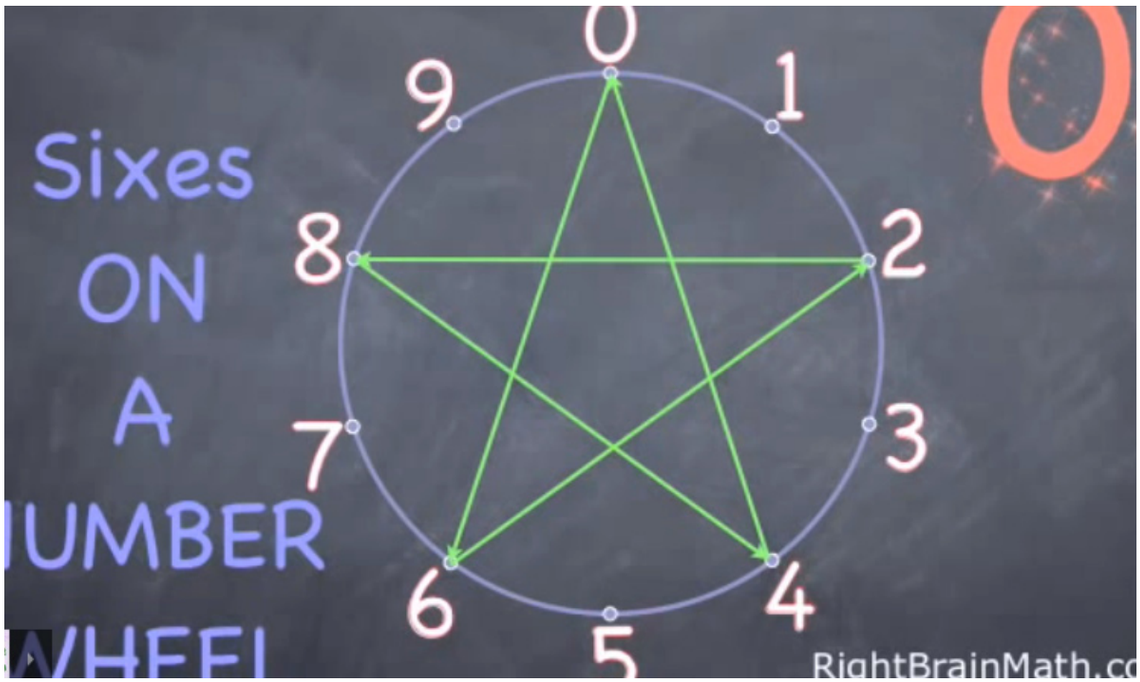
Sixes on a Number Wheel

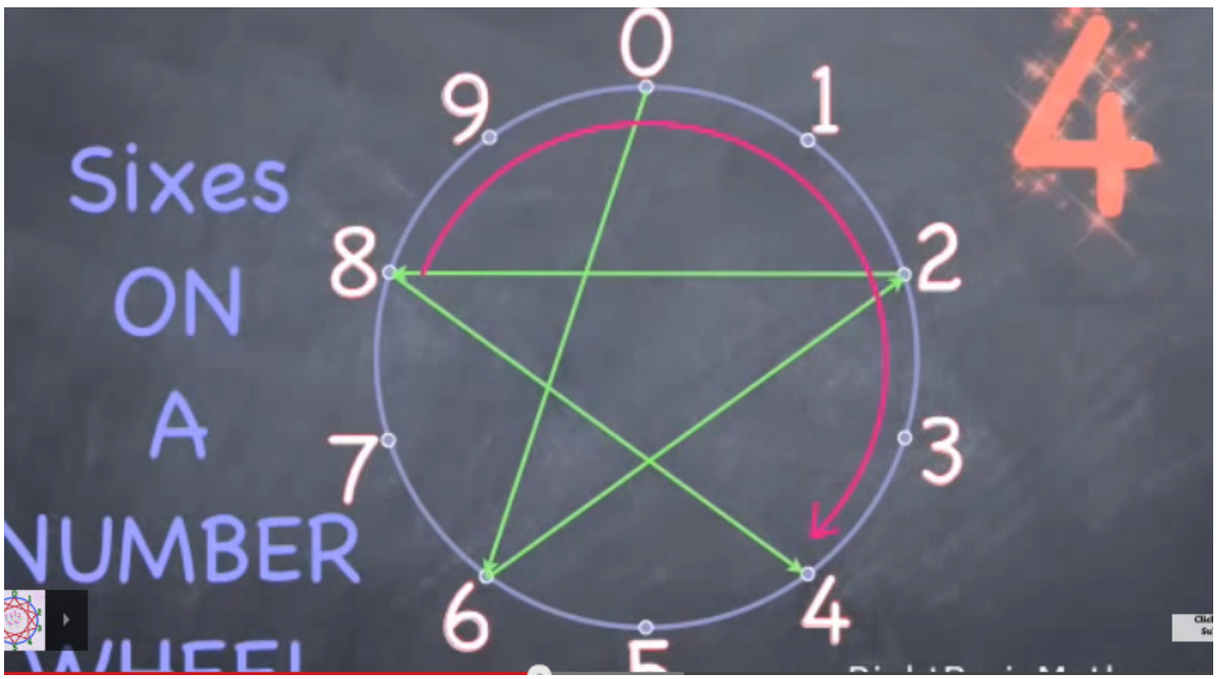


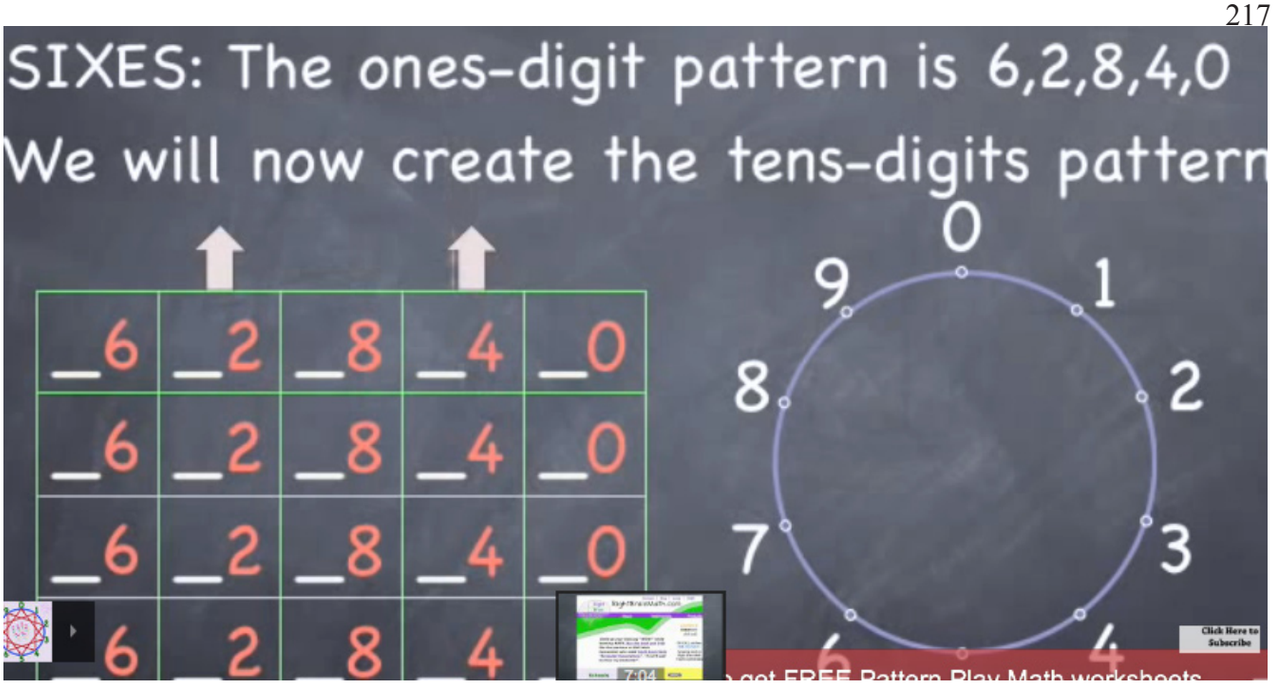



0
1
2
3
4
5
6
7
8
9
60


Sixes
ON
A
NUMBER
0
1
2
3
4
6
7
8
9
2


Sixes
ON
A
UMBER
0
0
1
2
3
4
5
6
7
8
9
RightBrainMath.co


Sixes
ON
A
NUMBER
4
0
1
2
3
4
5
6
7
8
9


SIXES: The ones-digit pattern is 6,2,8,4,0
We will now create the tens-digits pattern
_6 _2 _8 _4 _0
_6 _2 _8 _4 _0
_6 _2 _8 _4 _0
6 2 8 4
0
1
2
3
4
7
8
9
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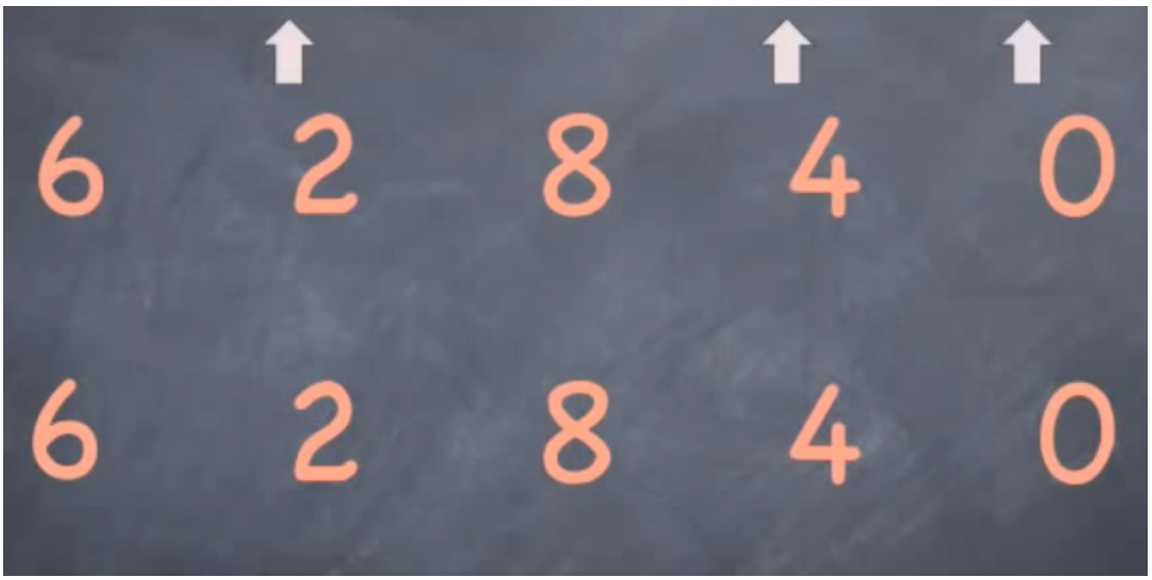
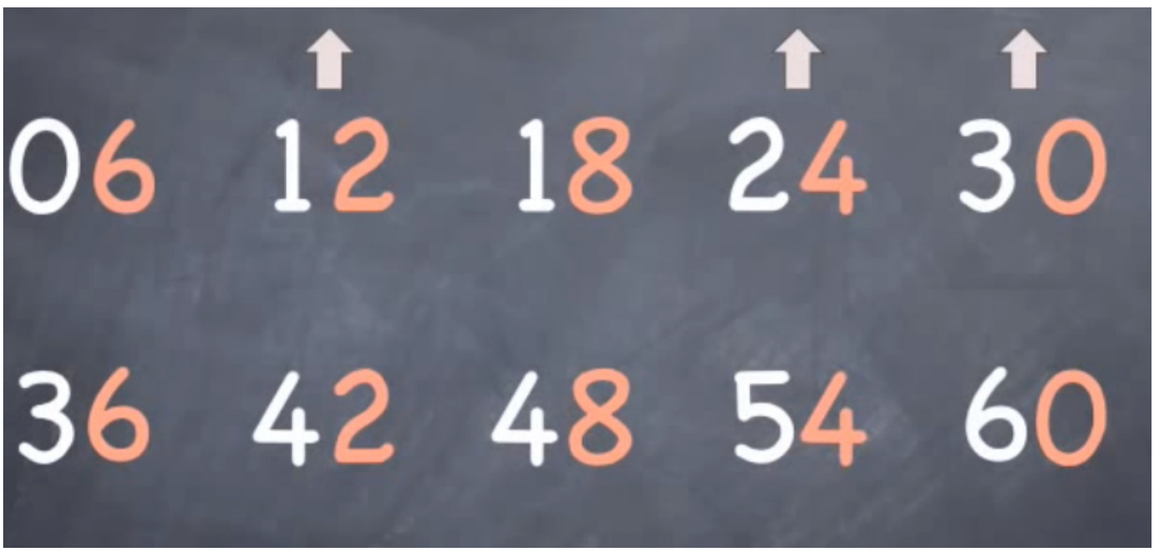

6 2 8 4 0
6 2 8 4 0


06 12 18 24 30
36 42 48 54 60

Squares

0 x 0 =	0
1 x 1 =	1
2 x 2 =	4
3 x 3 =	9
4 x 4 = 1	6
5 x 5 = 2	5
6 x 6 = 3	6
7 x 7 = 4	9
8 x 8 = 6	4
9 x 9 = 8	1
10 x 10 = 1 0	0

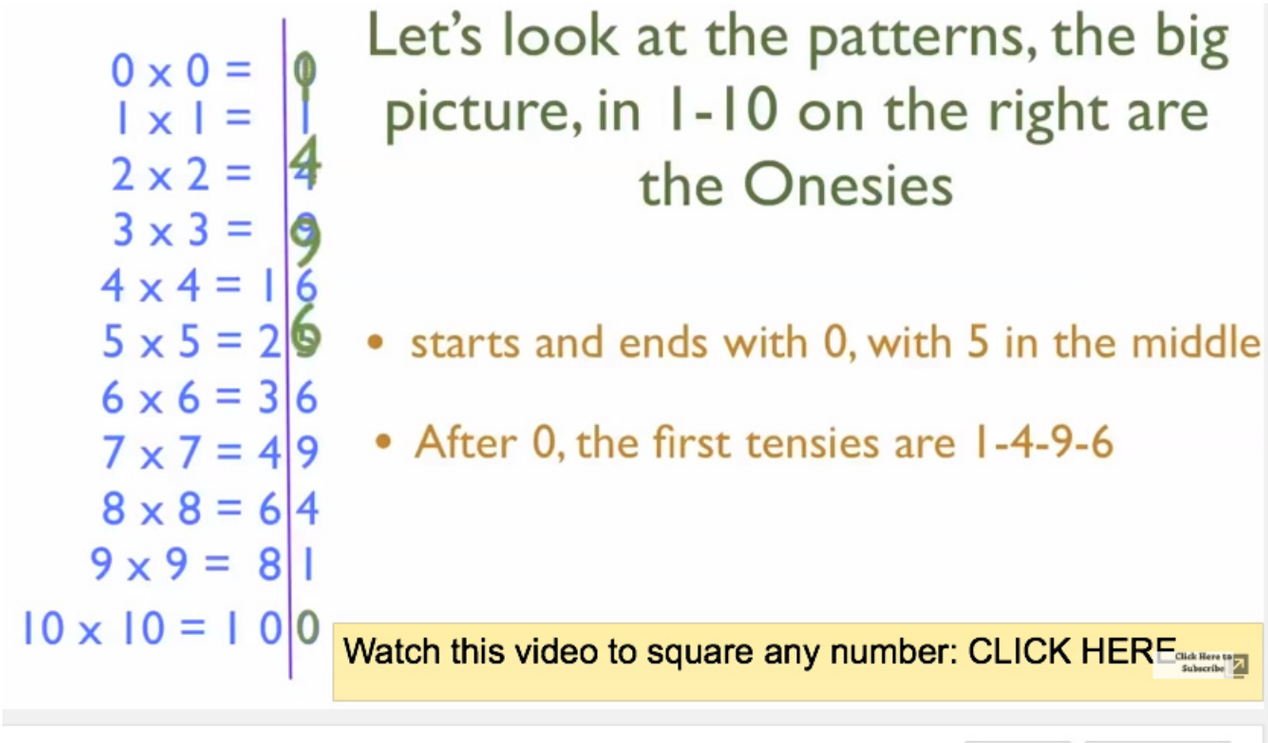
I believe that YOU can create the squares from 1-40 or higher in a couple minutes

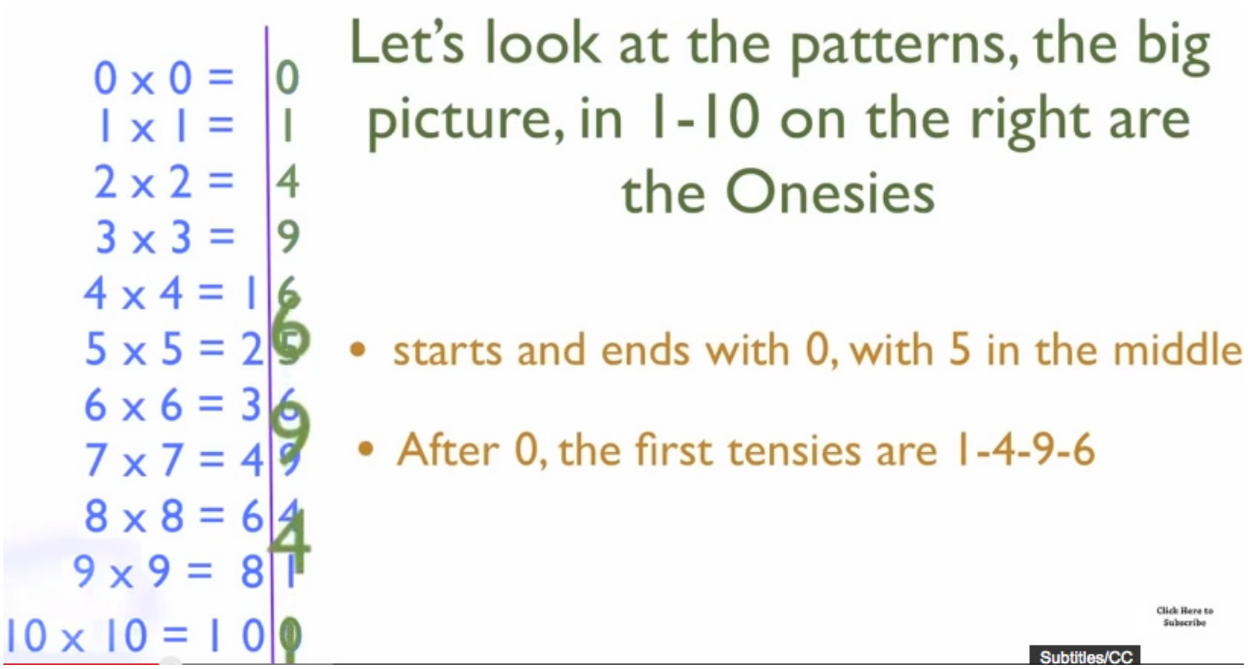
1 x 1 =	1
2 x 2 =	4
3 x 3 =	9
4 x 4 = 1	6

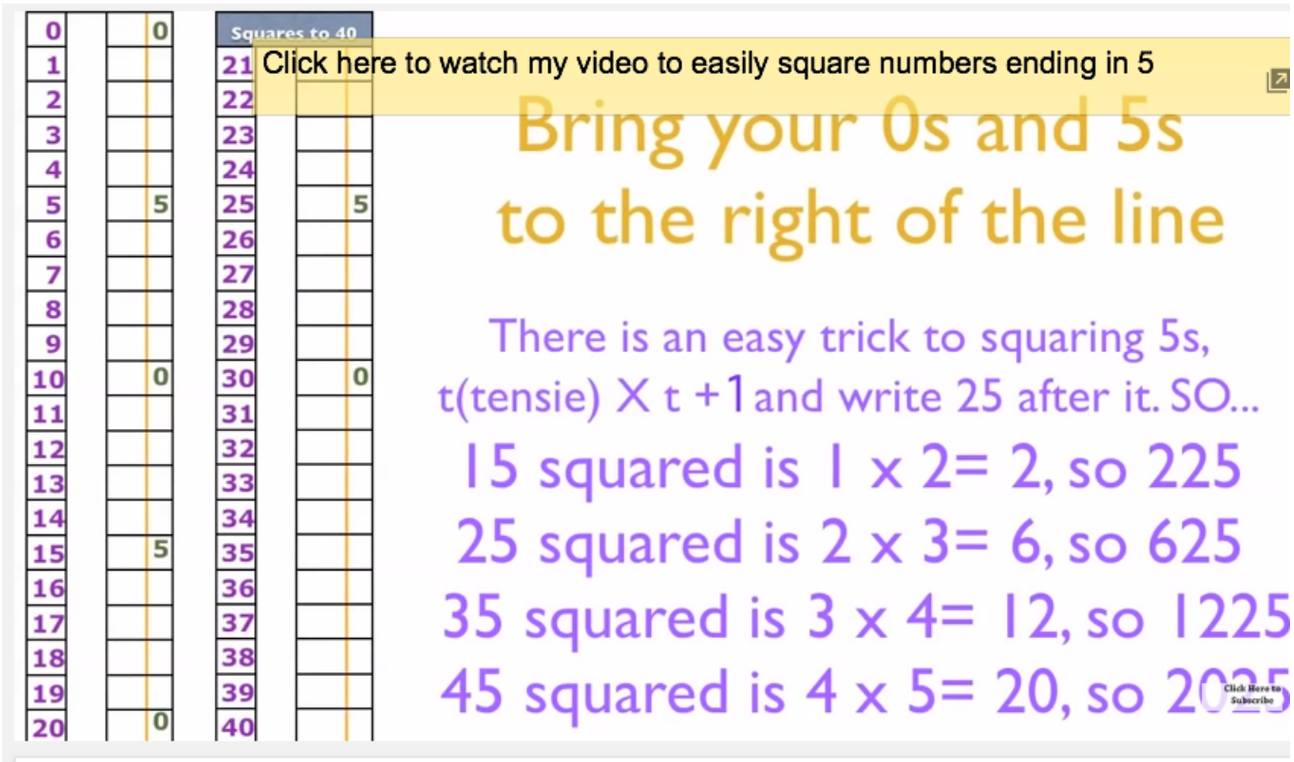
All you need to know is the squares of 1, 2, 3, 4

And be able to add a 1-digit-number to another number: like 152 +8

You can do that!


0 x 0 = 0
1 x 1 = 1
2 x 2 = 4
3 x 3 = 9
4 x 4 = 16
5 x 5 = 25
6 x 6 = 36
7 x 7 = 49
8 x 8 = 64
9 x 9 = 81
10 x 10 = 100
Let's look at the patterns, the big picture, in 1-10 on the right are the Onesies
• starts and ends with 0, with 5 in the middle
• After 0, the first tensies are 1-4-9-6
Watch this video to square any number: CLICK HERE
Click Here to Subscribe


0 x 0 = 0
1 x 1 = 1
2 x 2 = 4
3 x 3 = 9
4 x 4 = 16
5 x 5 = 25
6 x 6 = 36
7 x 7 = 49
8 x 8 = 64
9 x 9 = 81
10 x 10 = 100
Let's look at the patterns, the big picture, in 1-10 on the right are the Onesies
• starts and ends with 0, with 5 in the middle
• After 0, the first tensies are 1-4-9-6
Click Here to Subscribe
Subtitles/CC


Squares to 40
Click here to watch my video to easily square numbers ending in 5
Bring your 0s and 5s
to the right of the line
There is an easy trick to squaring 5s,
t(tensie) X t +1 and write 25 after it. SO...
15 squared is 1 x 2= 2, so 225
25 squared is 2 x 3= 6, so 625
35 squared is 3 x 4= 12, so 1225
45 squared is 4 x 5= 20, so 2025
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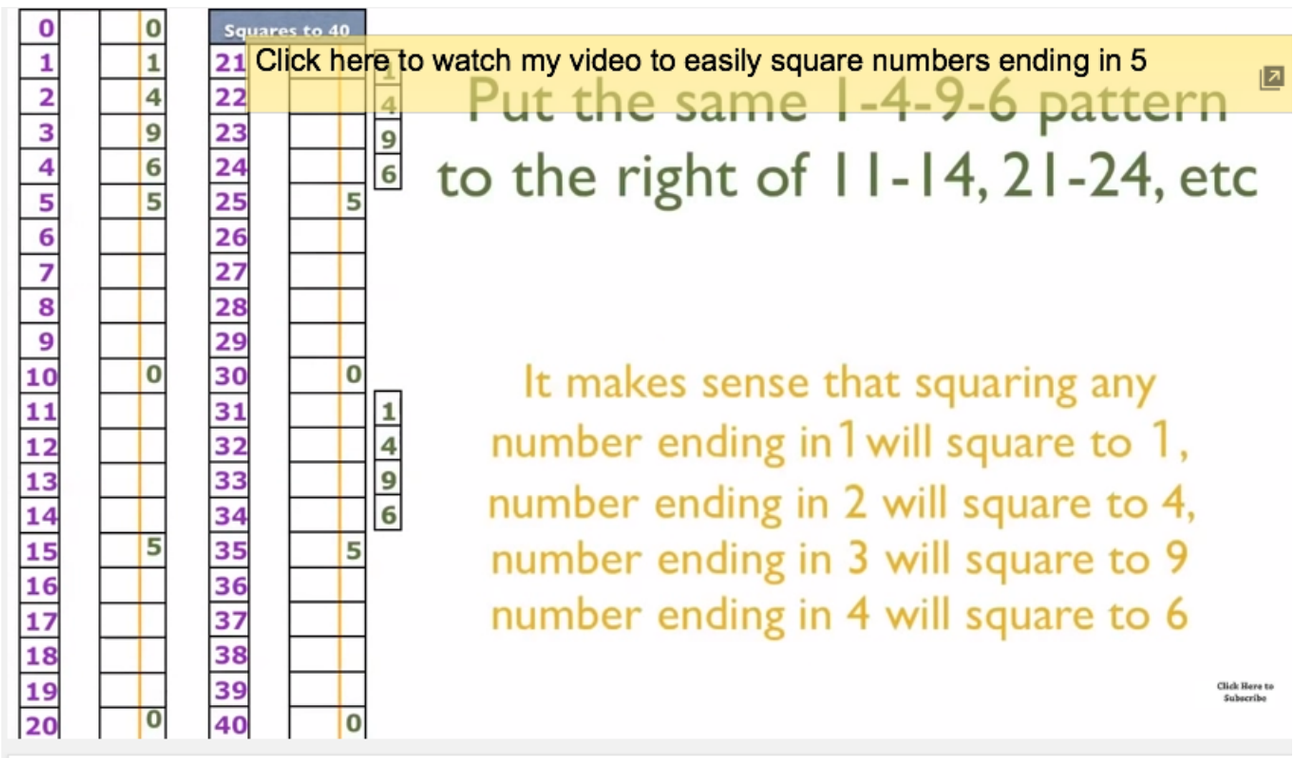
Squares to 40
Click here to watch my video to easily square numbers ending in 5
Put the same 1-4-9-6 pattern
to the right of 11-14, 21-24, etc
It makes sense that squaring any
number ending in 1 will square to 1,
number ending in 2 will square to 4,
number ending in 3 will square to 9
number ending in 4 will square to 6
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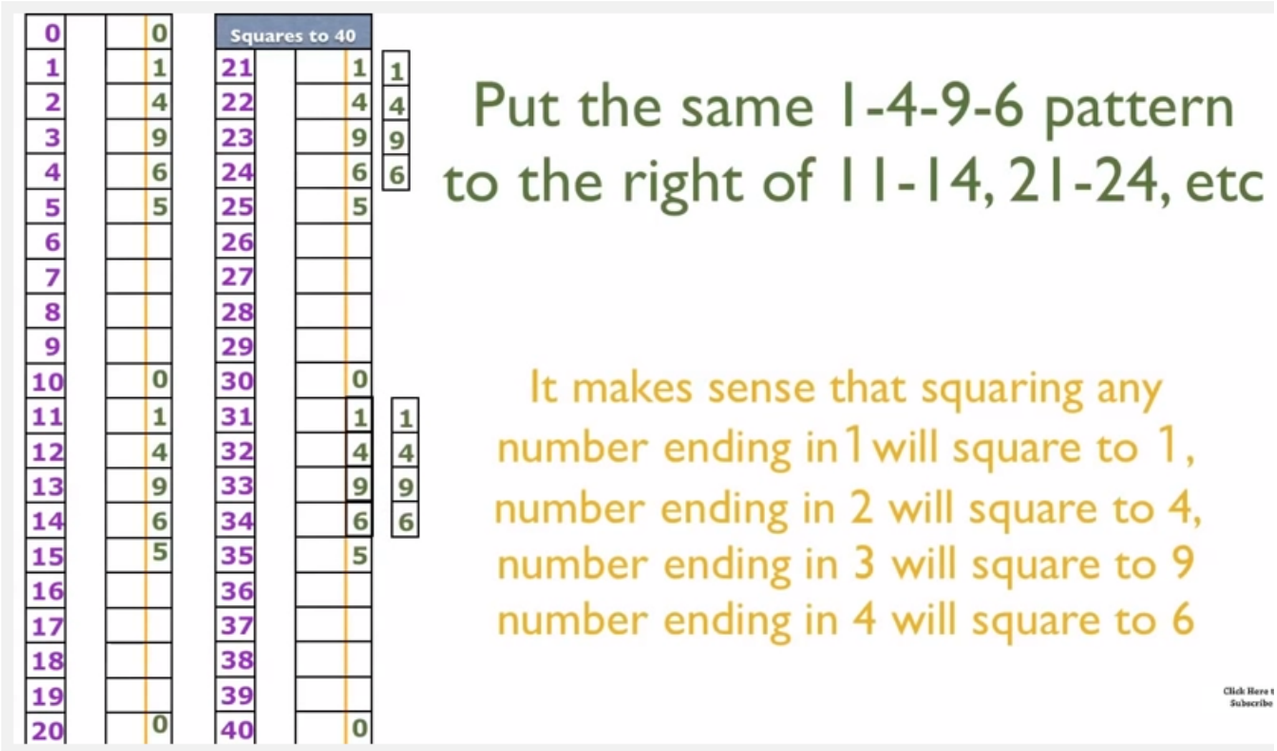
Squares to 40
Put the same 1-4-9-6 pattern to the right of 11-14, 21-24, etc
It makes sense that squaring any number ending in 1 will square to 1, number ending in 2 will square to 4, number ending in 3 will square to 9 number ending in 4 will square to 6
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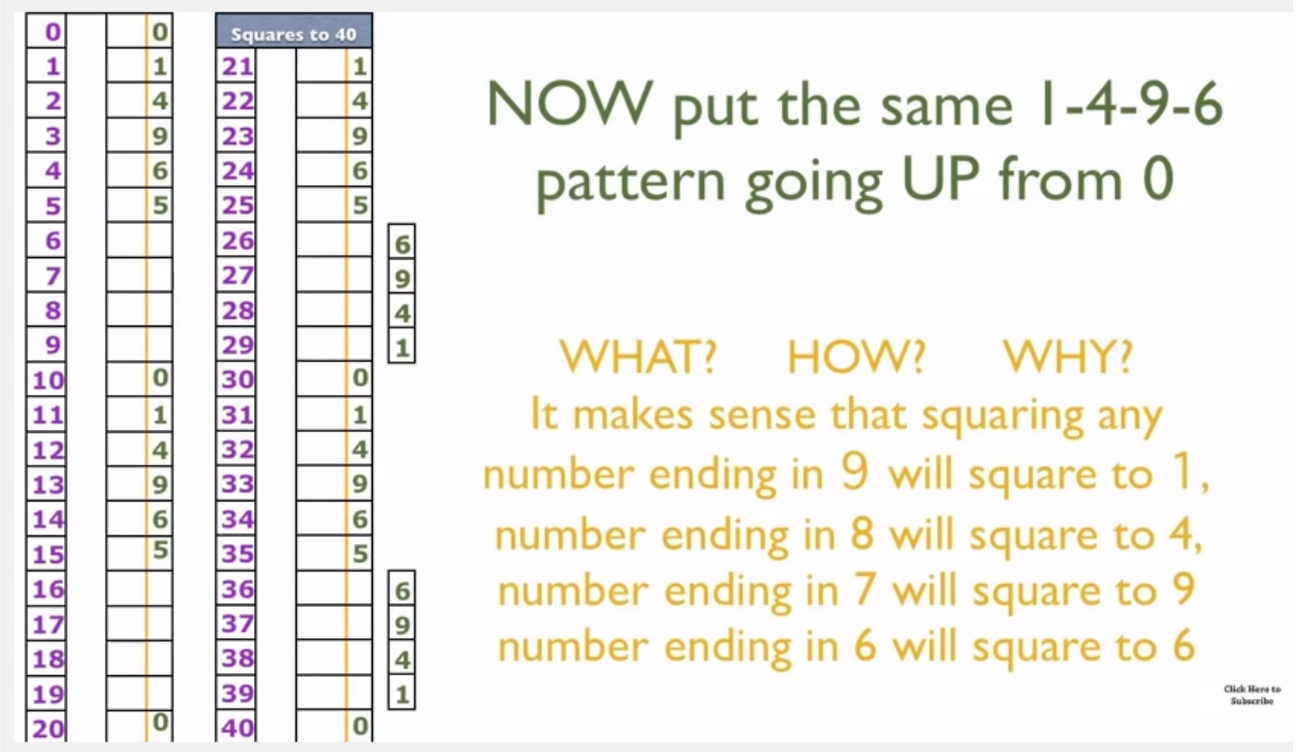
Squares to 40
NOW put the same 1-4-9-6 pattern going UP from 0
WHAT? HOW? WHY?
It makes sense that squaring any number ending in 9 will square to 1, number ending in 8 will square to 4, number ending in 7 will square to 9 number ending in 6 will square to 6
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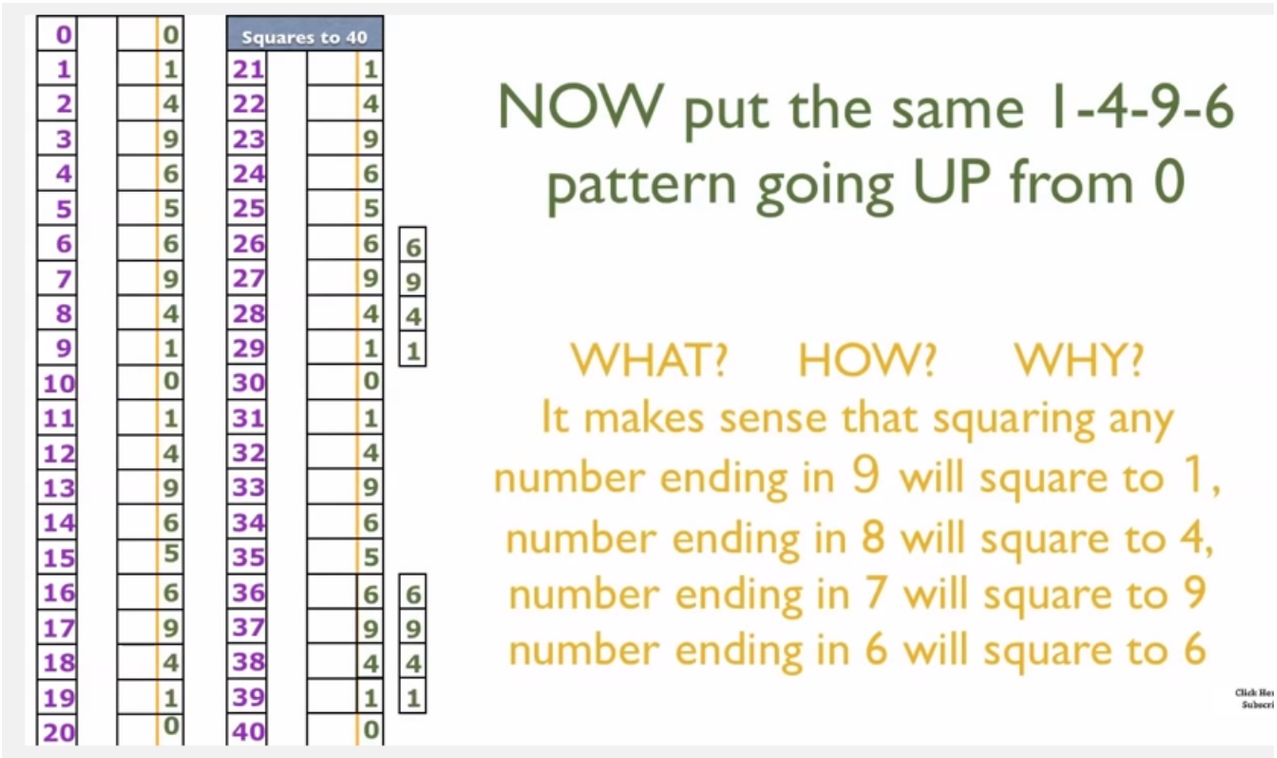
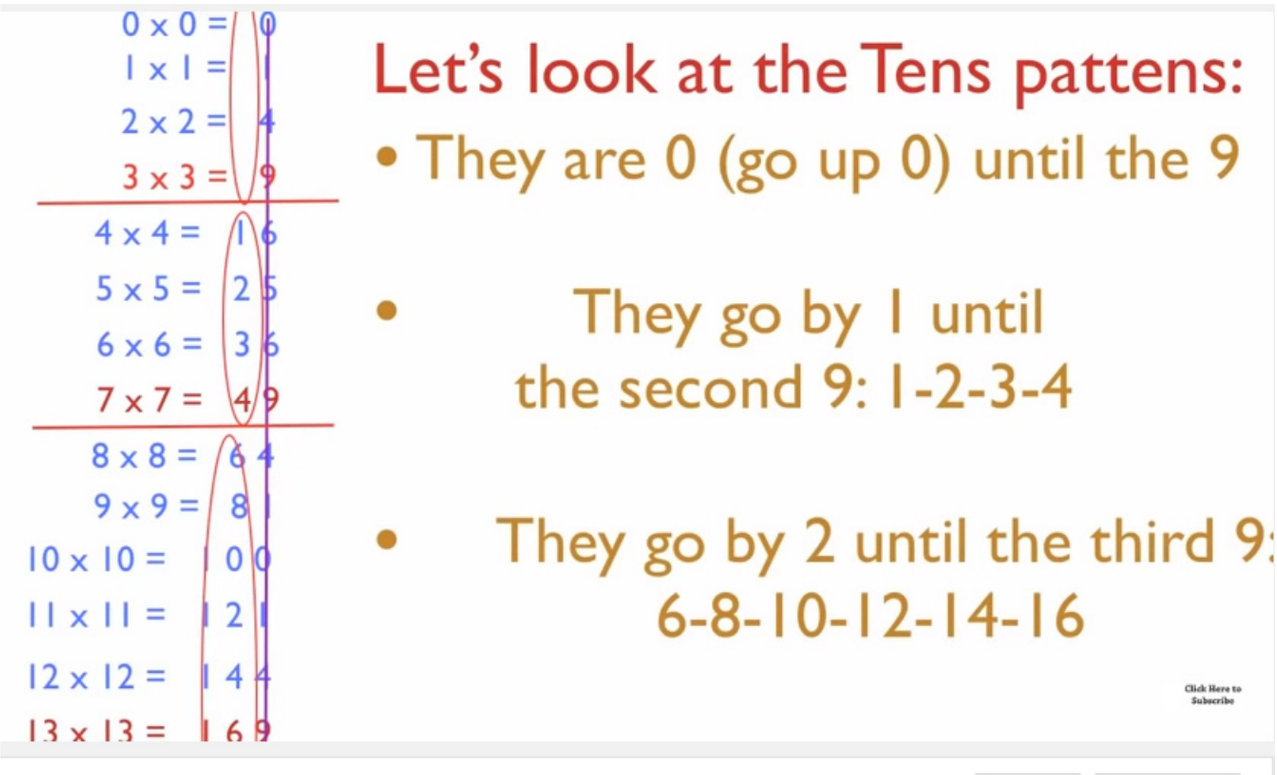

Squares to 40
NOW put the same 1-4-9-6 pattern going UP from 0
WHAT? HOW? WHY?
It makes sense that squaring any number ending in 9 will square to 1,
number ending in 8 will square to 4,
number ending in 7 will square to 9
number ending in 6 will square to 6


0 x 0 = 0
1 x 1 = 1
2 x 2 = 4
3 x 3 = 9
4 x 4 = 16
5 x 5 = 25
6 x 6 = 36
7 x 7 = 49
8 x 8 = 64
9 x 9 = 81
10 x 10 = 100
11 x 11 = 121
12 x 12 = 144
13 x 13 = 169
Let's look at the Tens pattens:
• They are 0 (go up 0) until the 9
• They go by 1 until the second 9: 1-2-3-4
• They go by 2 until the third 9:
6-8-10-12-14-16

0			0
1			1
2			4
3			9
4			6
5			5
6			6
7			9
8			4
9			1
10			0
11			1
12			4
13			9
14			6
15			5
16			6
17			9
18			4
19			1
20			0

Squares to 40			
21			1
22			4
23			9
24			6
25			5
26			6
27			9
28			4
29			1
30			0
31			1
32			4
33			9
34			6
35			5
36			6
37			9
38			4
39			1
40			0

Start by drawing a line after each 9 in the Onesies, this shows where the Tensies (tens-digits) change

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0	+0	0	0
1		0	1
2		0	4
3		0	9
4	+1	1	6
5		2	5
6		3	6
7		4	9
8	+2		4
9			1
10			0
11			1
12			4
13			9
14	+3		6
15			5
16			6
17			9
18	+4		4
19			1
20			0

Squares to 40			
21			1
22			4
23			9
24	+5		6
25			5
26			6
27			9
28	+6		4
29			1
30			0
31			1
32			4
33			9
34	+7		6
35			5
36			6
37			9
38	+8		4
39			1
40			0

After the 1st line, tens go up by 1: 1, 2, 3, 4 creating 16, 25, 36, and 49

Watch this video to square ANY number: CLICK HERE

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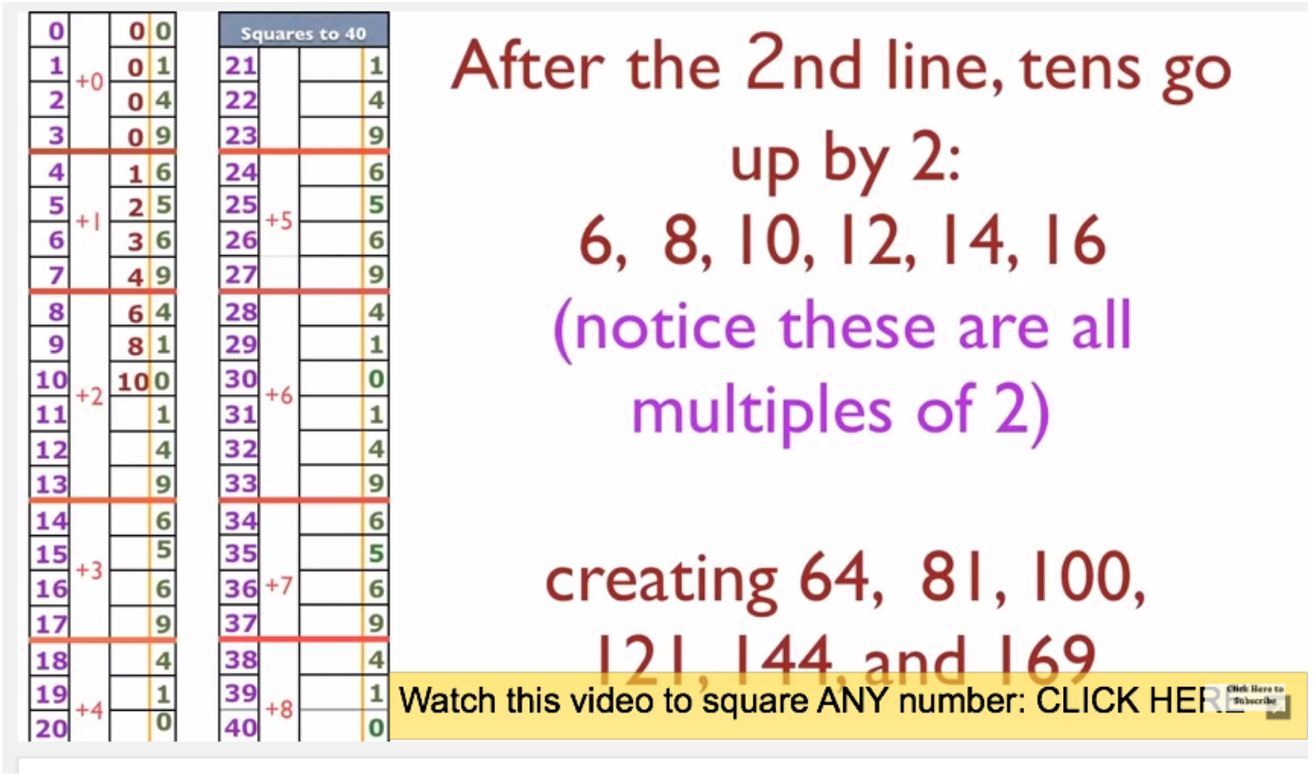
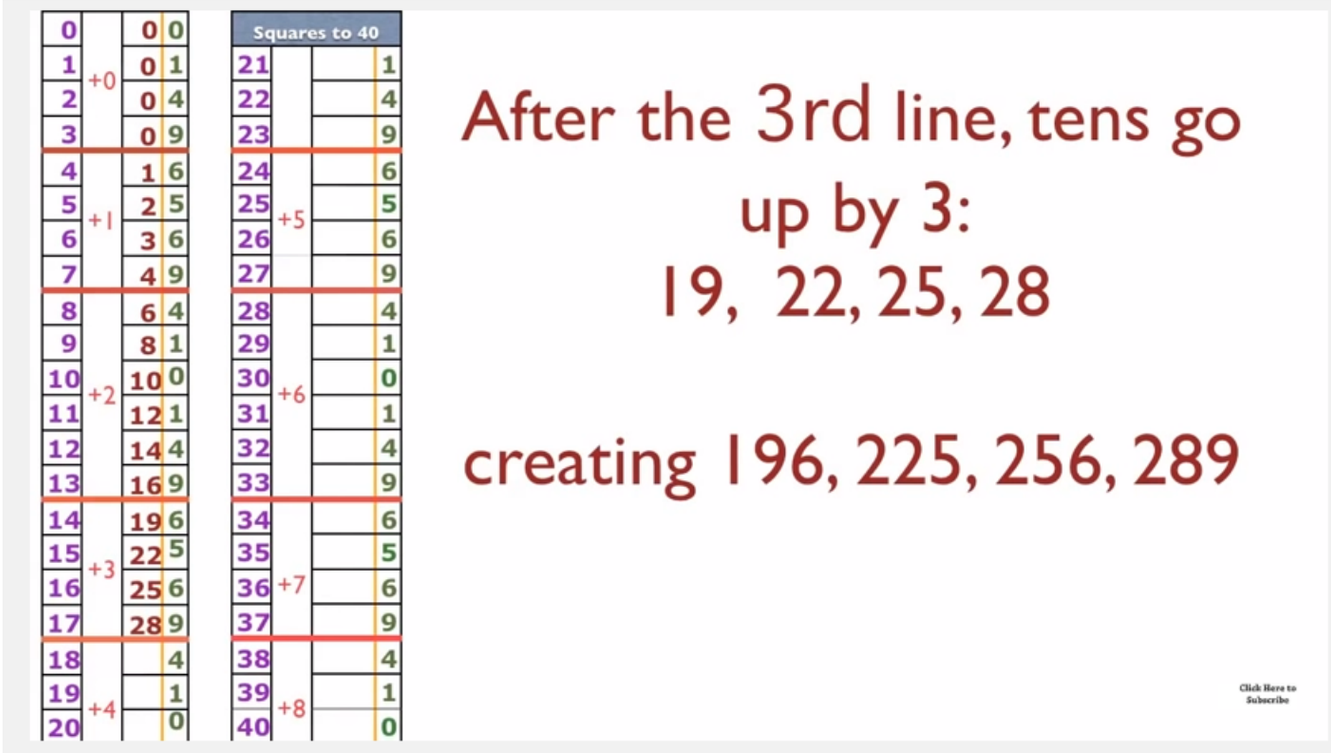

Squares to 40
After the 2nd line, tens go up by 2:
6, 8, 10, 12, 14, 16
(notice these are all multiples of 2)
creating 64, 81, 100, 121, 144, and 169
Watch this video to square ANY number: CLICK HERE


Squares to 40
After the 3rd line, tens go up by 3:
19, 22, 25, 28
creating 196, 225, 256, 289
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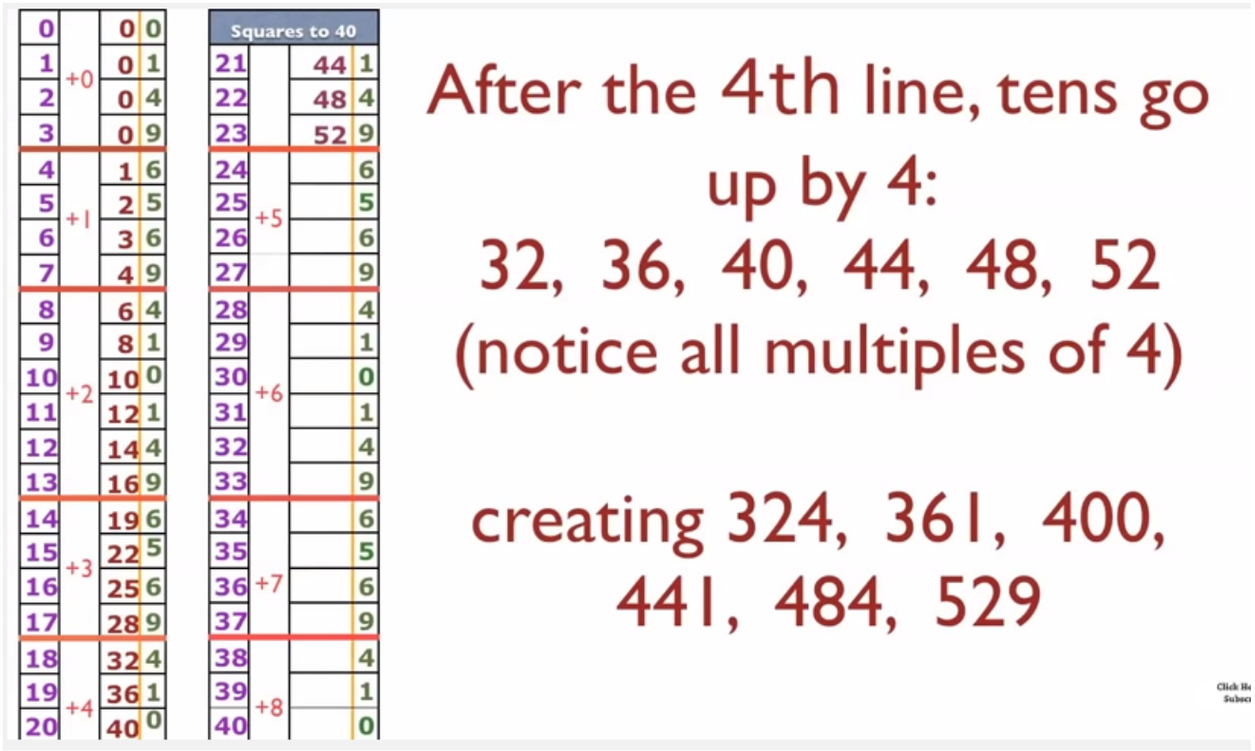
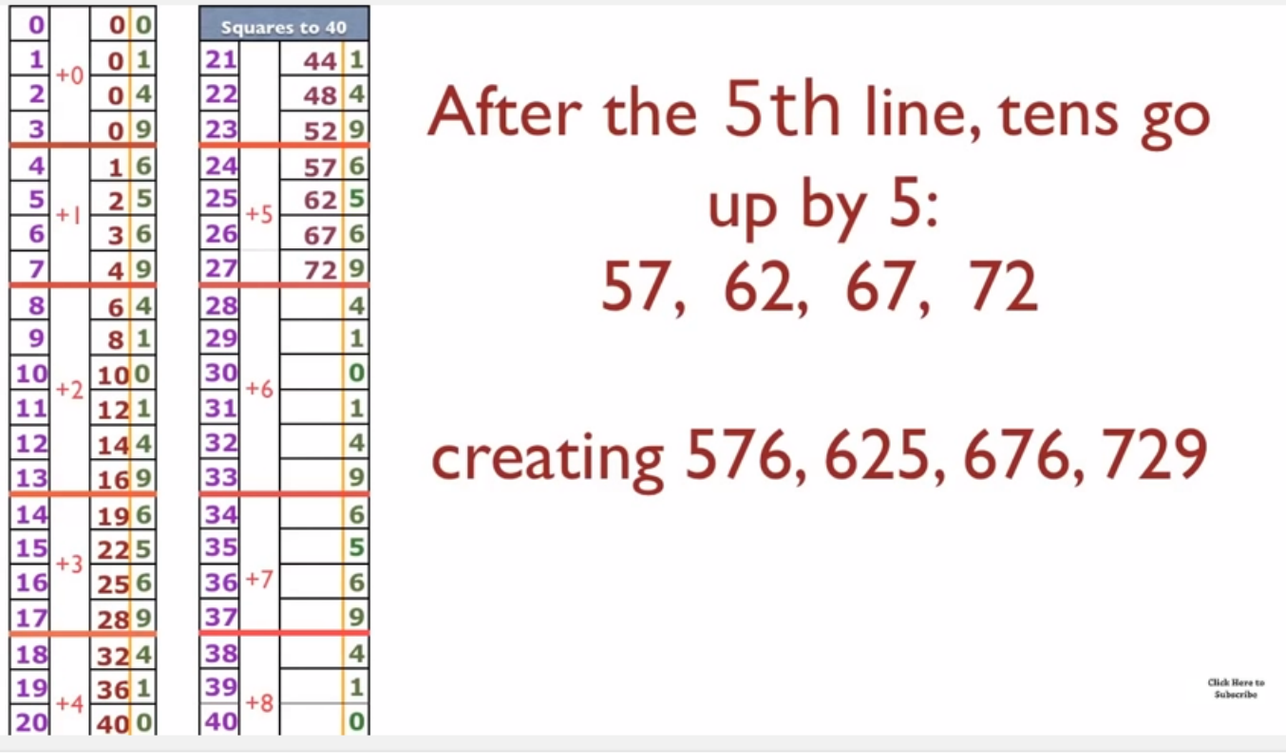
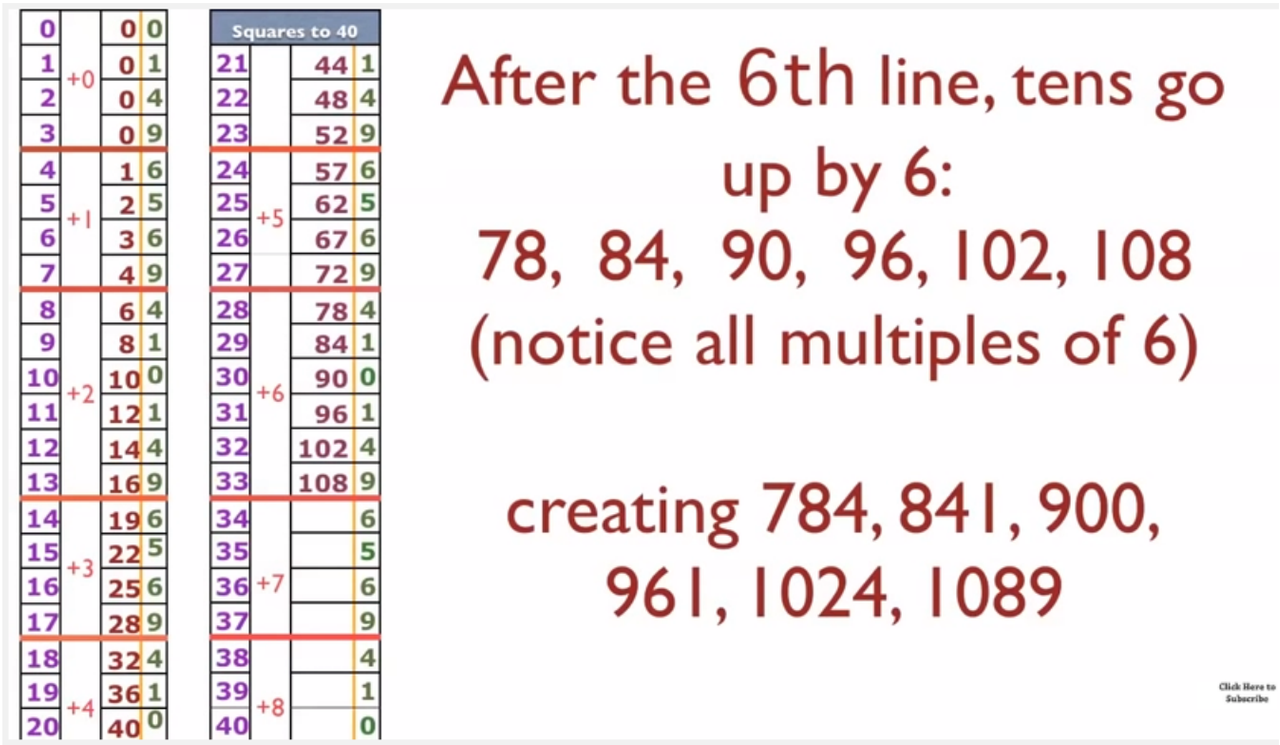

0 +0 0 0
1 0 1
2 0 4
3 0 9
4 +1 1 6
5 2 5
6 3 6
7 4 9
8 +2 6 4
9 8 1
10 10 0
11 12 1
12 14 4
13 16 9
14 +3 19 6
15 22 5
16 25 6
17 28 9
18 +4 32 4
19 36 1
20 40 0
Squares to 40
21 +5 44 1
22 48 4
23 52 9
24 6
25 5
26 6
27 9
28 +6 4
29 1
30 0
31 1
32 4
33 9
34 +7 6
35 5
36 6
37 9
38 +8 4
39 1
40 0
After the 4th line, tens go up by 4:
32, 36, 40, 44, 48, 52
(notice all multiples of 4)
creating 324, 361, 400, 441, 484, 529


0 +0 0 0
1 0 1
2 0 4
3 0 9
4 +1 1 6
5 2 5
6 3 6
7 4 9
8 +2 6 4
9 8 1
10 10 0
11 12 1
12 14 4
13 16 9
14 +3 19 6
15 22 5
16 25 6
17 28 9
18 +4 32 4
19 36 1
20 40 0
Squares to 40
21 +5 44 1
22 48 4
23 52 9
24 57 6
25 62 5
26 67 6
27 72 9
28 +6 4
29 1
30 0
31 1
32 4
33 9
34 +7 6
35 5
36 6
37 9
38 +8 4
39 1
40 0
After the 5th line, tens go up by 5:
57, 62, 67, 72
creating 576, 625, 676, 729


Squares to 40
After the 6th line, tens go up by 6:
78, 84, 90, 96, 102, 108
(notice all multiples of 6)
creating 784, 841, 900, 961, 1024, 1089
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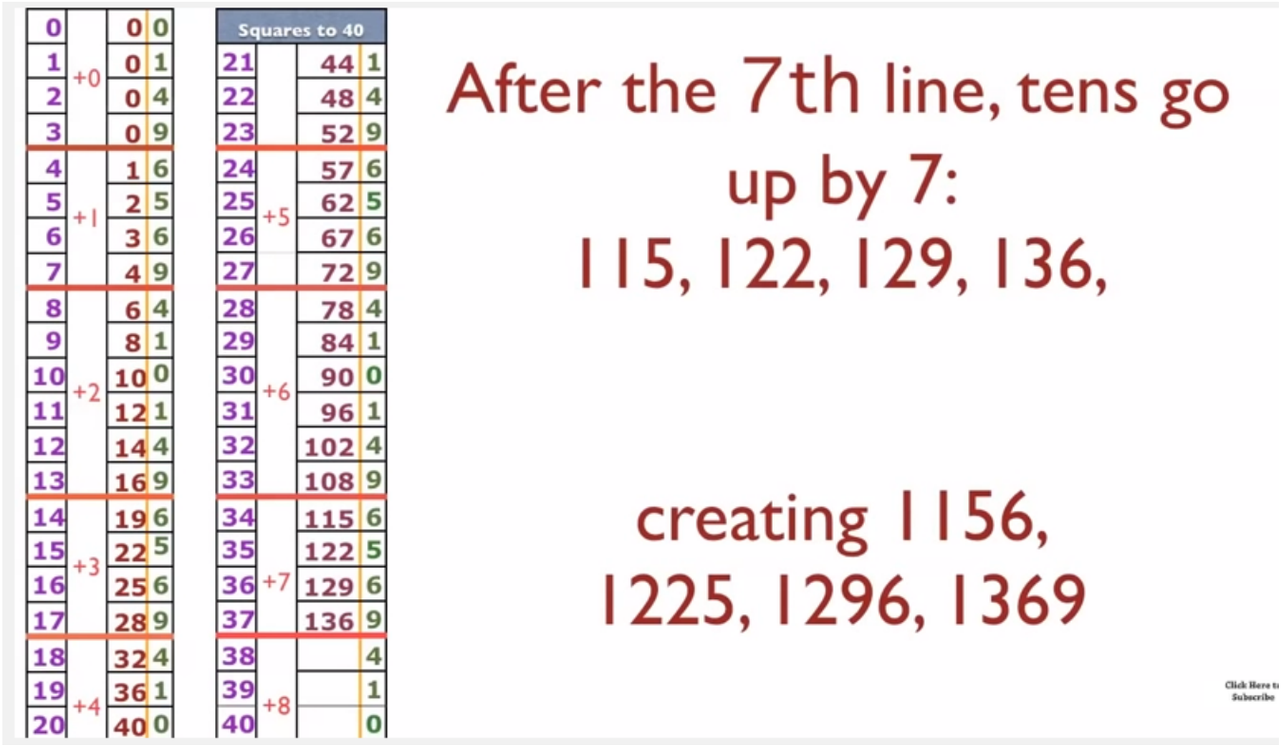
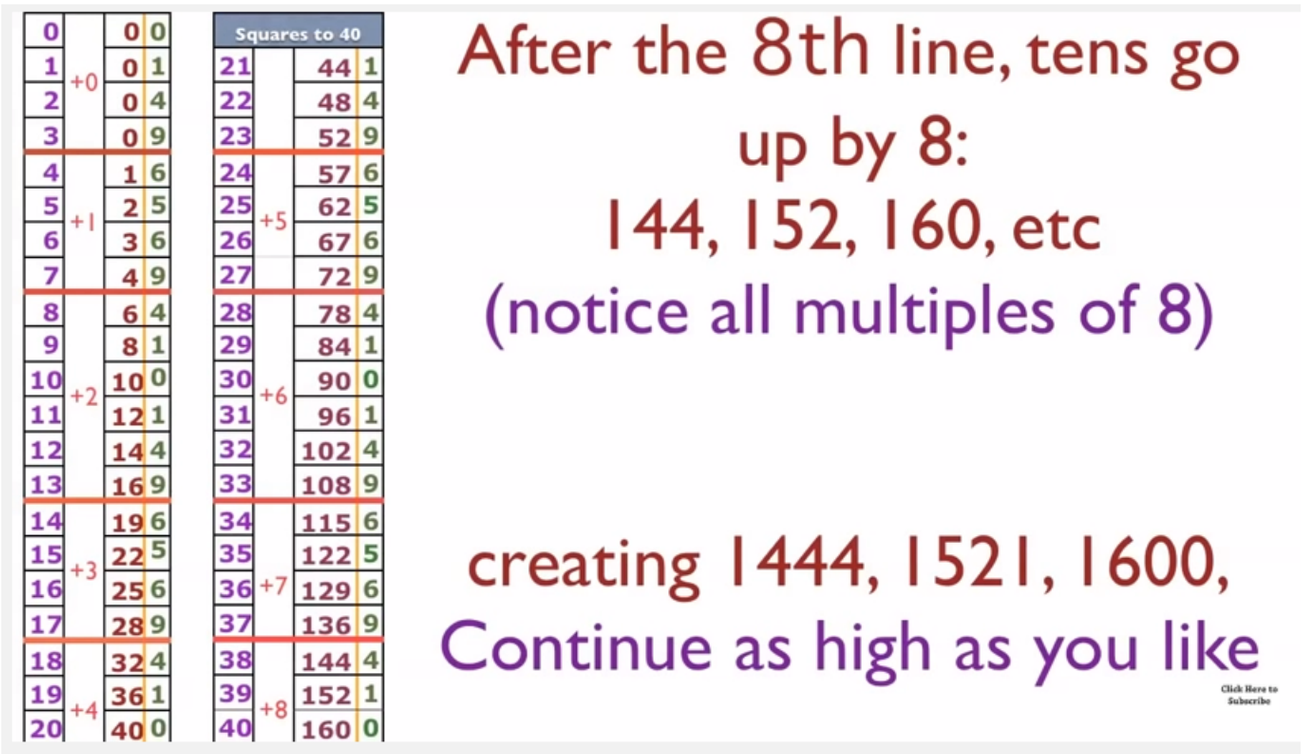
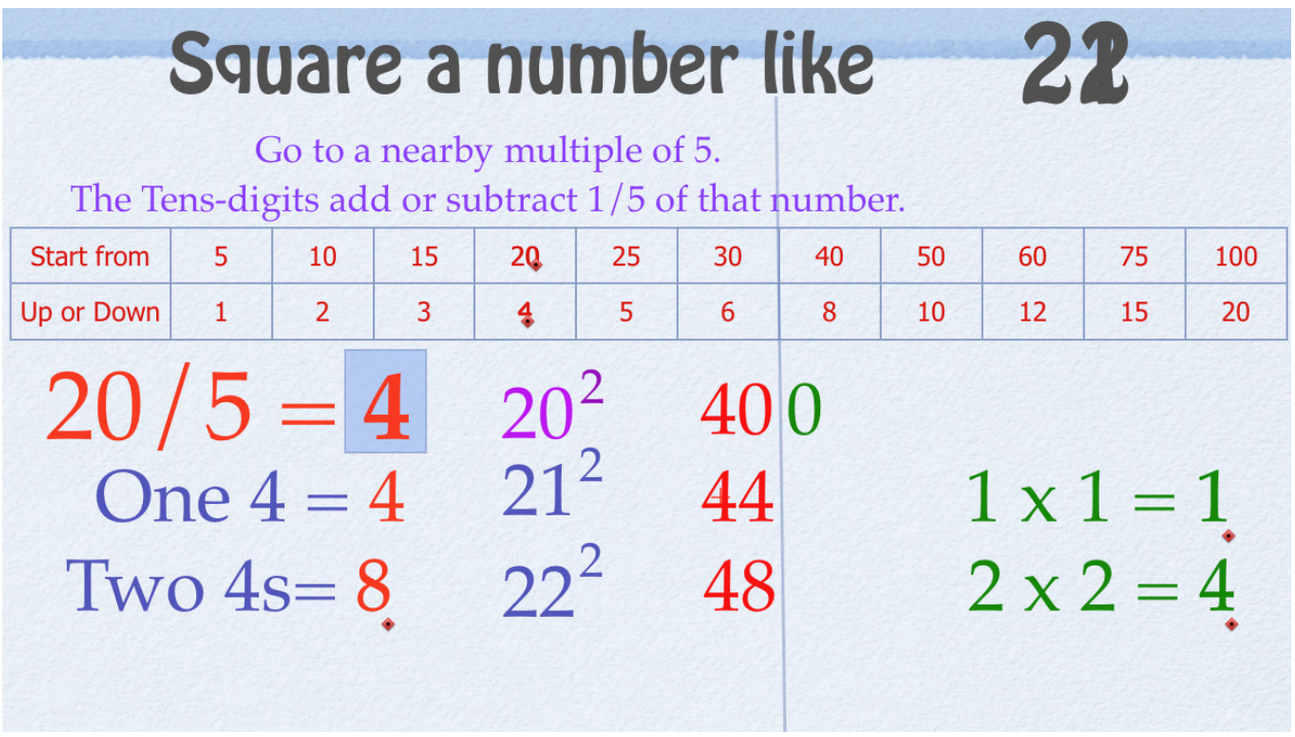
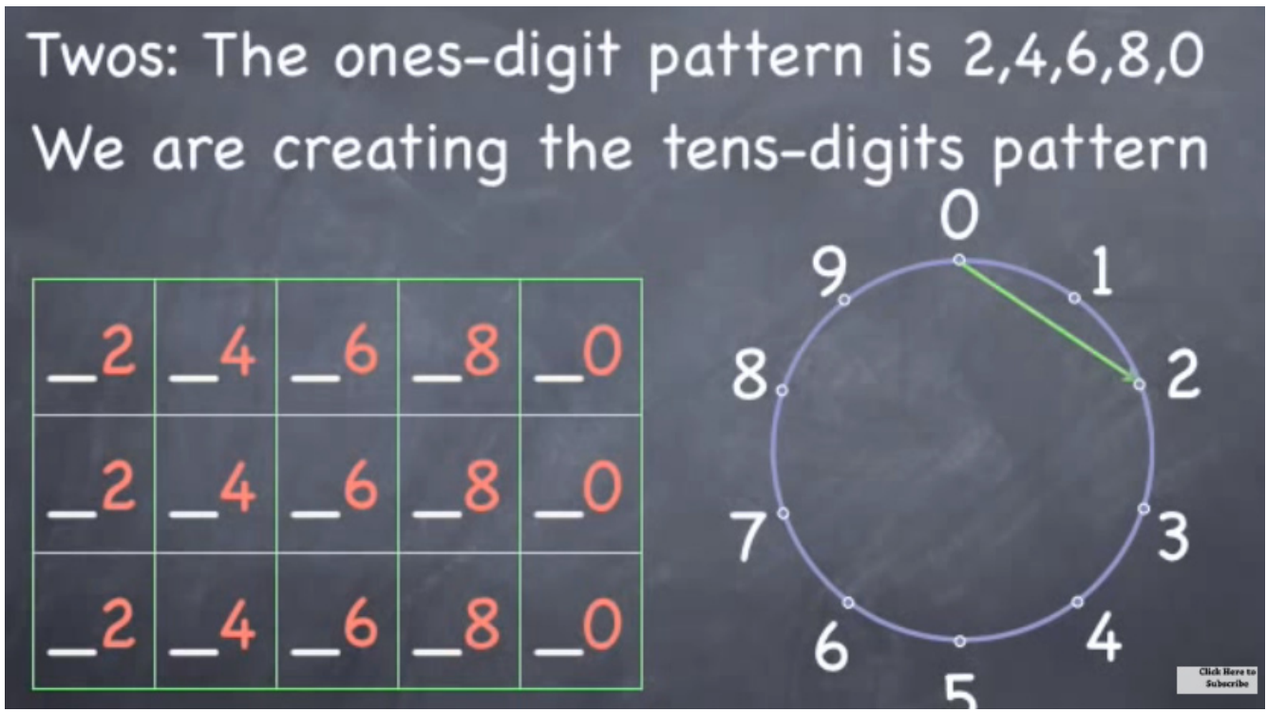

Squares to 40
After the 7th line, tens go up by 7:
115, 122, 129, 136,
creating 1156, 1225, 1296, 1369
Click Here to Subscribe

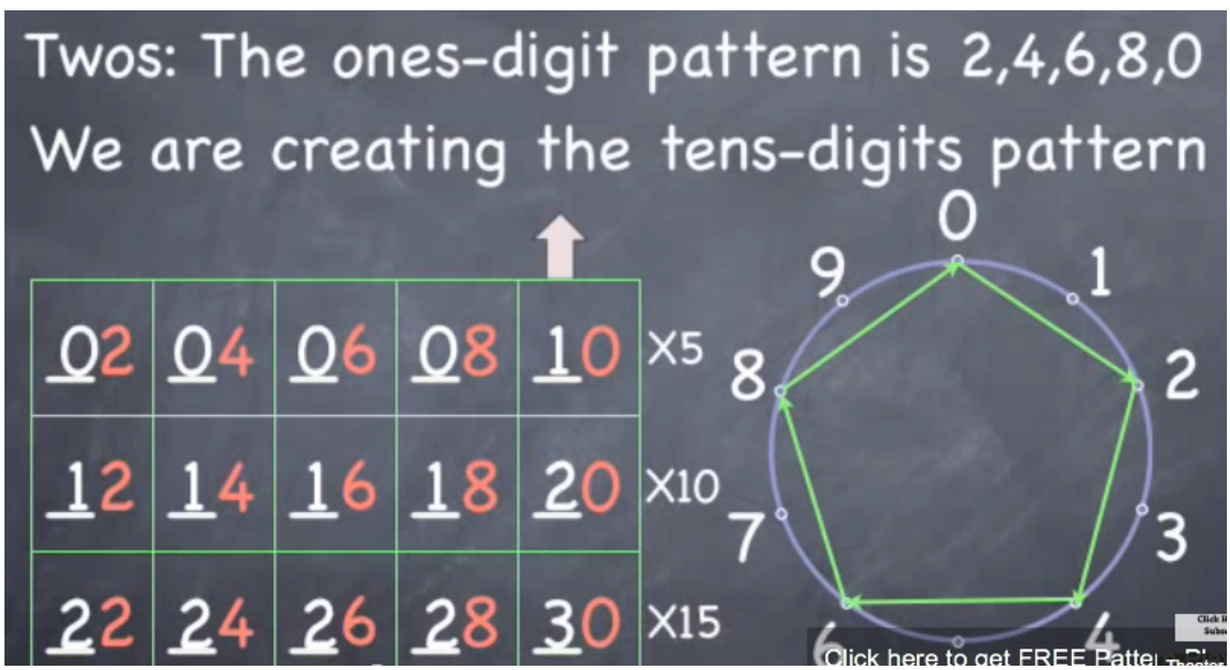


Square Any Number up to 100

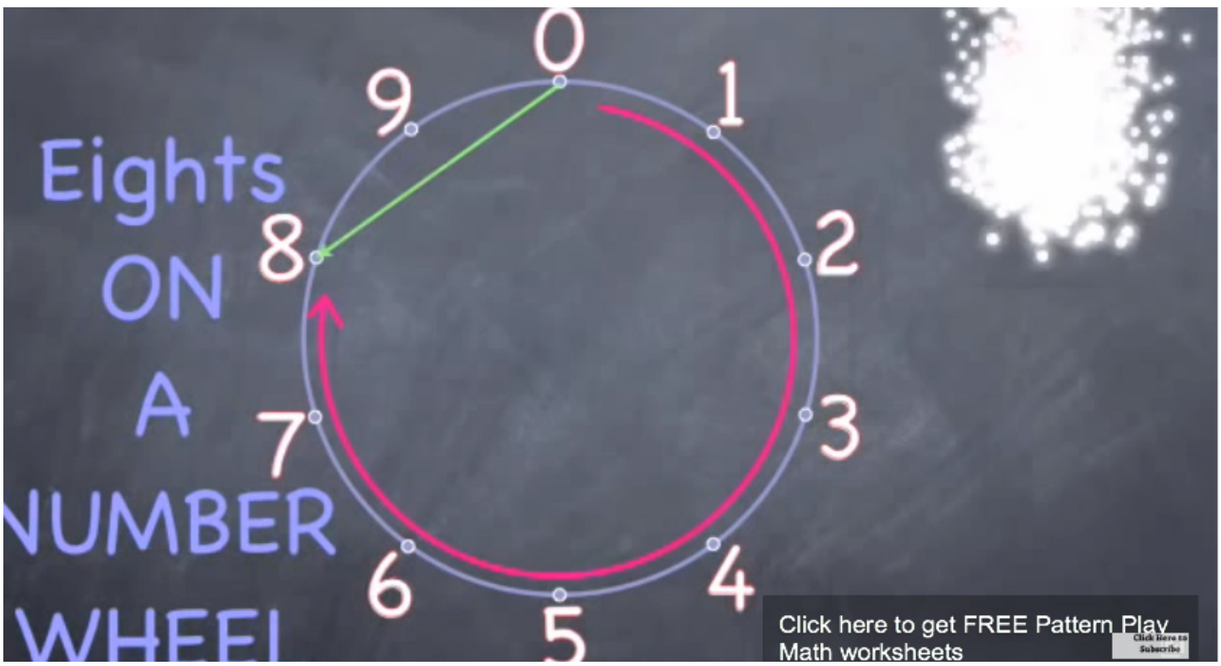


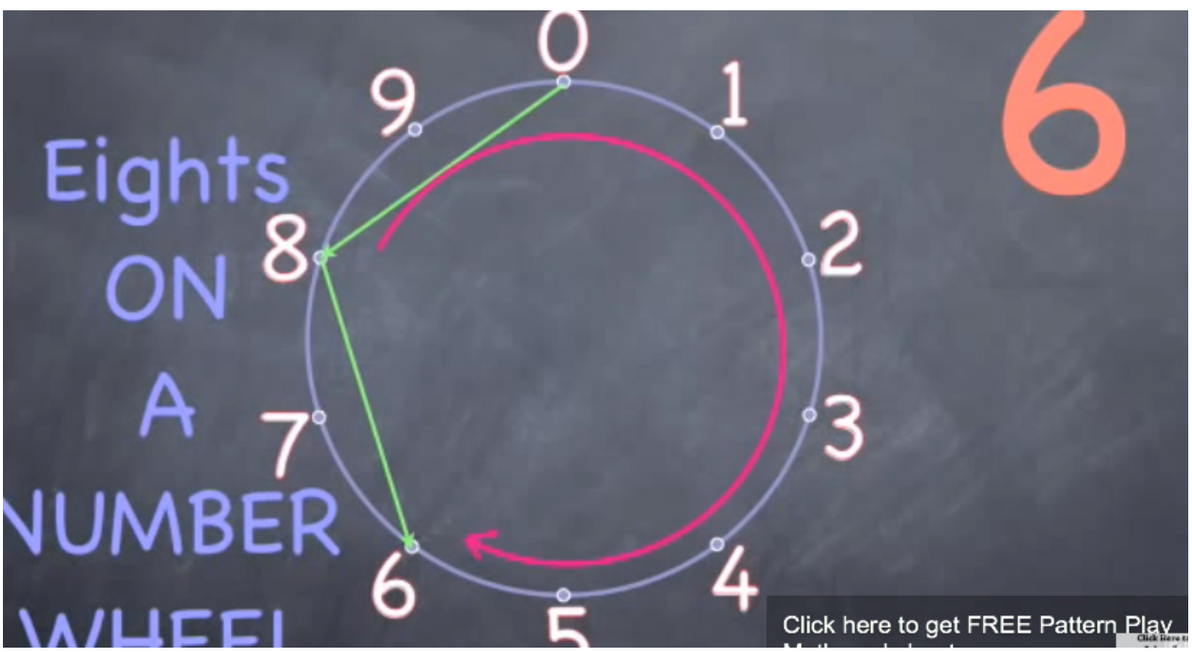
Twos on a Number Wheel



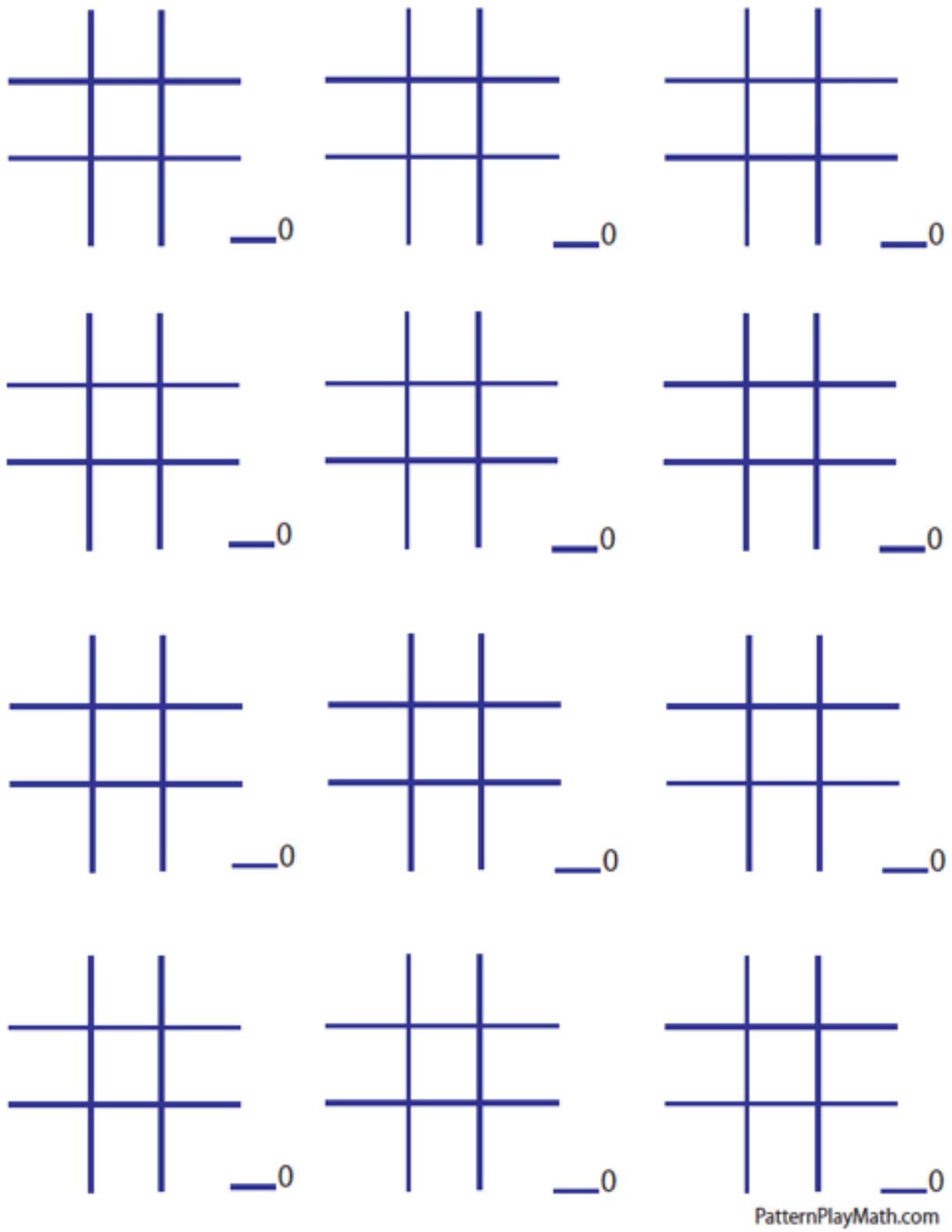


Eights on a Number Wheel





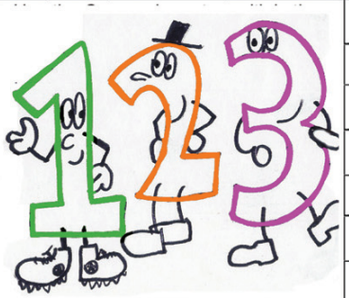
MisterNumbers TicTacToe Squares for 1s, 3s, 7s, and 9s

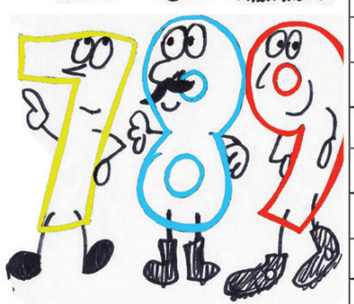


PatternPlayMath.com

EZ TIMES TABLE

Odd Numbers						Even Numbers					



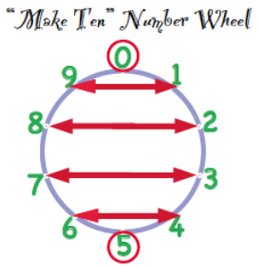


EZ TIMES TABLE

Odd Numbers						Even Numbers				
9	7	5	3	1	2	4	6	8	10
0 9	7	5	•	1	2	•	•	•	1 0
1 8	14	10	•	2	4	4x1	•	•	2 0
2 7	21	15	3x1	3	6	•	6x1	•	3 0
3 6	28	20	•	4	8	4x2	•	8x1	4 0
4 5	35	25	•	5	10	•	•	•	5 0
5 4	42	30	3x2	6	12	4x3	6x2	•	6 0
6 3	**49**	35	•	7	14	•	•	•	7 0
7 2	56	40	•	8	16	4x4	•	8x2	8 0
8 1	63	45	3x3	9	18	•	6x3	•	9 0
9 0	70	50	•	10	20	4x5	•	•	**10** 0
			•	11	22	•	•	•	
			3x4	12	24	4x6	6x4	8x3	
			•	13	26	•	•	•	
			•	14	28	4x7	•	•	
			3x5	15	30	•	6x5	•	
			•	16	32	4x8	•	8x4	
			•	17	34	•	•	•	
			3x6	18	36	4x9	6x6	•	
			•	19	38	•	•	•	
			•	20	40	4x10	•	8x5	
			3x7	21	42	•	6x7	•	
			•	22	44	4	•	•	
			•	23	46	•	•	•	
			3x8	24	48	4	6x8	8x6	
			•	25	50	•	•	•	
			•	26	52	4	•	•	
			3x9	27	54	•	6x9	•	
			•	28	56	4	•	8x7	
			•	29	58	•	•	•	
			3x10	30	60	4	6x10	•	
			•	31	62	•	•	•	
			•	32	64	4	•	8x8	

0 x any number = 0

Ten Adds and Nine Adds



Importance of students learning Ten Adds

Our number system is ten base so Ten, and the numbers that add up to 10, are very important for kids when learning addition, subtraction and multiplication, They show up on the number wheel in cool ways that can help kids with basic addition. Start with the five at the bottom.

Cube Numbers and Ten Adds

Another place that Ten Adds show happens when any number is cubed.

Numbers ending in:	Cube ends in:
0	**0**
1	**1**
2	**8**
3	**7**
4	**4**
5	**5**
6	**6**
7	**3**
8	**2**
9	**9**

Most cubes end in the same number as the Ones of the root number.
The four exceptions are 2, 3, 7, and 8. All of them end in the Ten Add of the original Ones digit.

Learning Ten Adds on a Number Wheel

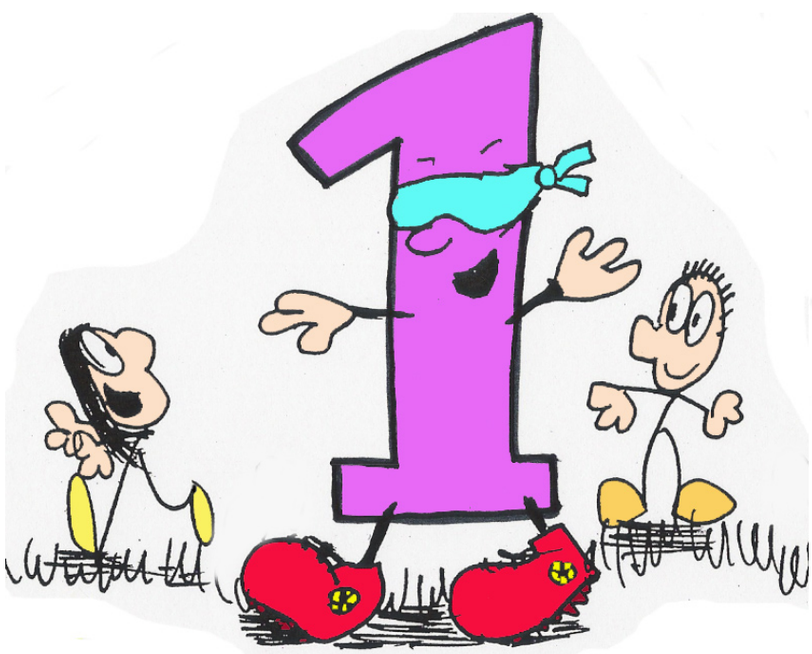
Start at the 5 at the bottom of the number wheel. It is all alone there. You can circle (and double an alone number. 5+5 = 10. We have 10 digits (fingers) and 10 digits (numbers) and our number system is ten based BECAUSE humans have 10 fingers.
To be more flexible, have five pennies in each hand. Again 5+5 = 10.
Now put one penny from the right hand into the left hand. We still have 10 pennies, but now 6+4 = 10.
Now put another penny from the right hand into the left hand. We still have 10 pennies, but now 7+3 = 10.
Now put another penny from the right hand into the left hand. We still have 10 pennies, but now 8+2 = 10.
Now put another penny from the right hand into the left hand. We still have 10 pennies, but now 9+1 = 10.
Now put the last penny from the right hand into the left hand. We still have 10 pennies, but now 10+0= 10.
On the number wheel horizontal parallel lines show us the Ten Adds.

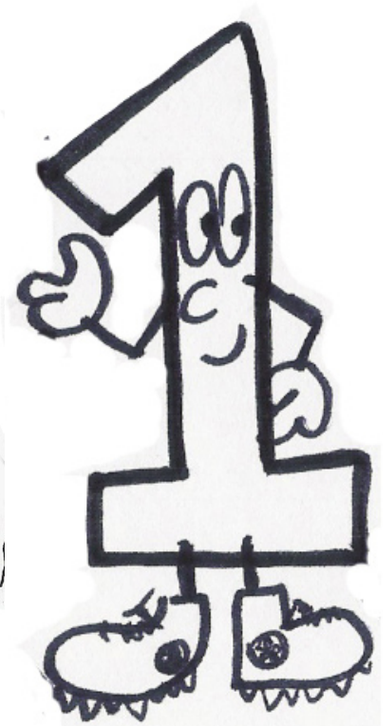
Nine Adds

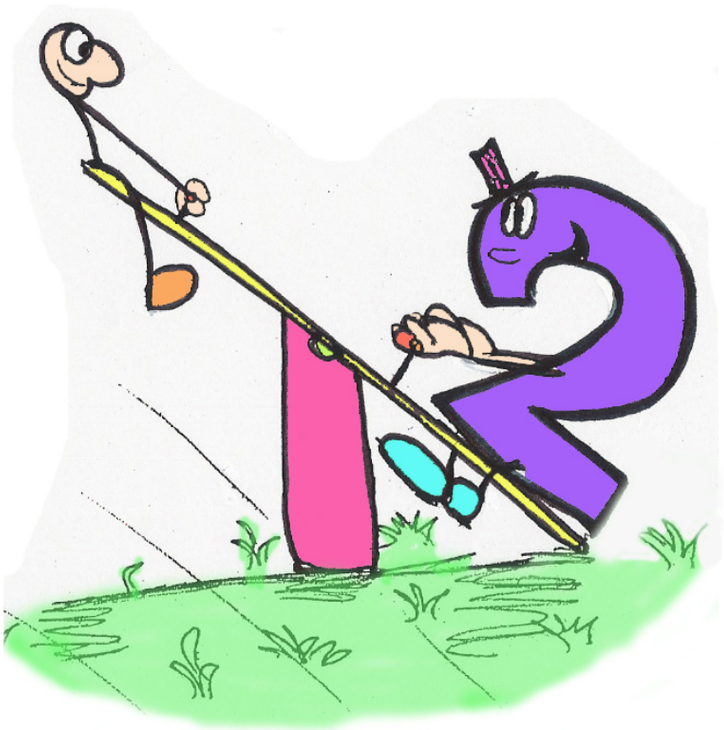
Look at the Ten Adds on a number Wheel. Raise all the right side up one number to create Nine Adds. Again we have parallel lines and the numbers linked not only show all the numbers adding up to 9: 0-9, 1-8, 2-7, 3-6, 4-5, 5-4, 6-3, 7-2, 8-1, 9-0 as we go around, but they also are revealing the Nines times table: 9-18-27-36-45-54-63-72-81-90. See the Nines Add Wheel

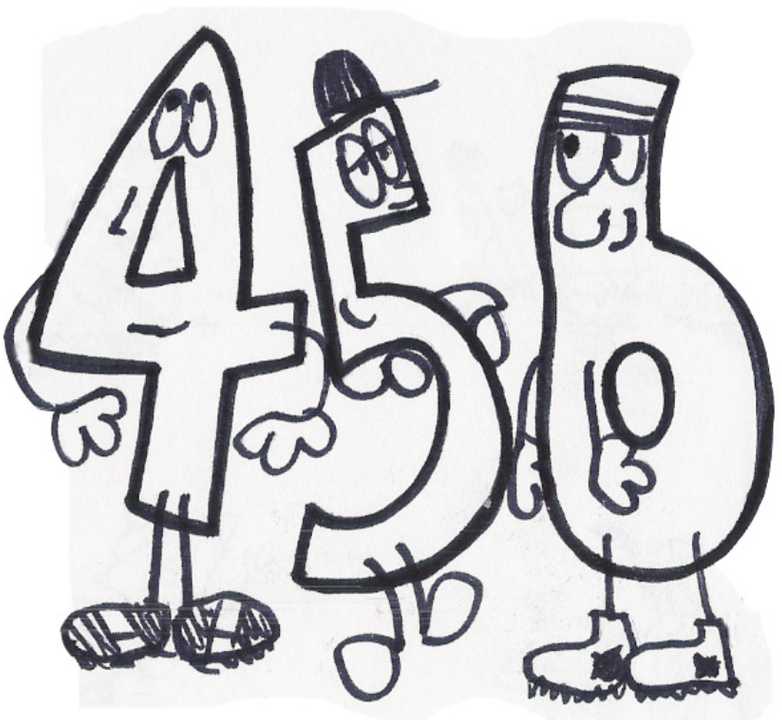
Coloring Numbers: Single and Ten-Adds

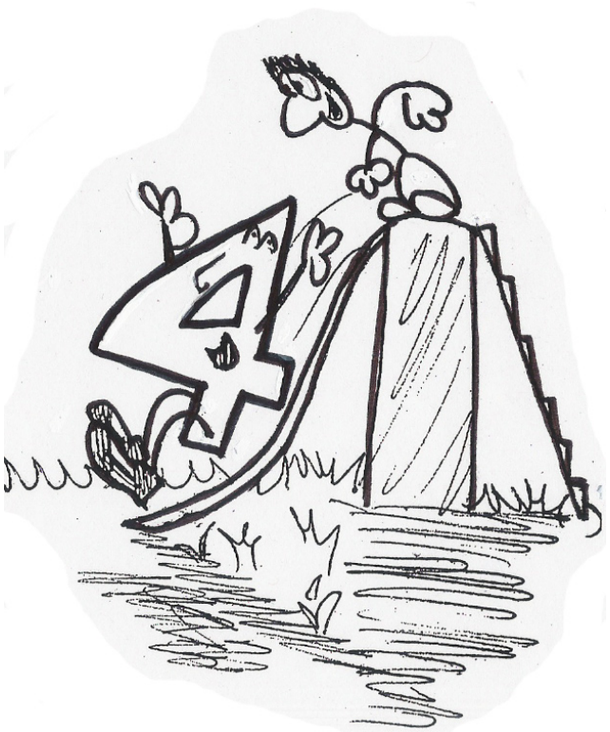
Originals by Jacob Marsh

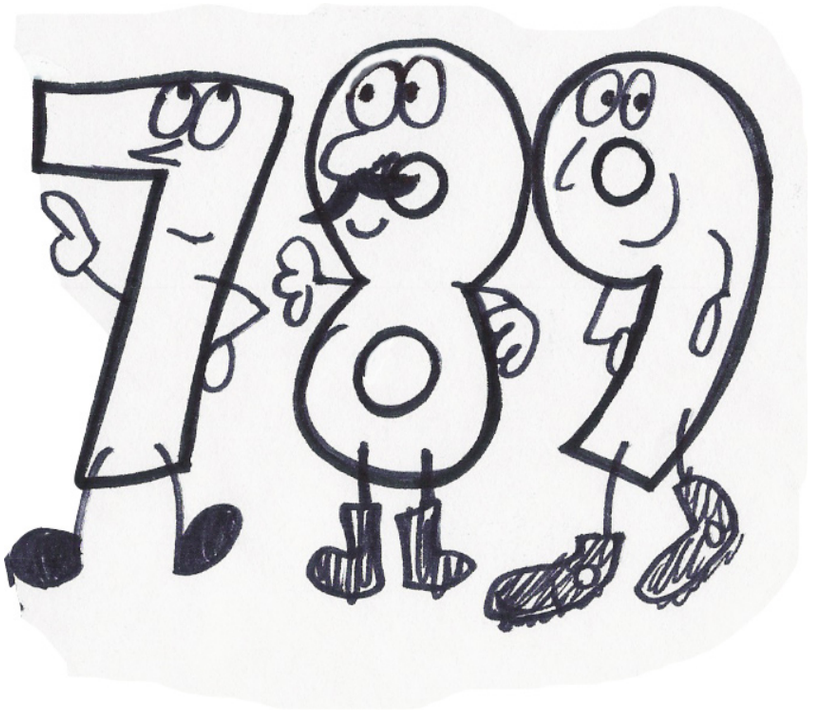


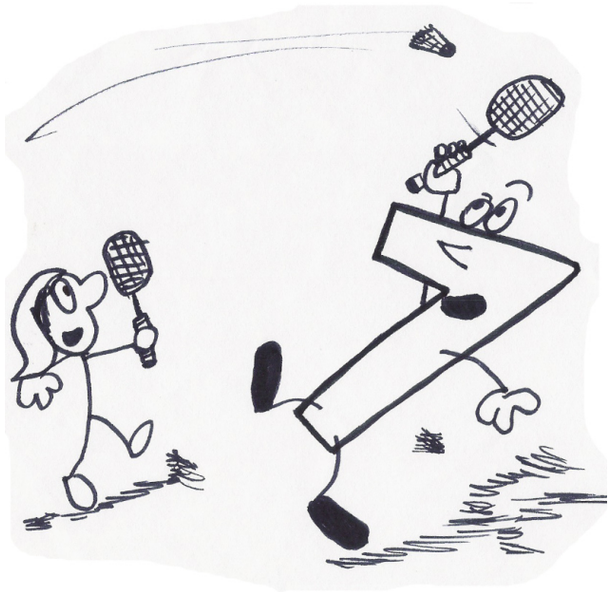


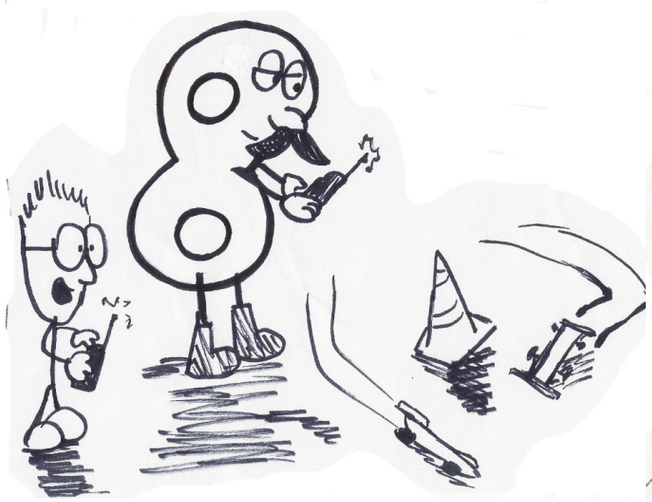


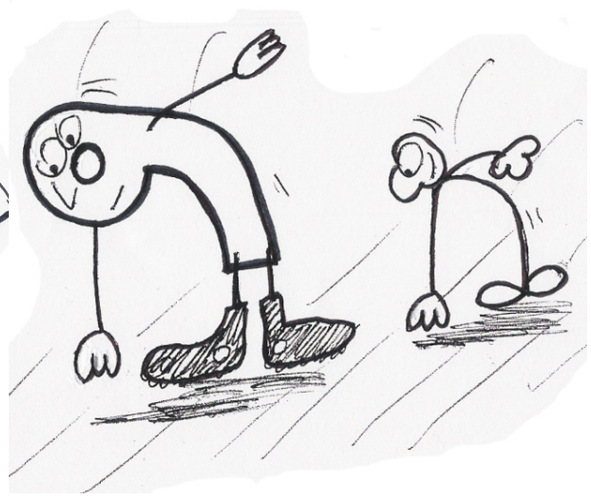


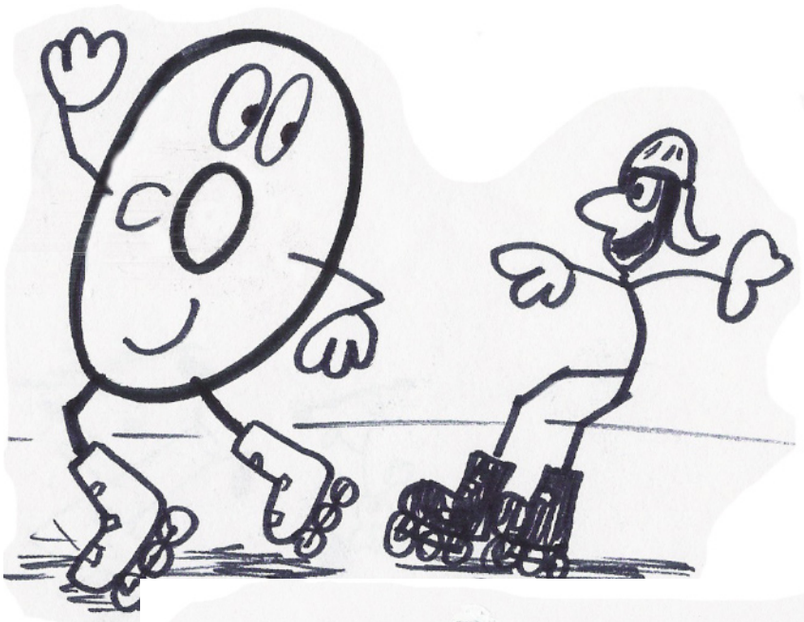


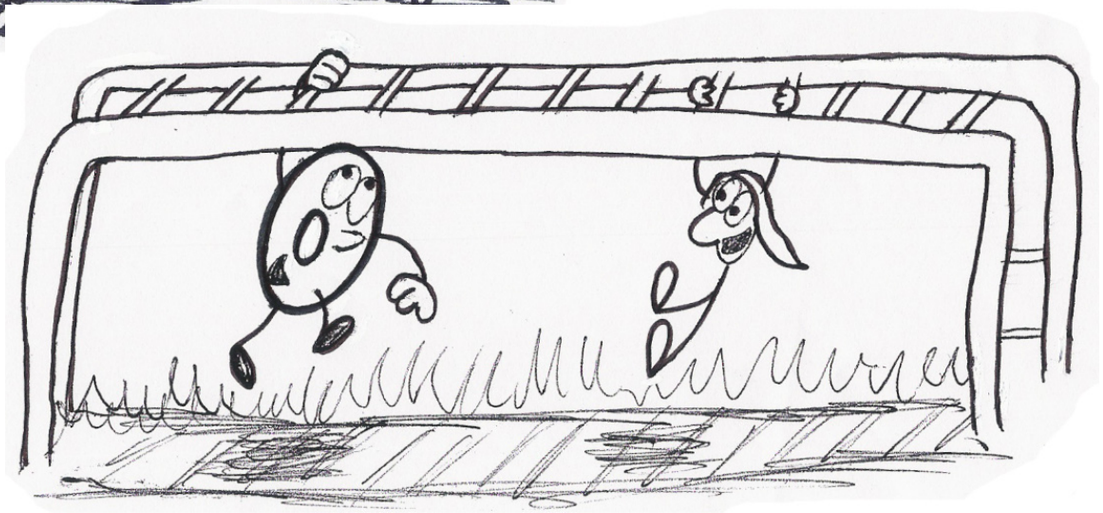


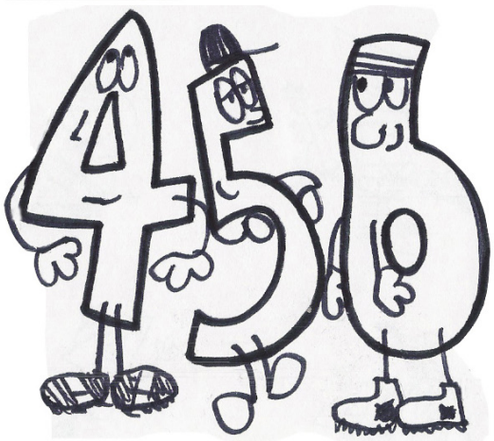


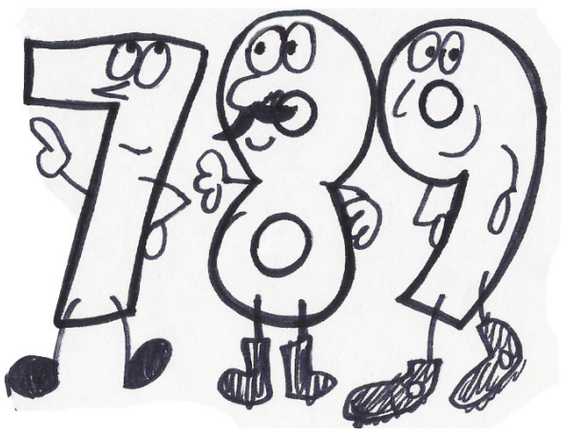


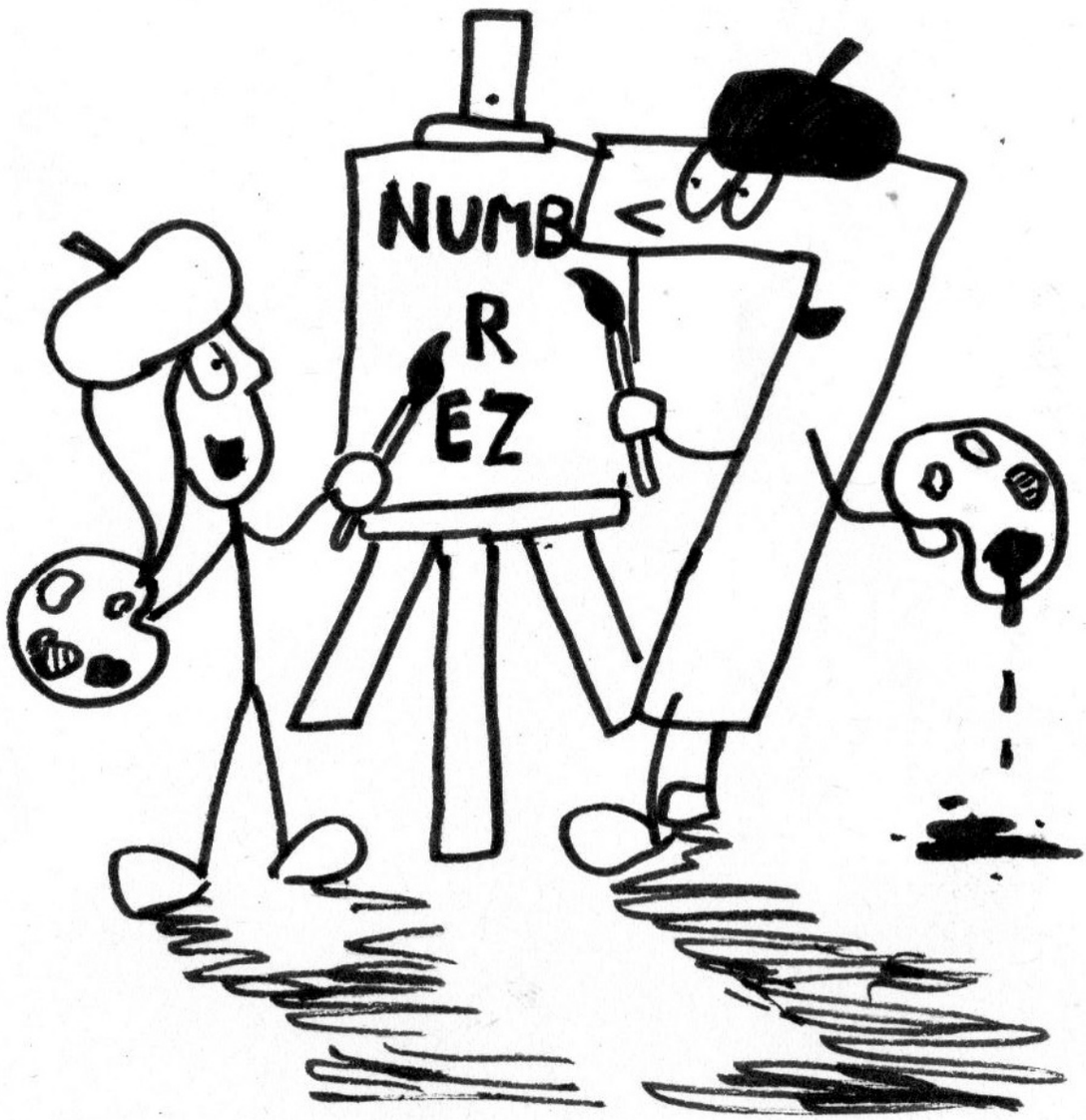








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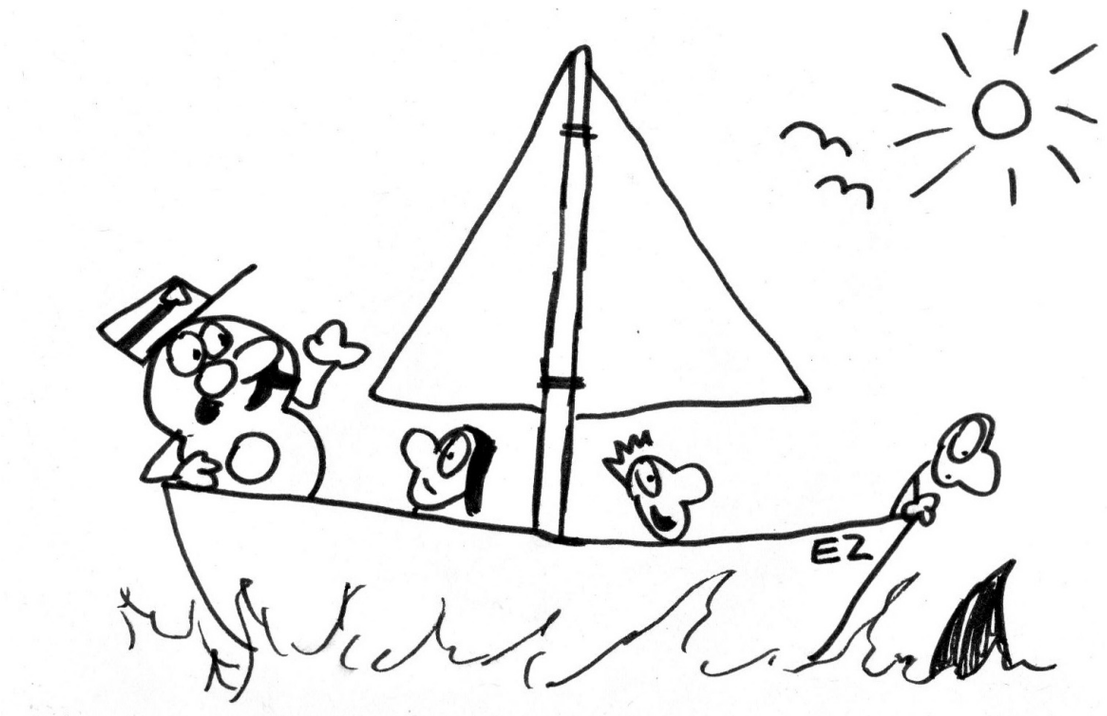

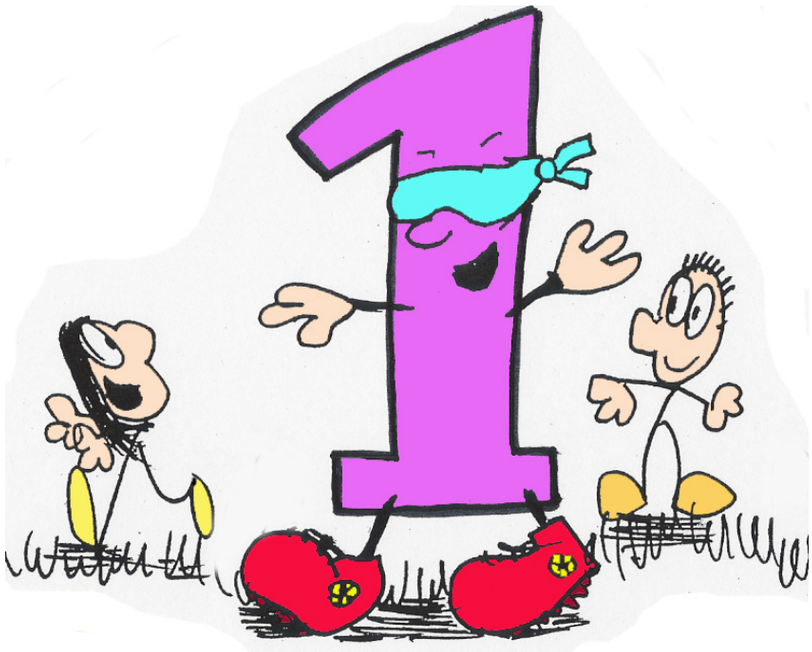

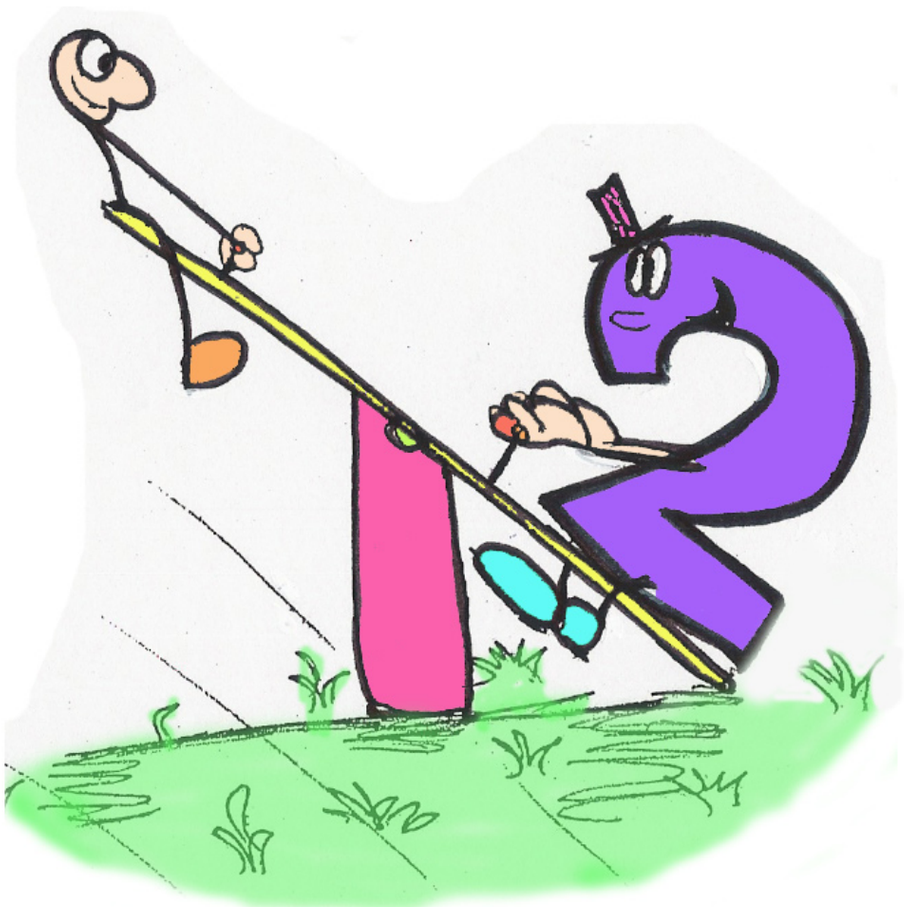

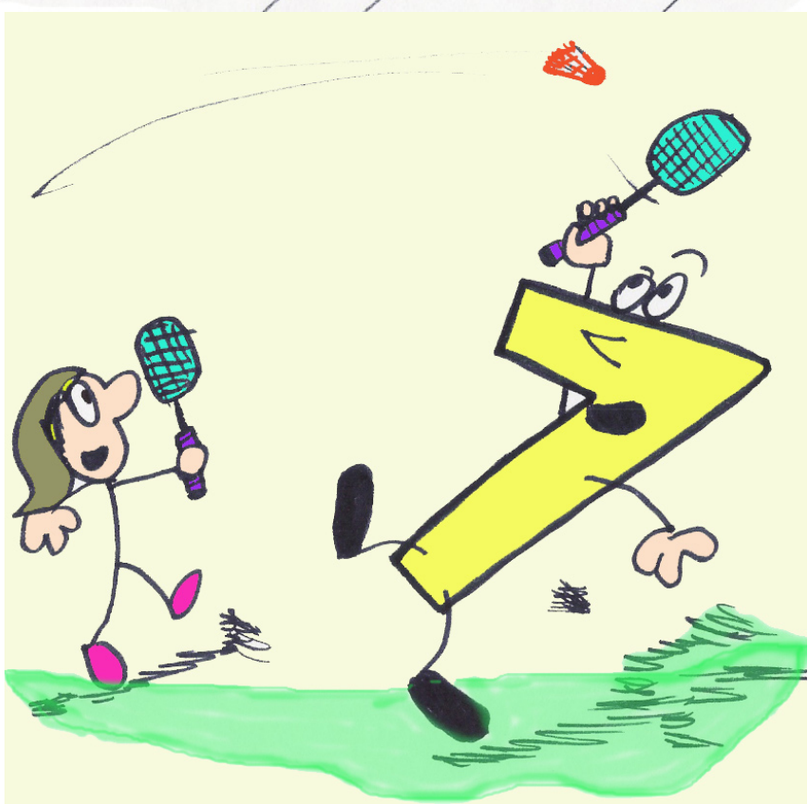

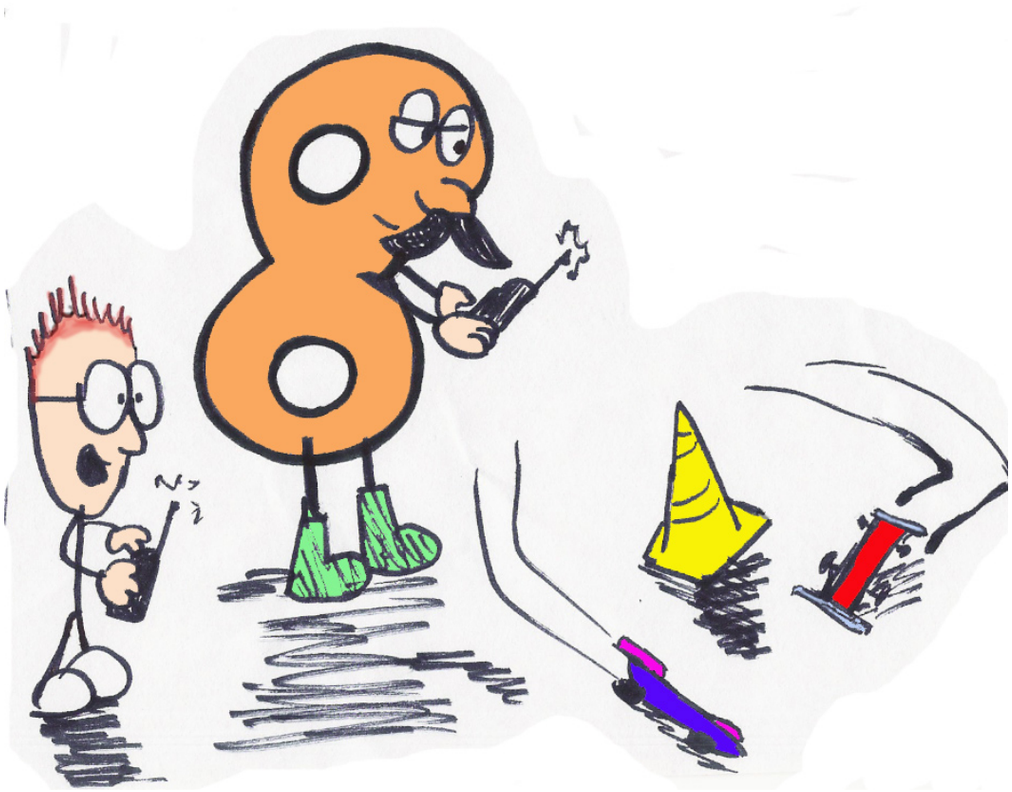

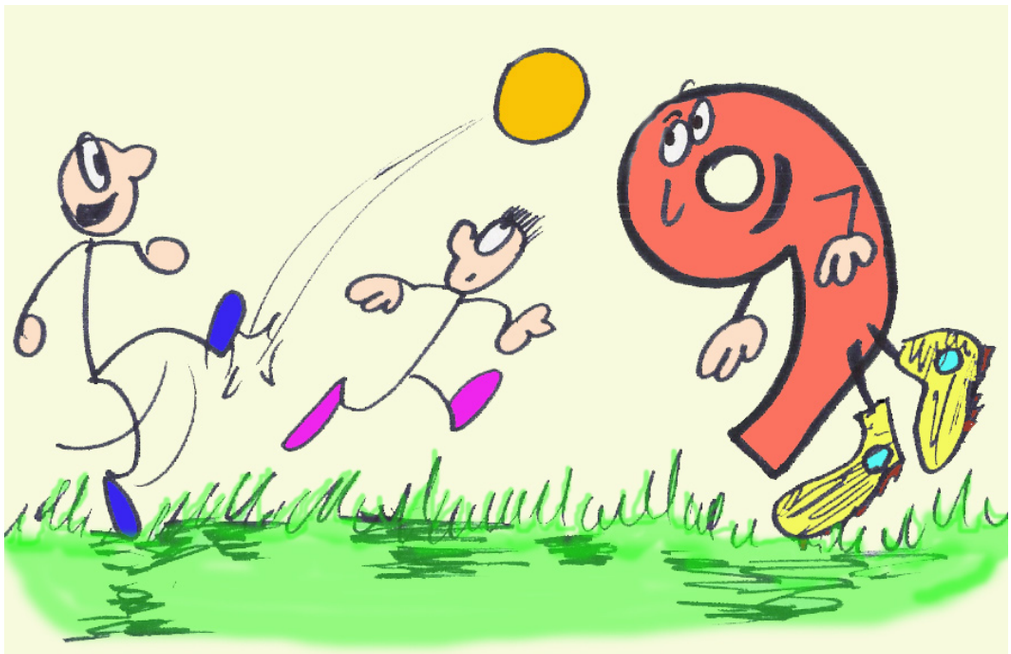

Color Ten-Adds