

Whole Numbers

Primary Mathematics
Study of numbers, patterns and
simple operations
(Grades 1 & 2)

LEARNING LOG



<http://www.happalmer.com/Count,%20Add,%20Subtract/Engineer.jpg>

Name: _____

Primary Whole Numbers Learning Log

Copyright: Barbara J. Smith

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This document edition will be used as a pilot resource to support innovative schools. The intent of sharing this first version with students, staff and families, is so we can gather further input for future revisions of this living curriculum. All we ask is that if you use these materials please give credit to the author(s) of this initial work, in your introduction.

Acknowledgement: Many thanks to Headwaters Academy for taking part in the initial pilot of this resource.

PURPOSE of LEARNING LOG RESOURCE:

1. To support the Ontario Science and Mathematics Curriculum
2. To support independent and paired study during station work or during home study (holiday or at-home interest/extended homework activities)
3. To add support as an enrichment or remedial resource (students can work at their own pace)
4. To provide a learning log (evidence of learning) built in to student resources

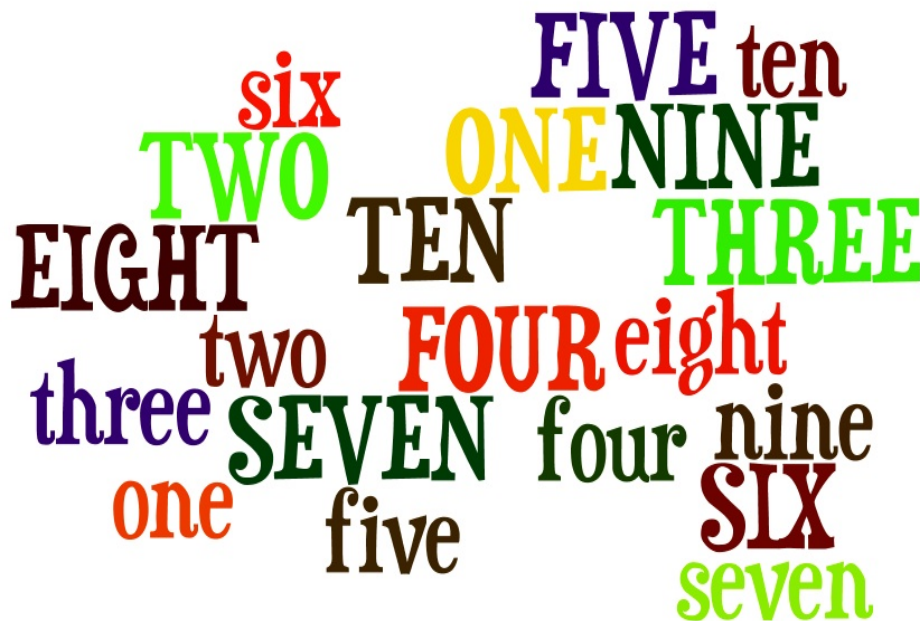
What's in each lesson/unit?

- **Check In** – (diagnostic quiz – to reduce repeated teaching)
- **Essential Targets (ET)** – state or provincial expectations
- **Examples** (patterns for examining the math)
- **TECH CHECK** (more ways and examples for practicing the math)
- **REAL WORLD Problems** (context for math)
- **Fun and Games** (activities for making memories)
- **Reciprocal Teaching** (talking and demonstrating 'like a teacher')
- **GOT IT** (learning log/notebook evidence of learning)
- **Habit Check** (checking in on how students are doing the math)
- **Extensions** (students can extend where lesson leads next)
- **Master Quiz** (sample unit quiz)
- **Math Project** (culminating task revealing applied mastery of many ET's)

The MATH Challenge!

Trailblazer (Expert)	180+ points
Pathfinder (Apprentice)	160-179 - points
Rookie (Novice)	< than 160 points

Challenge	Maximum Points
Graphing & Counting Quiz	30
Patterns Quiz	30
Place Value Quiz	50
Operations Quiz	70
Learning Log Challenge (complete tasks in book)	10
Classroom Work	10
TOTAL	200



<https://move2yourbestmove.files.wordpress.com/2014/01/wordle-math.jpg>

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A. Counting

Check-In (diagnostics)

Maybe you already know all this?

Show your teacher what you know!

Count and write



<http://artifexstudio.net/count-and-write-the-number/>

1. Counting by 1's (Review)

RULE: When you count objects, each object represents 1.

- Arrange numbers and Lego on a counting mat for your teacher.

1	2	3	4	5	6	7
○	○ ○	○ ○ ○	○ ○ ○ ○	○ ○ ○ ○ ○		

STEP OUTSIDE:

- In pairs, collect leaves already on the ground to use for this number counting activity.

<http://kidscraftroom.com/wp-content/uploads/2016/09/Fine-Motor-Counting-Activity-1.jpg>



FUN & GAMES: Magic Marker Count and Sort

Every year, we need to sort through our magic markers to get rid of the ones that have dried up.

- Choose one colour to count and sort.



http://2.bp.blogspot.com/-Ja-KdHtAOwg/VPIQsDGtikI/AAAAAAAAABVM/nm3FeFoa4NU/s1600/20150204_134853.jpg

- Using 21 markers, count backwards with your teacher.

How well did I complete these tasks?	Like a Trailblazer (expert)	Like a Pathfinder (apprentice)	Like a rookie (need more help & practice)

GOT IT:

- Using a hundreds chart, count backwards by 1's from 50.



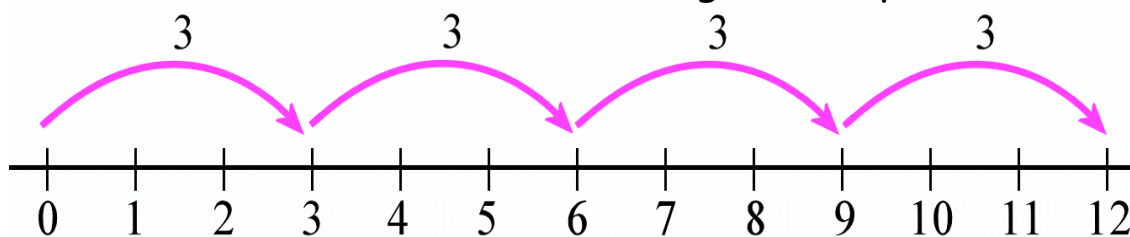
my 100 chart

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	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

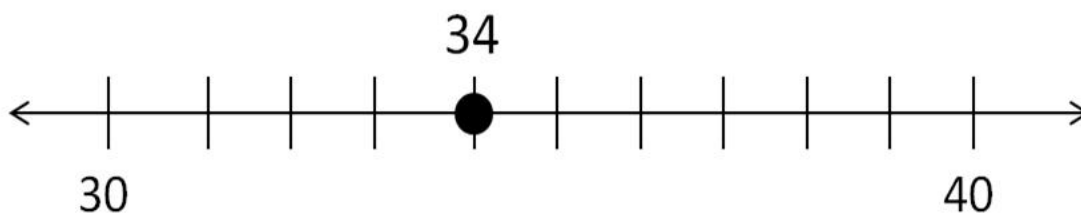
RULE: You can also count using number lines.

EXAMPLES:

This number shows someone counting three spaces at a time.



Sometimes you can use a partial number line.



GOT IT!

- Create your own number line from 72-81 and draw a dark dot where the number 77 would be.

2. Odd and Even Numbers

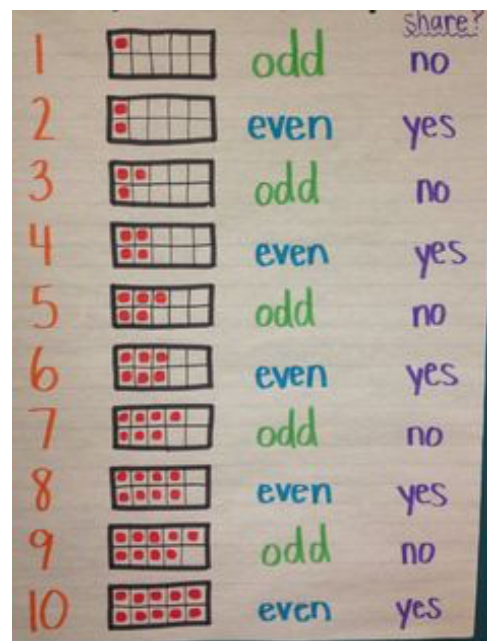
RULE: An even number is a number that can be divided into 2 equal groups. An odd number is a number that cannot be divided into 2 equal groups.

EXAMPLE:

The 'Sharing or Not Chart' show how even numbers let you share the same amounts with 2 people.

STEP OUTSIDE:

- With a partner, find 10 rocks you can use as counters.
- Begin with 10 to see what happens when you take one rock away.
- Which numbers of rocks let you share them equally?



Number	Visual Representation	Classification	Share?
1	1 dot	odd	no
2	2 dots	even	yes
3	3 dots	odd	no
4	4 dots	even	yes
5	5 dots	odd	no
6	6 dots	even	yes
7	7 dots	odd	no
8	8 dots	even	yes
9	9 dots	odd	no
10	10 dots	even	yes

These are called _____ numbers.

The numbers that do not divide equally are called _____ numbers.

TECH CHECK:

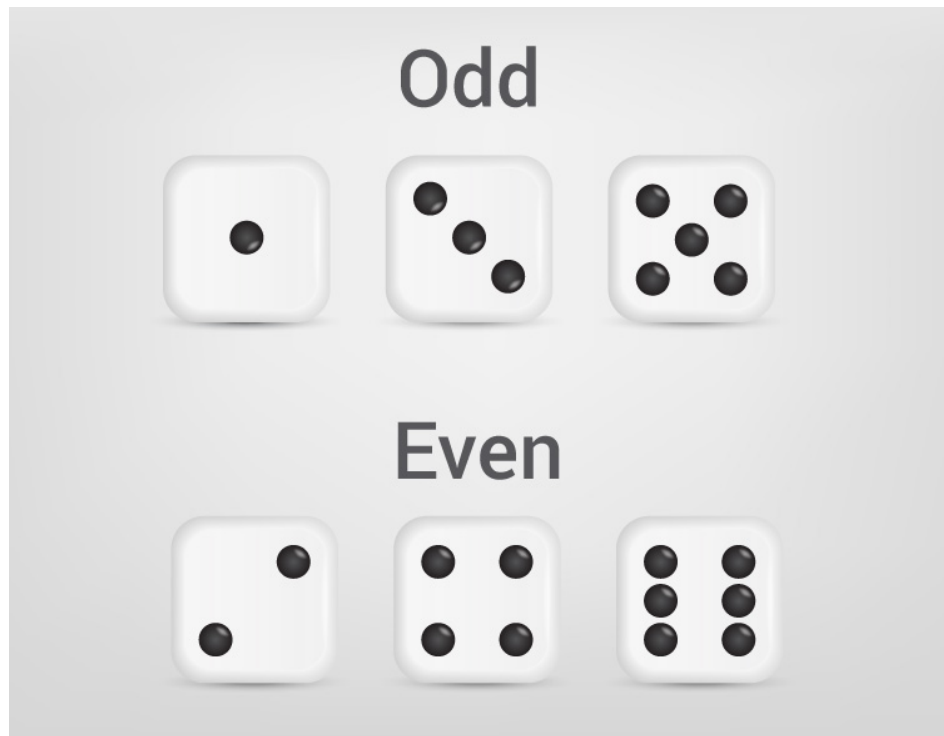
- http://www.abcya.com/number_ninja_odd_even.htm
- <http://www.mathnook.com/math/skill/evenodddnumbergames.php>

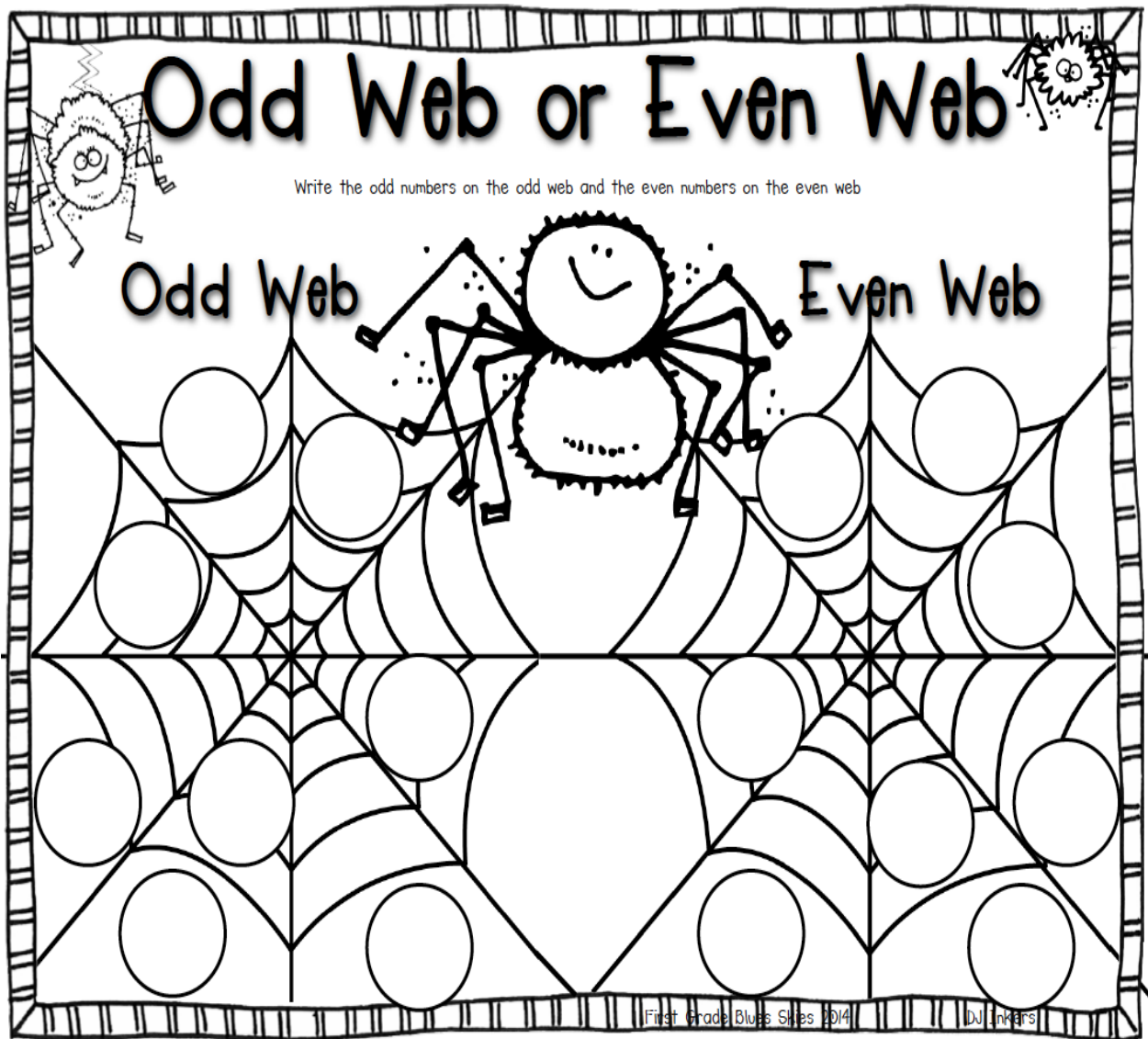
RECIPROCAL TEACHING:

1. Using 20 counters explain "like a teacher" how to count by even numbers and odd numbers.
2. Share examples and explain the difference between odd and even numbers to a friend or family member.
3. Use scrap paper.
4. Have your friend or family member change places and replay what you taught.

FUN & GAMES:

- Use dice.
Begin with one.
- Roll it and put the number in the odd or even side of the web.
- Try it with 2 dice.





Extension:

- Use expanded form from written to whole numbers (Example: eighty-three = 83).

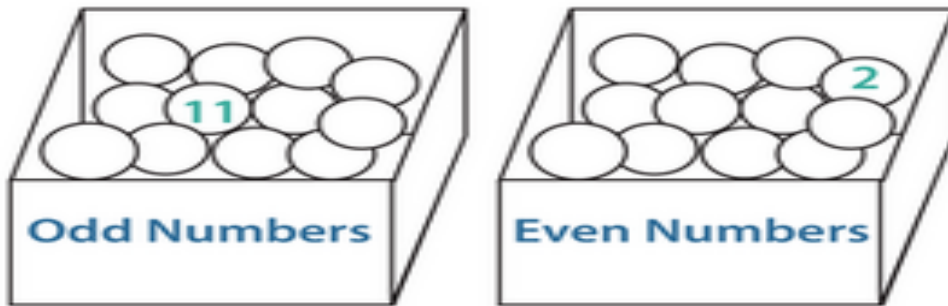
GOT IT!

- Sort the following ping pong balls in their boxes:

Sorting Balls: Odd and Even Numbers

Help Tommy sort out balls into two boxes. One box contains only balls with odd numbers while another one contains only balls with even numbers. Fill in blank balls with the numbers you think belong in each box.

7 50 13 356 57 18
 69 45 42 103
 202 121 76
 33 112 71 94
 26



<https://cdn.education.com/worksheet-image/126245/sorting-odd-numbers-counting-place.png>

Odd Numbers	Even Numbers		
How well did you identify and differentiate between odd and even numbers?	Like a Trailblazer (expert)	Like a Pathfinder (apprentice)	Like a rookie (need more help & practice)

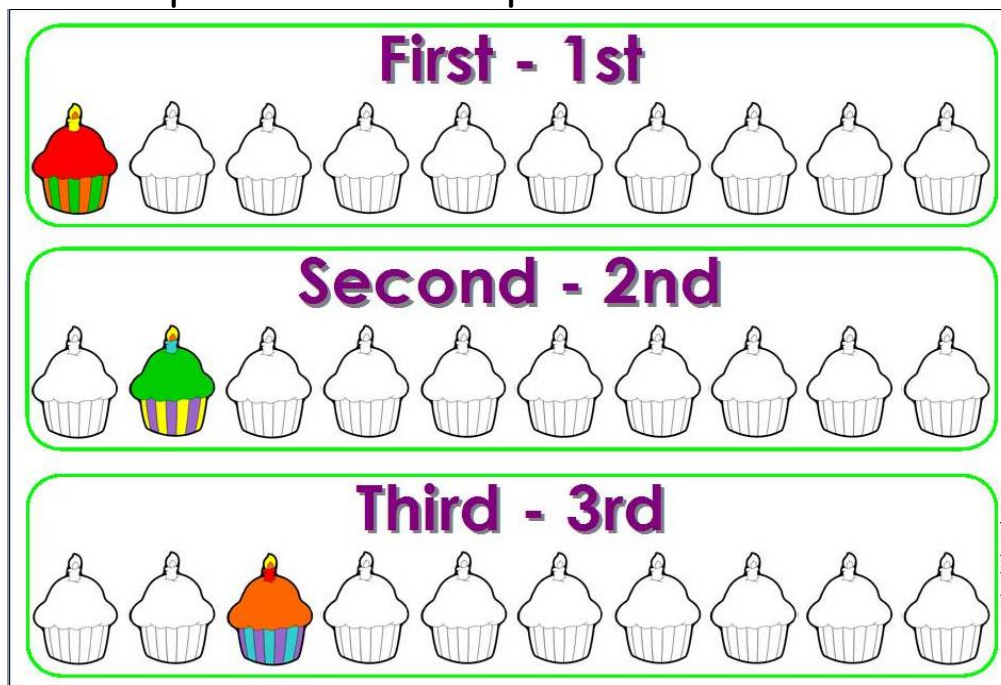
ET - Organize, represent & interpret pictograph and bar graph data up to 3 or 4 categories.

3. Ordinals and Graphs

RULE: Ordinal numbers help you compare things. An ordinal number is a number that tells the position of something in a list or line.

EXAMPLES:

- Look at the picture of the cupcakes below.



<http://deeviyanameab023.blogspot.ca/2011/09/number-types.html>

- What letters (after the number) help tell the order of the number?
First.. - "st"
Second - "nd"
Third - "rd"

FUN & GAMES: Ordinals Banner

1. In pairs, make an 'ordinals' banner.
2. Print the word 'ORDINALS' in capital letters as the title.
3. Then cut out pictures from magazines and place them in the correct order on the banner.
4. Once your teacher has checked the order, you may glue them on the banner.
5. Then record the ordinal below each picture

Correct order for banner:

- An animal (place in the 3rd spot)
- A watch (place it in the 8th spot)
- A landscape (place it in the 1st spot)
- A really cool word (place it in the 2nd spot)
- A happy person (place it in 5th spot)
- Something funny (place it in the 7th spot)
- Something good to eat (place it in 4th spot)
- Something that helps (place it the 6th spot)



http://www.sparklebox.co.uk/4331-4340/_wp_generated/pp36287a37_02.jpg

TECH TIME:

- <https://www.turtlediary.com/game/ordinal-numbers.html>
- http://www.internet4classrooms.com/skill_builders/ordinal_numbers_math_first_1st_grade.htm
- <http://www.thetechieteacher.net/2015/10/ordinal-numbers-ipad-activity.html>

RULE: Graphs organize amounts or numbers of things.

EXAMPLES:



<https://s-media-cache-ak0.pinning.com/736x/55/4d/39/554d392f6b0816f8438916ed2794b35a--birthday-graph-birthday-charts.jpg>

- In this class, there were 4 birthdays in January, April and July.
- March had the fewest birthdays (1)

FUN & GAMES: Class Birthdays

- Let's make a graph listing the months that each classmate has a birthday.
- First, we need to do a survey and tally up who was born in each month in our class.

Month	List of Dates
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

- We can also add in our teacher's birthday.

Extension: Make a birthday graph to show the grade or school birthdays.



<https://s-media-cache-ak0.pinimg.com/originals/b3/b4/5b/b3b45b170f3c81c2ddba7de3ba435d6e.jpg>

- Now look at the graph, and think about our four seasons.
- Add up the number of birthdays in class in each season and make a graph to show which season has the most birthdays and which season has the fewest birthdays.
- Put a title on the graph:

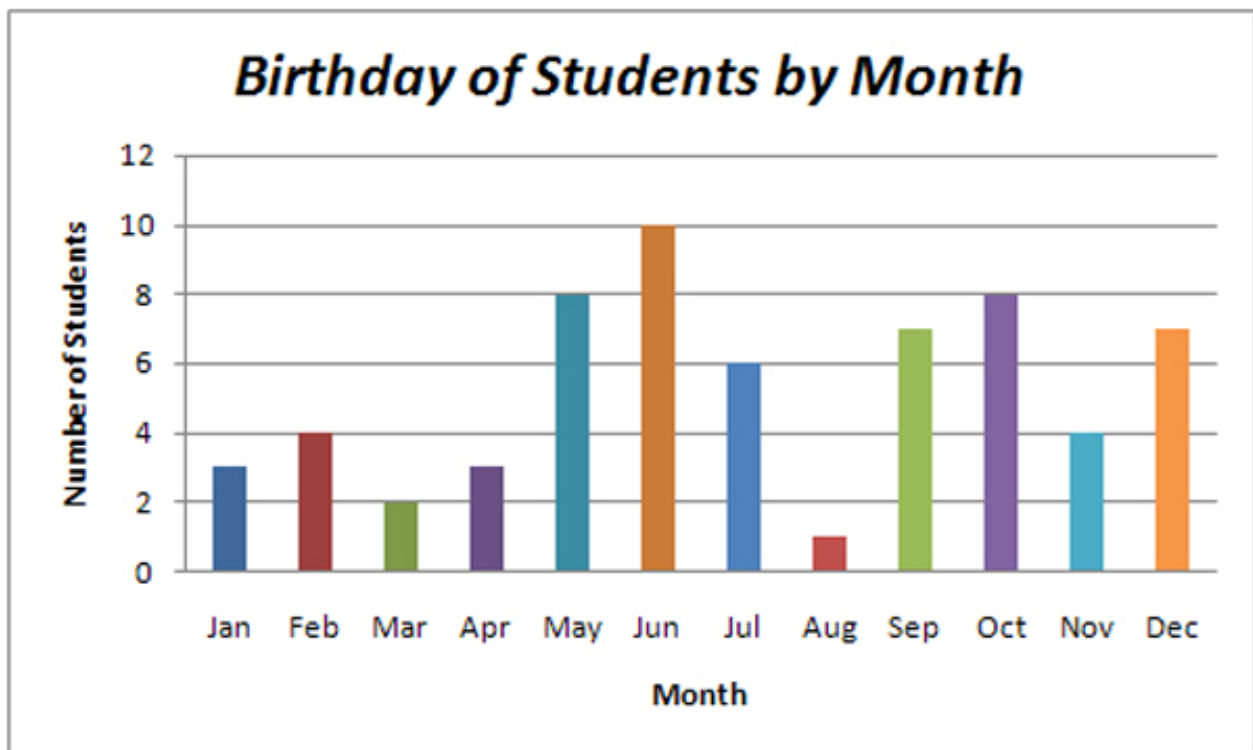
Draw pictures to show number of birthdays in each season.				
Seasons	Fall (September, October, November)	Winter (December, January, February)	Spring (March, April, May)	Summer (June, July, August)

RECIPROCAL TEACHING:

- Using 20 counters explain the ordinals of each counter "like a teacher"
- Share examples and explain to a friend or family member how to make a graph to organize information.
- Use scrap paper.
- Have your friend or family member change places and replay what you taught.

GOT IT!

- Look at this bar graph of birthdays from another school.
- Point out the title of the graph and the side and bottom labels.



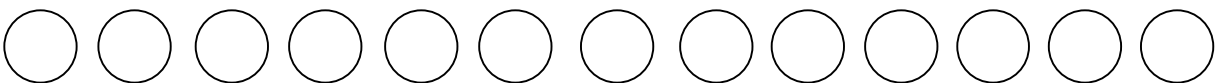
<http://wikieducator.org/images/c/c7/Bargraph.jpg>

- List them in order using ordinals from 1st (being the most) to 8th position (being the least)

Month	Number of Birthdays
1 st	
2 nd	
3 rd	
4 th	
5 th	
6 th	
7 th	
8 th	

*Hint: Some months have the same number of birthdays!

- Colour the 1st circle red.
- Colour the 5th circle blue.
- Colour the 10th circle green.
- Colour the last circle black.



- Now make up your own:

I coloured the _____ circle _____.

I coloured the _____ circle _____.

I coloured the _____ circle _____.

- Research the number of times the word "the" is in the math poem below:

Number Writing Poems!



Come right down and then you're done.
That's the way to make a one!

Around and back on the railroad track.
Two! Two! Two!



Around the tree, around the tree.
That's the way to make a three!

Down, over, down some more.
That's the way to make a four!



Put on a hat. Then take a dive.
Make a round belly. Now that's a five!

Make a hoop and then a loop!
Six!



Across the sky and down from heaven.
That's the way to make a seven!

Make an 'S' and close the gate.
That's the way to make an eight!



Make a circle and then a line.
That's the way to make a nine!

<https://s-media-cache-ak0.pinimg.com/736x/b2/75/a9/b275a923aae04342606f4a92e252602a--preschool-number-activities-preschool-poems.jpg>

- Place the data in a frequency table.
- Place the data in a bar graph.
- Create a title for your graph.
- Label the bottom and the left side of your graph.

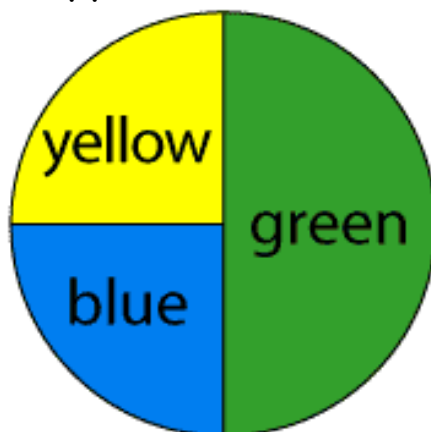
RULE: You can make predictions about how likely something can happen.

EXAMPLES: Likely or Not

- What is the likelihood or probability?
 - (a) New shoes in a box: If I take a new shoe out of a box without looking, it's equally likely that I will pick the left shoe or the right shoe. TRUE
 - (b) Winning a contest: It's unlikely that I will win the contest shown on the cereal box. TRUE
 - (c) Getting heads when tossing a coin: Getting a head and a tail was more likely than getting 2 heads. TRUE

FUN & GAMES: Spinner Time

- Create a spinner with $\frac{1}{2}$ green, $\frac{1}{4}$ blue and $\frac{1}{4}$ yellow colours.
- What is the probability it will land on yellow more than once in ten tries?
- Check it out.
- Talk about what happened?



https://www.eduplace.com/math/mw/minv/graphics/hmm05_mi_g4c23d.gif

Favourites Research

- Work with a partner to find out what food, sports, pets, toys or games are the 'favourites' in your class.
- What is the likelihood that everyone will have the same favourites? (circle)

- (a) impossible
- (b) unlikely
- (c) equally likely
- (d) more likely
- (e) certain

- Graph this information on a poster.
- Talk about your graph:
 - Explain why you think more students chose one 'favourite' than another.
 - Use the language: "Our bar graph shows that _____ more students like _____ than _____."
- Create 2 questions that your findings make you think about.

(a) _____

(b) _____

How well did you organize, represent & interpret pictograph and bar graph data up to 3 or 4 categories?

Like a Trailblazer (expert)

Like a Pathfinder (apprentice)

Like a Rookie (not yet, need more help)

Extension:

- Read aloud the dates as ordinals in the following calendar.



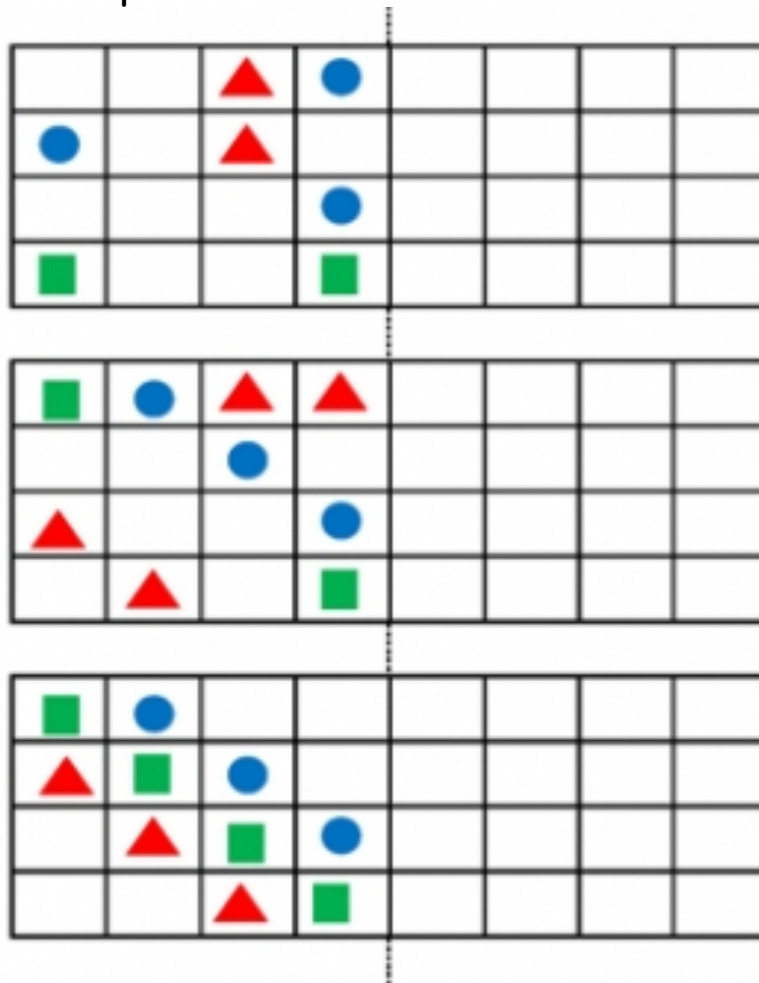
Extension:

- With help from your teacher, construct, compare & synthesize frequency tables & fractal line plots with a focus on median.

B. Patterns

Check-In (diagnostics)

Maybe you already know all this?
Show your teacher what you know!
Create reflective patterns.



4. Pattern Detective (Review)

RULE: We can make patterns with people, things, numbers and geometric figures.

Do we have the same number of boys and girls in our group?

- Let's make a line of a boy-girl-boy-girl pattern and see if this kind of line-up can work in our class.

What are the missing numbers?



matholia

<https://i.ytimg.com/vi/GddAGHgH1IMmaxresdefault.jpg>

- Create your own pattern as a secret code of numbers:

- Work with a partner to try and figure out the missing numbers.

<http://prek-8.com/math/patterns/images/numberPattern1.png>

3, 6, 9, 12, 15, 18, _____


Describe the Pattern:


20, 18, 16, 14, 12, 10, _____


Describe the Pattern:

2, 2, 6, 6, 8, 8, _____

Describe the Pattern:

1  2, __, 6, __, __, 12

2  5, 10, __, __, 25, 30

3  10, 12, __, 16, __, __

http://teacherlingo.com/resources/thumbnail/number-and-picture-patterns-star-wars_2.jpg

- Complete the geometric patterns below:

Repeating Patterns

Can you continue the patterns below?


△ □ □ □ □ □ □ □ □ □

○ □ □ □ □ □ □ □ □ □

□ □ △ □ □ □ □ □ □ □

○ ○ △ □ □ □ □ □ □ □

□ ○ □ ○ □ □ □ □ □ □

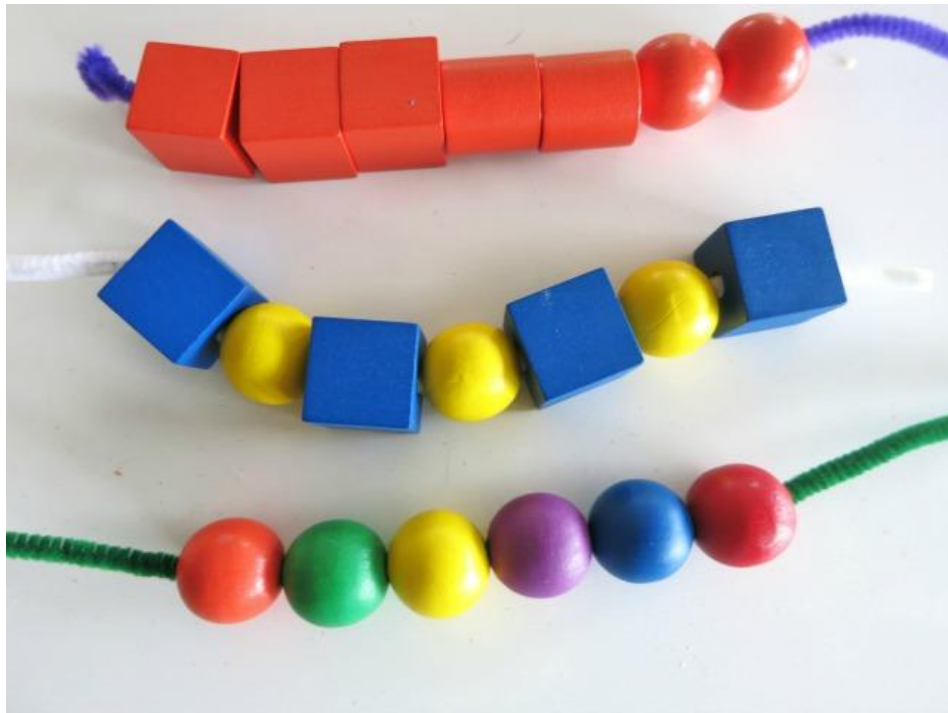


http://images.twinkl.co.uk/image/upload/t_630_eco/image/b3/96/T-N-192-Repeating-Patterns-Shapes_ver_1.jpg

- Then create your own patterns using cube blocks, Lego or different sized or coloured blocks.

FUN & GAMES: Bead Deed

- Think of at least 4 nice qualities of one person in your class (selected from popsicle sticks)
- Select a colour bead for each quality (kindness, courage, teamwork, leadership, helpful, patient, honesty...)
- Use beads to make a repeated pattern with each colour.
- Share your bead story and pattern with your classmates and give your necklace to the person you created it for.
- Each person in the class will repeat what their bead pattern stands for.



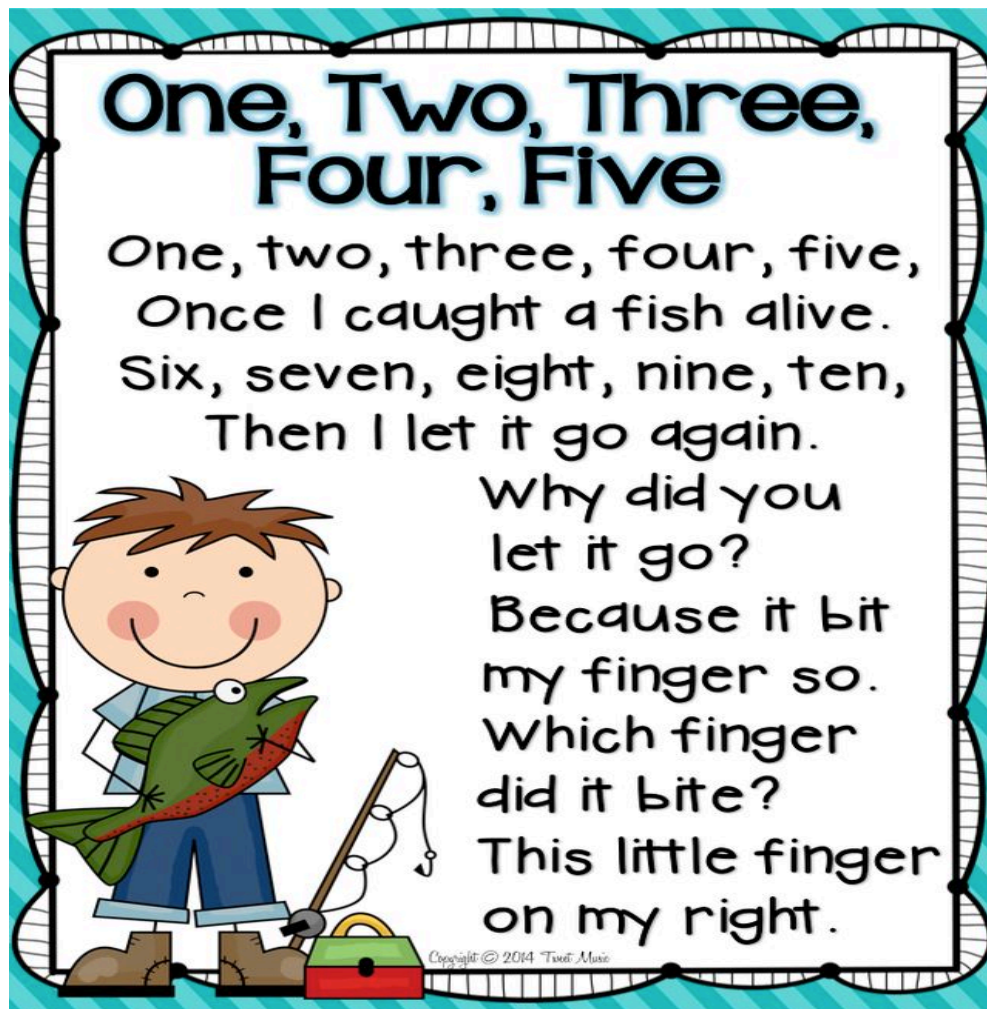
http://static.kidspot.com.au/cm_assets/34278/img_9469-jpg-20151023102531.jpg~q75,dx720y-u0r1g0,c--.jpg

Poems have rhyming patterns.

EXAMPLE:

The poem 'One, Two, Three, Four, Five' has the following pattern:

AABBCCDD



<https://cdn2.blovcn.com/bloglovin/aHR0cCUzQSUyRiUyRjEuYnAuYmxvZ3Nwb3QuY29tJTJGLWpjbFduNjUwSDJrJTJGVXhWNI1pU3duV0kiMkZBQUFBQUFBQUFEYyUyRi1uLUZFMW9pc2kwJTJGczE2MDAIMkZTY3JIZW4IMkJTaG90JTJCMjAxNC0wMy0wNCUyQmF0JTJCNi4wMC4zMkUyQnBtLnBuZw==?checksum=3fdb20a06a117d6b5070e6db7c22650ceded4858&format=j>

- Print out the words 1 through 15:

#	Number in 'words'
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	

FUN & GAMES: Rhyming Pattern Search

- Work with a partner to see if you can figure out the rhyming pattern in 'The Doubles Song'.

The Doubles Song

Sung to the tune "The Farmer In The Dell"

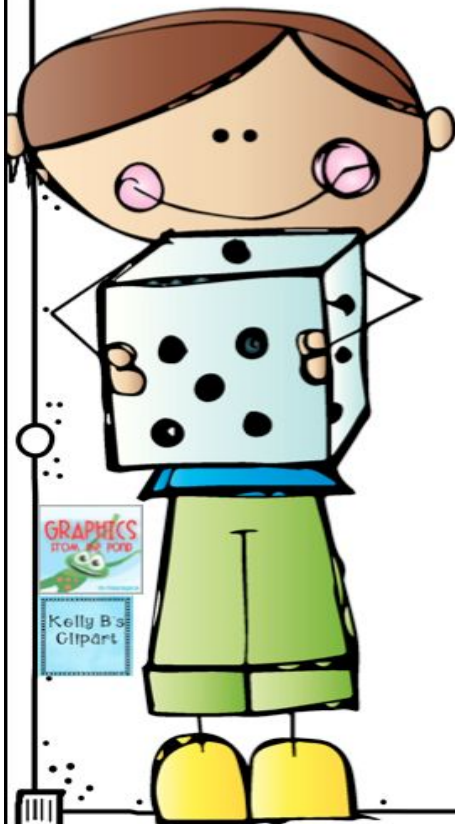
One and one is two,
And two is two is four,
Three and three is six,
So now let's try some more!

Four and four is eight,
And five and five is ten,
Six and six is twelve,
So now let's start again.

One and one is two,
And two is two is four,
Three and three is six,
So now let's try some more!

Four and four is eight,
And five and five is ten,
Six and six is twelve,
And now we've reached the end!

Words By Tweet Music



<https://s-media-cache-ak0.pinimg.com/736x/74/b6/25/74b625fc02c8793e4665facdc80280f5--preschool-songs-math-songs.jpg>

The rhyming pattern for 'The Doubles Song' is:

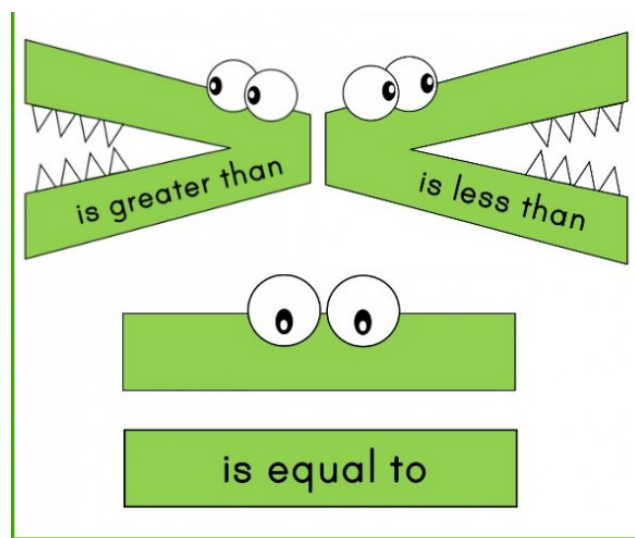
STEP OUTSIDE: Living Things Search

- Find natural materials to make a pattern with outside.
- Please do not remove anything living (i.e. leaves from trees).
- Think about using colour, size, sound, smoothness or roughness.
- At Classroom Circle, take turns sharing clapping sound patterns or creating action patterns.

ET - Compare numbers to 1000 using $>$, $<$ and $=$ signs.

5. Greater or Less Than

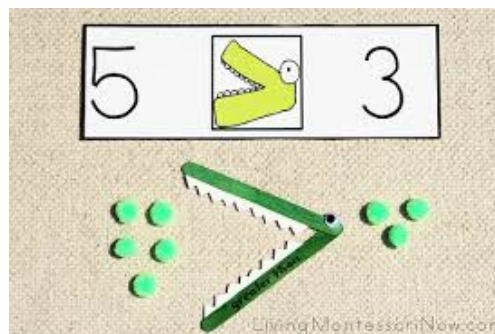
RULE: Some numbers and amounts are bigger than others. We use symbols to show if a number is greater than or less than another number.



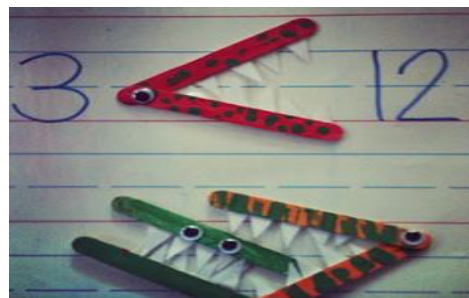
from www.themeasuredmom.com

EXAMPLES:

- (a) $5 > 2$
- (b) $14 < 87$
- (c) $101 > 98$
- (d) $978 < 984$



5 is greater than 3
and 12 is greater than 3.



FUN & GAMES: Shark Teeth

Let's make greater and lesser than 'shark tooth' signs using popsicle sticks and sentence strips or index cards.

Pan Balance Fun

- Place 5 cubes/dice on one pan on one side of the balance.
- Place 8 cubes/dice on the other pan.
- Remove the dice from one side until the weight is the same.
- Talk about what you had to do.

STEP OUTSIDE:

- Find two things on the ground, that look like they might weigh the same.
- Weigh them on a pan balance scale around the Classroom Circle to find out which item is heavier (greater than) the other item, or if they have equal weight.



http://s7d2.scene7.com/is/image/lakeshore/vr251?id=H_avx3&fmt=jpg&fit=constrain,1&wid=400&hei=300&fmt=jpeg&qlt=100,1&op_sharpen=0&resMode=bilin&op_usm=5,0.25,25,0

TECH TIME:

- <https://www.education.com/game/less-than-greater-than/>
- <http://interactivesites.weebly.com/greater-than-less-than-and-equal.html>
- http://www.abcya.com/comparing_number_values_jr.htm

RECIPROCAL TEACHING:

- "Like a teacher" explain how to compare different numbers by using greater than and less than.
- Share examples and explain to a friend or family member how to solve greater than and less than math questions.
- Use scrap paper.
- Have your friend or family member change places and replay what you taught.

GOT IT!

- Using blocks, Lego or other hands on math materials, show the following:

(a) $143 < 204$

(b) $146 > 97$

(c) $64 = 64$

- Circle the answers

More than 14 12 31 10 51	Less than 22 32 21 18 25	More than 51 52 50 49 71
Equal to 36 31 36 36 63	More than 98 100 91 89 104	Less than 68 62 68 86 50
More than 57 56 57 95 59	Equal to 12 21 12 24 12	More than 20 8 18 27 31
Less than 10 6 9 14 100	More than 28 27 18 82 34	Equal to 54 54 45 54 15

<http://edudream.co/greater-than-less-than-equal-to-worksheets-for-kindergarten/>

- Place a $>$, $<$ or $=$ to sign in each circle:

$6 \bigcirc 11$

$8 \bigcirc 3$

$1 \bigcirc 4$

$5 \bigcirc 5$

$2 \bigcirc 7$

$9 \bigcirc 4$

$8 \bigcirc 6$

$0 \bigcirc 2$



$3 \bigcirc 8$

$6 \bigcirc 1$

$5 \bigcirc 2$

$4 \bigcirc 4$

$8 \bigcirc 6$

$10 \bigcirc 5$

$3 \bigcirc 2$

$6 \bigcirc 4$

<https://www.pinterest.com/smidge421/teaching-greater-less-than/>

- Complete "the following:



425 ○ 421	889 ○ 988	346 ○ 464
868 ○ 887	453 ○ 543	624 ○ 624
501 ○ 512	765 ○ 675	969 ○ 996
987 ○ 979	882 ○ 882	848 ○ 668

Fill in the blanks that would make the statement true.

_____ < 387	296 < _____
925 < _____	_____ < 703
_____ > 632	549 < _____
482 < _____	_____ < 602



Compare each set of numbers. Use <, >, or =.



400 + 50 + 9 ○ 600 + 40 + 5
700 + 40 + 4 ○ 700 + 20 + 4
900 + 30 + 7 ○ 900 + 30 + 7
800 + 90 + 8 ○ 800 + 80 + 9

<https://s-media-cache-ak0.pinimg.com/736x/d1/96/9a/d1969a1118ecbe54d60f0fc3430a1482.jp>

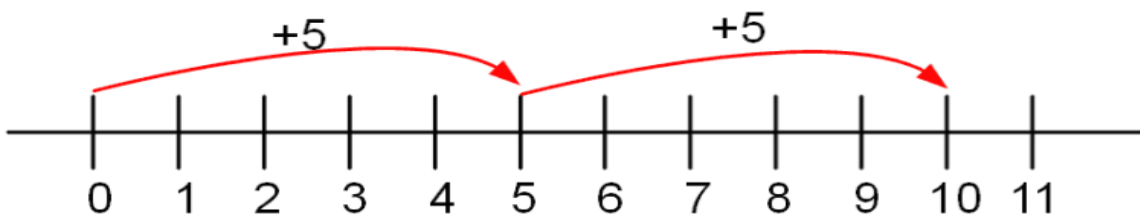
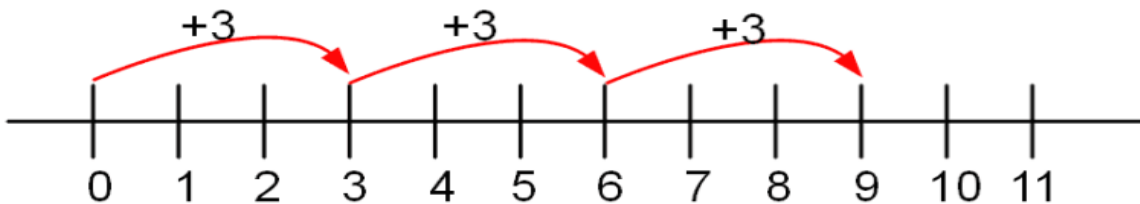
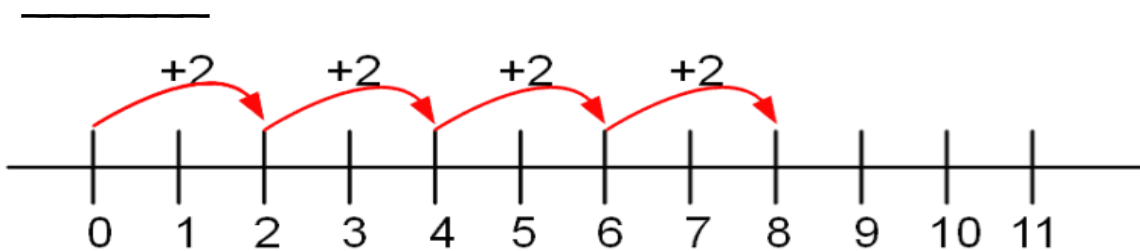
How well did you compare numbers to 1000 using >, < and - signs?	Like a Trailblazer (expert)	Like a Pathfinder (apprentice)	Like a Rookie (not yet, need more help)

6. Counting by 2's, 5's, 10's, 25's

RULE: Numbers can have a pattern sequence when we can count in different ways (by 1's, 2's, 5's, 10's and 25's).

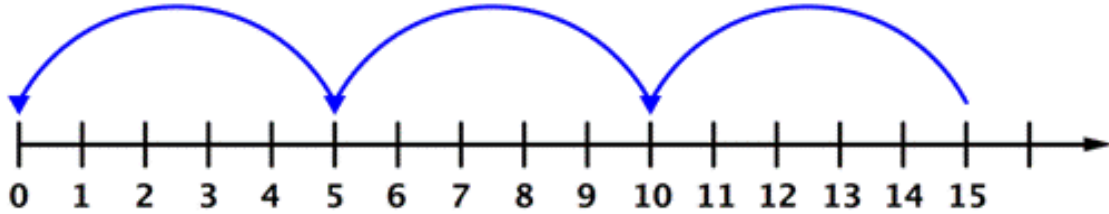
EXAMPLES:

- Look at these number lines to see how to skip count by 2's, 3's and 5's.
- Which one do you think is the hardest to remember?



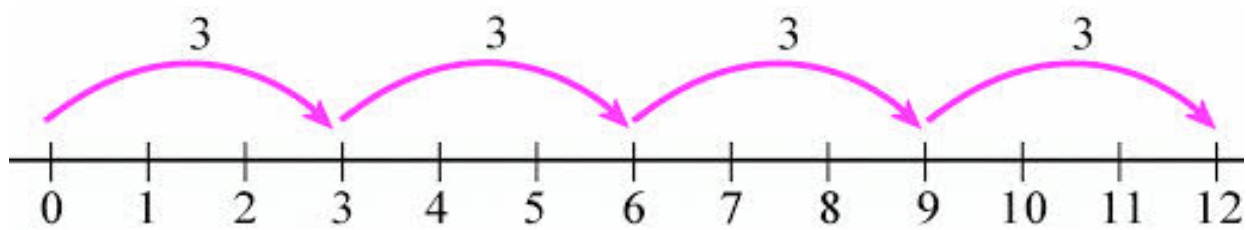
Skip Counting Backwards

- Take a look at this number line.
- What is the number it is skipping backwards to count? _____



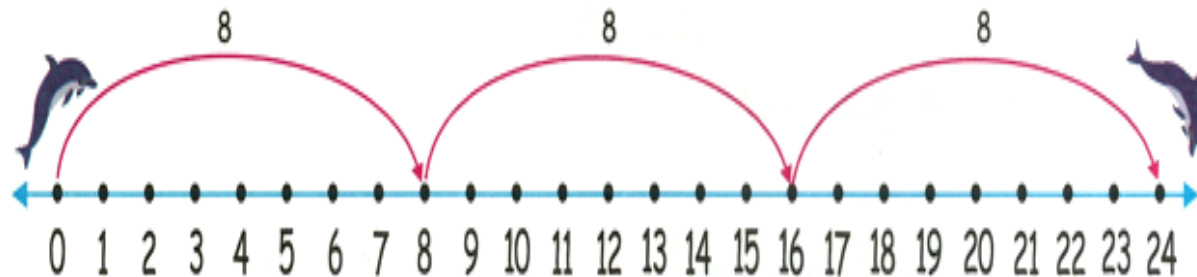
FUN & GAMES: Skip Counting Challenge

- Skip count out loud by the odd number 3 using the number line:



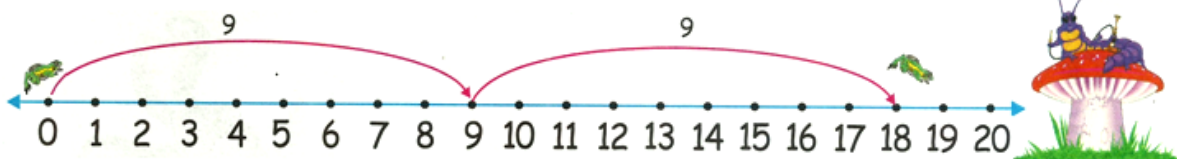
<https://turner08family.files.wordpress.com/2014/04/skip-counting-number-line.jpg>

- Skip count out loud by the even number 8:



<http://www.math-only-math.com/images/x8-times-table-on-number-line.png.pagespeed.ic.-Sn1sPgjH5.png>

- Skip count out loud by the odd number 9:



<http://www.math-only-math.com/images/9-times-table-on-number-line.png>

Whiteboard Number Lines

- Make your own number line on the whiteboard to show skip counting by the even numbers 4 and 6:

Can you?

- Can you skip count backwards from 100 by 10? _____
- Can you skip count backwards from 100 by 25? _____
- Can you skip count backwards from 50 by 5? _____
- Can you skip count backwards from 30 by 2? _____
- Practise on the number chart and without looking.
- Say the counts out loud to your teacher.

TECH CHECK:

- http://www.abcya.com/counting_fish.htm
- <https://www.mathsisfun.com/numbers/skip-counting.html>
- <https://ca.ixl.com/math/grade-2/skip-counting>

RECIPROCAL TEACHING:

- "Like a teacher" explain how to skip count by 2, 5 and 10. .
- Share examples and explain to a friend or family member how to skip count
- Use scrap paper.
- Have your friend or family member change places and replay what you taught.

GOT IT!

- Count backwards by 10 from 100 using the chart.
- Using the chart, count backwards from 87 by 10.
- Talk about any patterns that helps you predict what the next number might be?

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	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Complete the number pattern by skip counting by 2.

2	4	6							

<https://s-media-cache-ak0.pinimg.com/564x/c1/90/e7/c190e79a4b043c83d07c528dee5ec0aa.jpg>

- NOW skip count by 5 and colour in the 200 chart with yellow.

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	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170
171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200

- Try counting by 10's and colour in the number chart with blue.
- Then skip count by 25's and colour with green.

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	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170
171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200

www.MathATube.com Dedicated to helping parents and their kids with math.

How well did you skip count by 2, 5 and 10?

Like a Trailblazer (expert)

Like a Pathfinder (apprentice)

Like a rookie (need more help & practice)

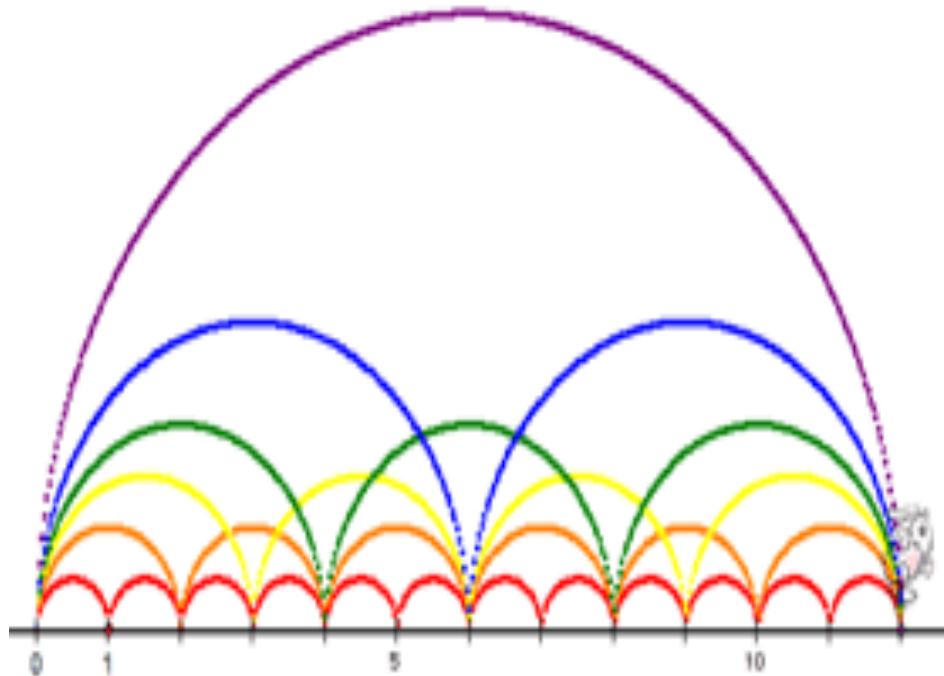
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Extension:

- Explain how to count forwards and backwards using this number line.
Red counts by 1.
Orange counts by 2.
Blue counts by 5.
Purple counts by 10.
- What does the yellow and green count by: ____ & ____.
<http://learningcenter.dynamicgeometry.com/Images/Elementary2.gif>


ET - Make patterns with repeated addition (1- 5).

7.Repeating Patterns

RULE: Numbers can have a pattern sequence when we can count in different ways (by 1's, 2's, 5's, 10's and 25's). It is easy to count things when they have equal numbers in each group,

EXAMPLE:

How many legs do these dogs have altogether?



4 + 4 + 4 which makes 12!

Example of repeated addition

<http://ictedusrv.cumbria.ac.uk/maths/pgdl/unit6/unit6/images/pic004.gif>


RECIPROCAL TEACHING:

1. "Like a teacher" explain what patterns look like when you repeat addition or subtraction by 1's, 2's, 5's, 10's, and 25's on a hundreds chart (i.e. the numbers 90, 80, 70, 60, 50, 40, 30, 20, 10 are in a straight line on a hundreds chart).
2. Share examples and explain to a friend or family member how make patterns with repeated addition.
3. Use scrap paper.
4. Have your friend or family member change places and replay what you taught.

GOT IT!

- Look at the 9 birds in the picture below:

How many birds are there altogether?



$3 + 3 + 3 = 9$
3 threes are 9

matholia

<https://i.ytimg.com/vi/dpFOvoiYDaQ/maxresdefault.jpg>

- Using hands on math materials create 2 more groups of things and two more math sentences. Draw your sentences below:







How well did you make patterns with repeated addition?	Like a Trailblazer (expert)	Like a Pathfinder (apprentice)	Like a rookie (need more help & practice)

Extension:

- Use multiples of 6, 7, 8 & 9 to find greatest common factor

C. Place Value

Check-In (diagnostics)

<p>Cent 11</p>  <p>What is the value of the underlined number?</p>	<p>Cent 11</p>  <p>What is the value of the underlined number?</p>
<p>Cent 11</p>  <p>What is the value of the underlined number?</p>	<p>Cent 11</p>  <p>What is the value of the underlined number?</p>
<p>Cent 11</p>  <p>What is the value of the underlined number?</p>	<p>Cent 11</p>  <p>What is the value of the underlined number?</p>

3 is _____

5 is _____

3 is _____

7 is _____

6 is _____

8 is _____

What is the 1 in 1,567? _____

What is the 2 in 2,583? _____

8. Place Value to 10

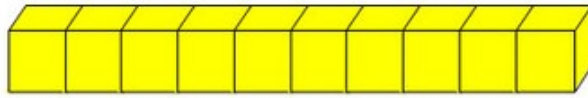
RULE: Ten ones makes 10.

EXAMPLES:

- Take a look at how many ones are in a ten rod.



one



ten rod

<http://www.tvdsb.ca/webpages/cmacintosh/imageGallery/Math/1%20and%2010.jpg>

- Show these numbers using base ten blocks?

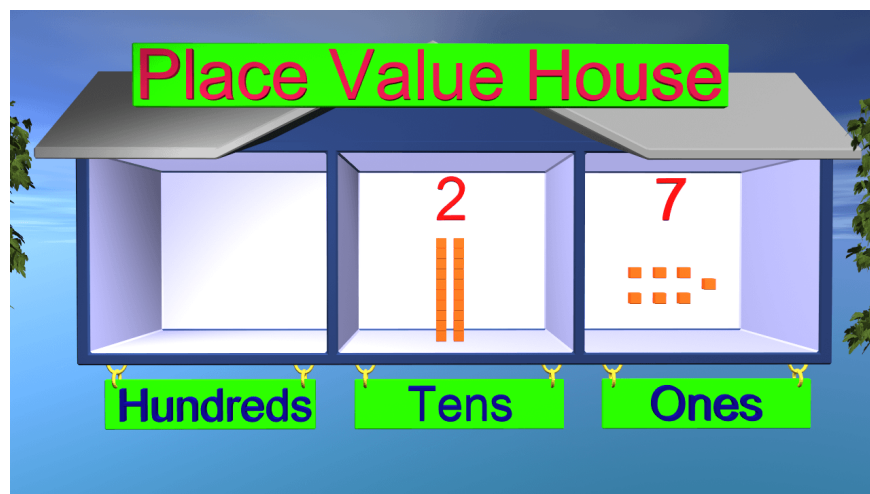
(a) $6 = 0 \text{ tens} + 6 \text{ ones}$

(b) $10 = 1 \text{ ten } 0 \text{ ones}$

(c) $78 = 7 \text{ tens} + 8 \text{ ones}$

(d) $40 = 4 \text{ tens} + 0 \text{ ones}$

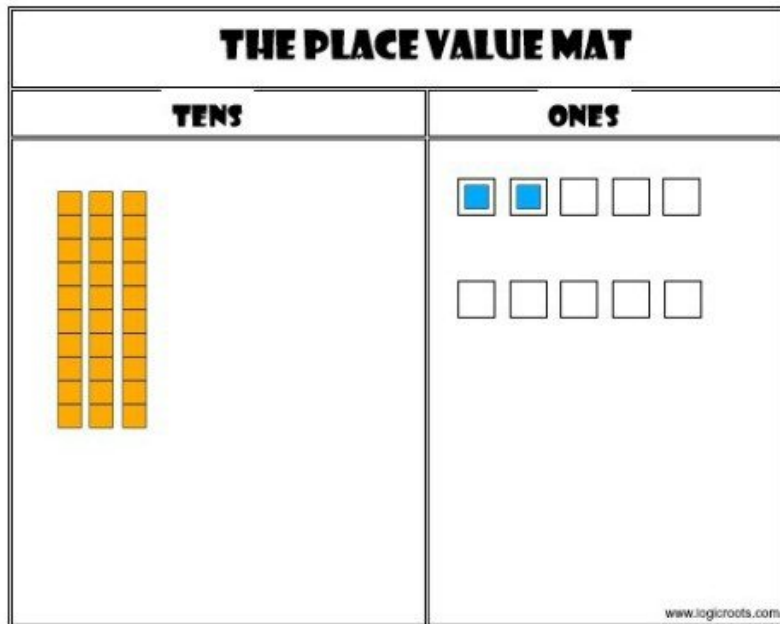
- This number in the Place Value House is 27.



https://www.commoncore4kids.com/wp-content/uploads/2013/10/PlaceValue_House_v010_rgb6523.png

FUN & GAMES: Place Value Mats

- Make a Place Value Mat with ones and tens.
- Roll the dice to make a number.
- Show the number using cubes and columns made up of cubes.



1 cube = 1

1 column of 10
cubes = 10

Tens place will
ALWAYS have
columns of 10

<https://logicroots.com/MathBlog/wp-content/uploads/2016/03/Pictorial-representation-of-how-to-place-manipulatives-on-the-Place-Value-Mat-e1457341474593.jpg>

- Place 7 pieces of Lego together.
- Split it up in different ways:

$$1 + 6$$

$$2 + 5$$

$$3 + 4$$

- Is 7 closer to 10 or 5? _____

- Use Lego to make and split up the numbers: 17, 9 and 11.

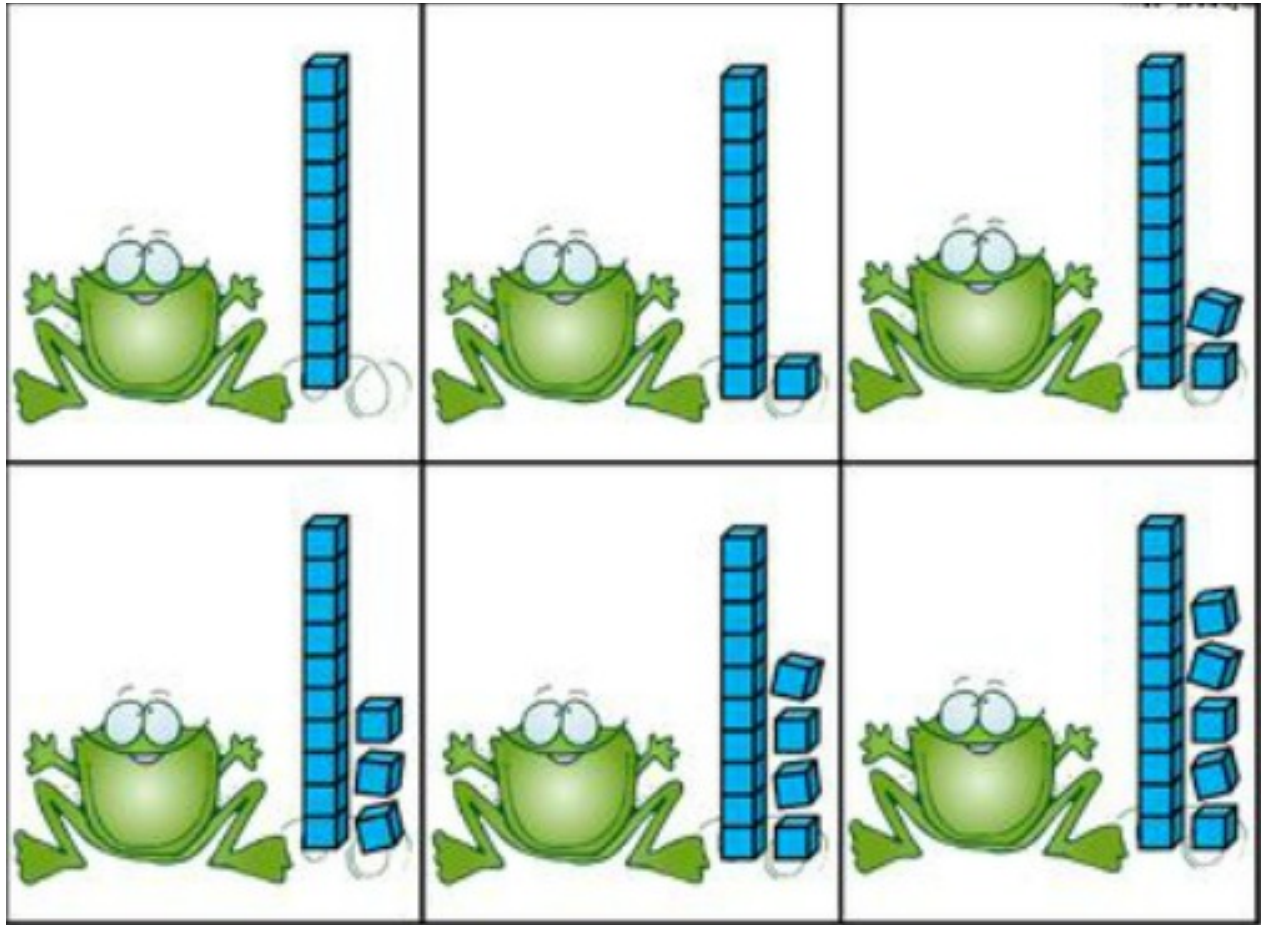
Make	Split up
17	
9	
11	

TECH CHECK:

- <https://www.education.com/game/place-value-machine/>

GOT IT!

- What number does each frog make?
-



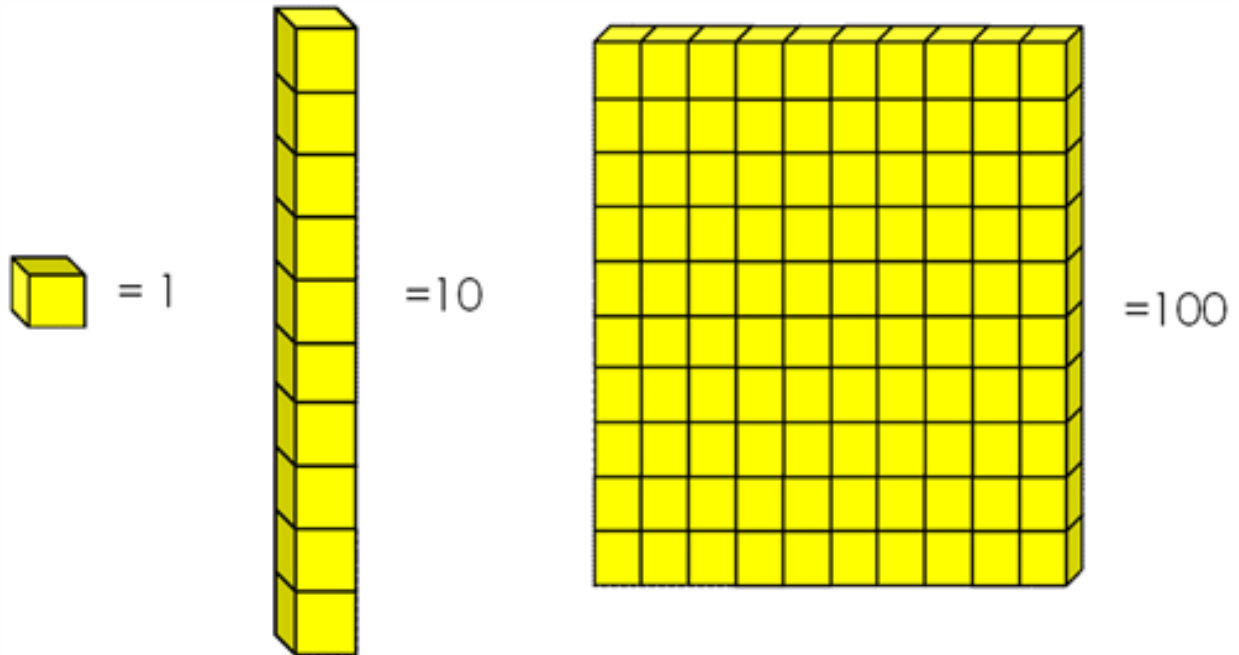
<http://www.teachjunkie.com/wp-content/uploads/2013/02/Capture1.jpg>

How well did I complete these tasks?	Like a Trailblazer (expert)	Like a Pathfinder (apprentice)	Like a rookie (need more help & practice)

ET - Order numbers & use place value between 0-100.

9. Place Value to 100

RULE: Ten groups of ten makes 100.



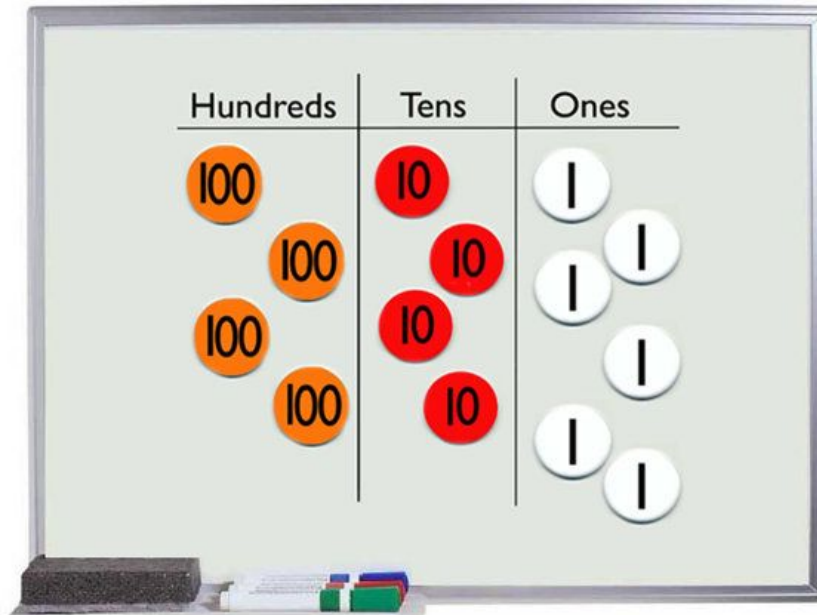
<http://www.clipartkid.com/images/177/base-10-my-math-blog-900Xfy-clipart.png>

EXAMPLE:

$$149 = 1 \text{ hundred} + 4 \text{ tens} + 9 \text{ ones}$$

$$420 = 4 \text{ hundreds} + 2 \text{ tens} + 0 \text{ ones}$$

- This number below is: 446.



<http://media-cache-ak0.pinimg.com/736x/72/23/25/722325e288676d760469d79cb5e54983.jpg>

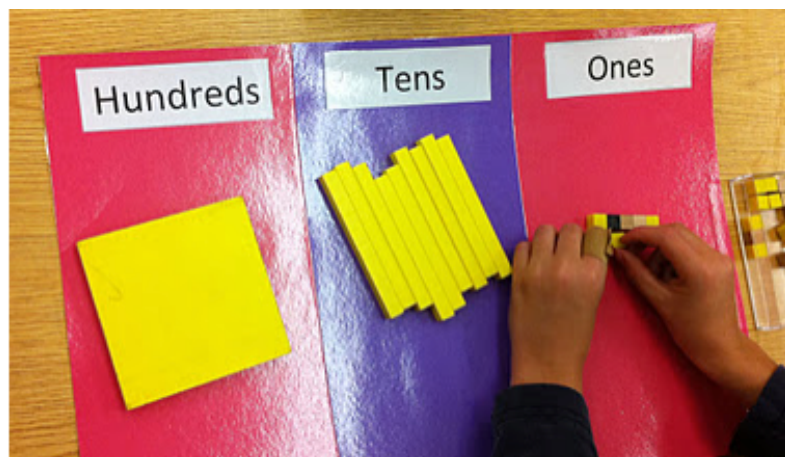
- Read the Place Value poem with your teacher.

Place Value Poem

The **ones** are on the right
 The **tens** are next in line
 Move one more to the left
 For the **hundreds** every time.

- https://sites.google.com/a/ocdsb.ca/mrs-emery-etfi/_/rsrc/1474462083852/home/Math/english-grade-2/sept19-232016/place%20value%20poem.jpg

- Place Value can help breakdown numbers.



Mats

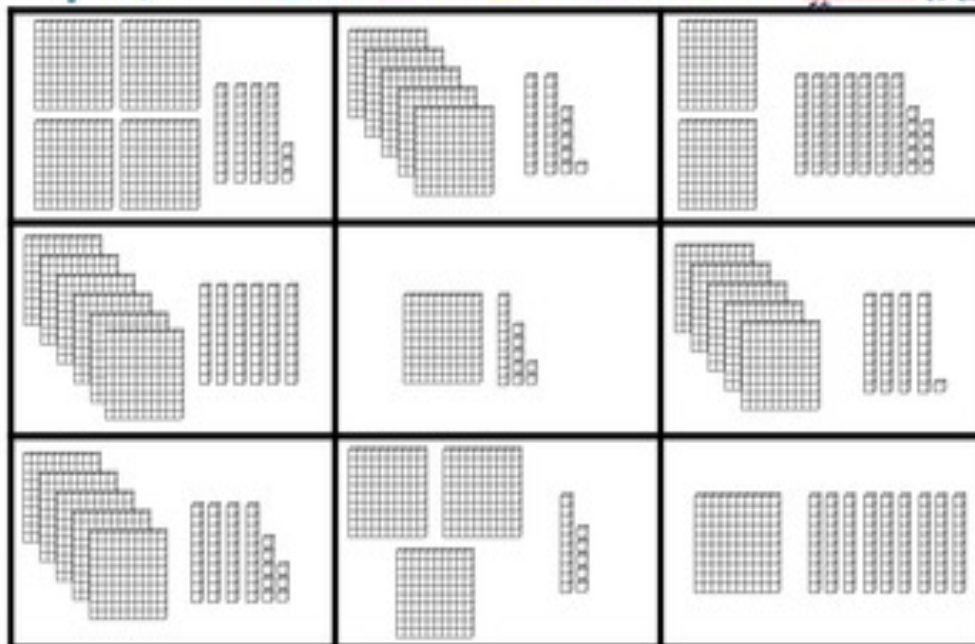
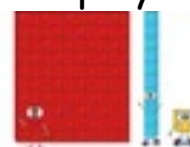
<http://4.bp.blogspot.com/-4yvJ1YEbews/UGeb9BDd2YI/AAAAAAAAAWA/Ab3PUsWvTvE/s1600/Screen+shot+2012-09-29+at+5.09.05+PM.png>

FUN & GAMES:

- Make a class set of place value bingo cards and play Bingo!



B **i** **n** **g** **o**



<https://ecdn.teacherspayteachers.com/thumbitem/Place-Value-Hundreds-Tens-and-Ones-Bingo-Math-Game-1459828233/original-334087-2.jpg>

TECH CHECK:

- <http://www.ictgames.com/arrowcards.html>
- <http://www.sheppardsoftware.com/mathgames/placevalue/MatchingPV.swf>

RECIPROCAL TEACHING:

- "Like a teacher" explain how to order numbers and use place value to breakdown numbers between 0 and 100.
- Share examples and explain to a friend or family member about number order and place value.
- Use scrap paper.
- Have your friend or family member change places and replay what you taught.

GOT IT!

- Make a large Place Value Mat with ones, tens and hundreds and use base 10 blocks to show these numbers:

(a) 328

(b) 504

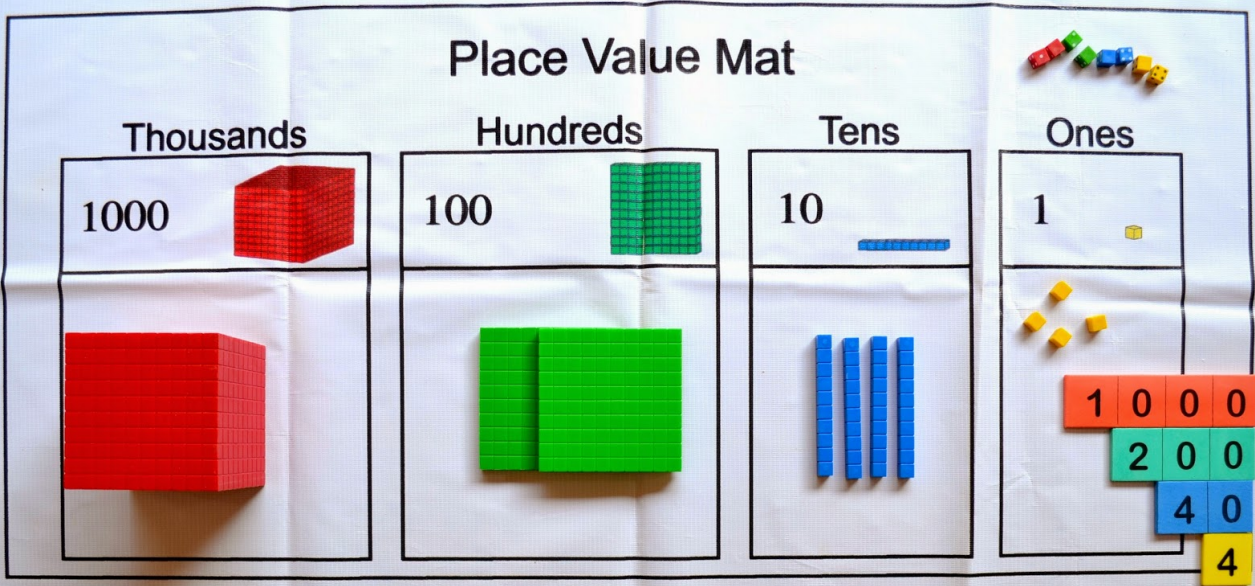
(c) 64

How well did you order numbers & use place value up to 100?	Like a Trailblazer (expert)	Like a Pathfinder (apprentice)	Like a rookie (need more help & practice)

10. Place Value to 1000

RULE: Ten groups of one hundred make 1000.

- Look at the numbers in the place value mat.



- <http://1.bp.blogspot.com/-GK6fVZKkrfA/VP1eyss2SUI/AAAAAAAAARSg/U2Kpd5EYF4s/s1600/Place%2BValue%2BSet%2Bwith%2BBase%2B10%2Bblocks.jpg>

EXAMPLE:

$$2149 = 2 \text{ thousands} + 1 \text{ hundred} + 4 \text{ tens} + 9 \text{ ones}$$

$$5420 = 5 \text{ thousands} + 4 \text{ hundreds} + 2 \text{ tens} + 0 \text{ ones}$$

TECH TIME:

- <http://www.ictgames.com/abacusInteger.html#top>
- <http://www.rochesterforkids.com/placequiz.html>
- http://www.softschools.com/math/place_value/teaching_place_value/TeachingPlaceValue.swf

RECIPROCAL TEACHING:

- "Like a teacher" explain how to order numbers and use place value to breakdown numbers between 0 and 1000.
- Share examples and explain to a friend or family member about number order and place value.
- Use scrap paper.
- Have your friend or family member change places and replay what you taught.

GOT IT:

- Make a large Place Value Mat with ones, tens, hundreds and thousands
- Use base 10 blocks to show these numbers:

(a) 7328

(b) 1504

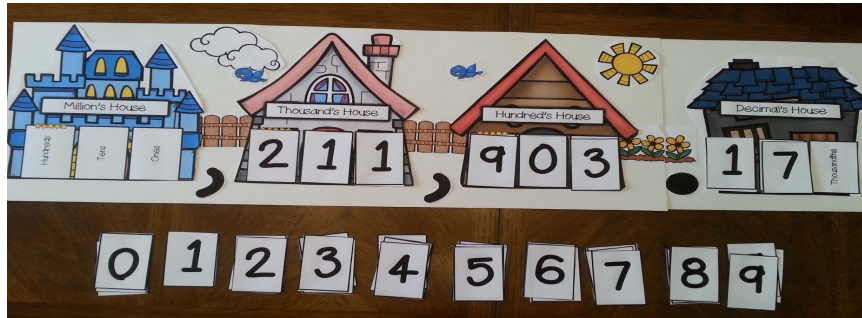
(c) 40

- Order the following numbers:

(a) 735, 752, 734 _____

(b) 1057, 1232, 1104 _____

How well did you order numbers & use place value up to 1000?	Like a Trailblazer (expert)	Like a Pathfinder (apprentice)	Like a rookie (not yet)



<http://3.bp.blogspot.com/>

[QR6TS2BxqTI/VcWJP5WiTbI/AAAAAAAAAKw/FGP5eo9cJUg/s1600/PV%2Bfractional%2Bnumbers.jpg](http://3.bp.blogspot.com/-QR6TS2BxqTI/VcWJP5WiTbI/AAAAAAAAAKw/FGP5eo9cJUg/s1600/PV%2Bfractional%2Bnumbers.jpg)

Extension

- Order numbers & use place value within 0 to 1 million

D. Operations

Check-In (diagnostics)

$$\begin{array}{r} 373 \\ +277 \\ \hline \end{array}$$

$$\begin{array}{r} 728 \\ +184 \\ \hline \end{array}$$

$$\begin{array}{r} 324 \\ -286 \\ \hline \end{array}$$

$$\begin{array}{r} 197 \\ +583 \\ \hline \end{array}$$

$$\begin{array}{r} 958 \\ -566 \\ \hline \end{array}$$

$$\begin{array}{r} 542 \\ -187 \\ \hline \end{array}$$

$$\begin{array}{r} 391 \\ -274 \\ \hline \end{array}$$

$$\begin{array}{r} 869 \\ +108 \\ \hline \end{array}$$

$$\begin{array}{r} 614 \\ +217 \\ \hline \end{array}$$

$$\begin{array}{r} 726 \\ -528 \\ \hline \end{array}$$

$$\begin{array}{r} 426 \\ -342 \\ \hline \end{array}$$

$$\begin{array}{r} 821 \\ +169 \\ \hline \end{array}$$

<http://www.theteachersguide.com/additionsubtraction/threedigtadditions subtraction/threedigitadditions subtractionregroupingmixed1.jpg>

11. Easy Adding

RULE: We add one or more numbers together to get a sum. That sum is bigger than the numbers, unless you are adding "0" (in this case the number remains the same.)

EXAMPLES:

- When you add the watermelon seeds the answers are 3, 8, 6 and 9. Count the seeds and put the answers in the box.

 2	+	 1	=	<input type="text"/>
---	---	---	---	----------------------

 6	+	 2	=	<input type="text"/>
---	---	---	---	----------------------

 3	+	 3	=	<input type="text"/>
---	---	---	---	----------------------

 5	+	 4	=	<input type="text"/>
---	---	---	---	----------------------

<https://www.myteachingstation.com/math/addition/addition-with-watermelon-seeds>

FUN & GAMES: Adding Machine

- Work with a partner to design your own adding machine.



- Start with adding single digits.
- Then move on to adding double digits.
- Tell your teacher at least 3 addition sentences you made using your machine.
- Explain how it works.

What is the number sentence when you only use one side:

$$\underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

When it is easy to add one digit numbers, then you can begin to add two or more digit numbers.

$$\begin{array}{r} 1) \quad 37 \\ + 42 \\ \hline 79 \end{array} \quad \begin{array}{r} 2) \quad 51 \\ + 42 \\ \hline 93 \end{array} \quad \begin{array}{r} 3) \quad 42 \\ + 23 \\ \hline 65 \end{array}$$

$$\begin{array}{r} 4) \quad 25 \\ + 43 \\ \hline 68 \end{array} \quad \begin{array}{r} 5) \quad 33 \\ + 50 \\ \hline 83 \end{array} \quad \begin{array}{r} 6) \quad 48 \\ + 21 \\ \hline 69 \end{array}$$

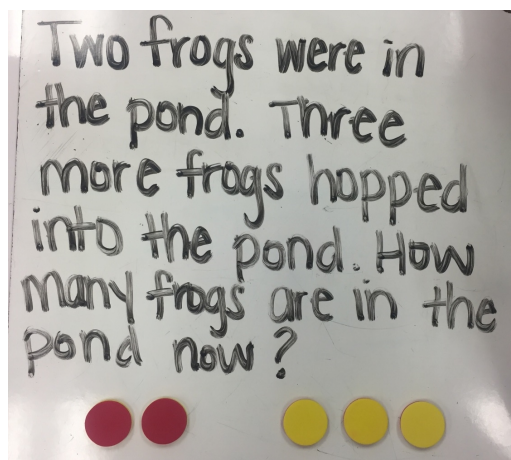
$$\begin{array}{r} 7) \quad 25 \\ + 11 \\ \hline 36 \end{array} \quad \begin{array}{r} 8) \quad 26 \\ + 21 \\ \hline 47 \end{array} \quad \begin{array}{r} 9) \quad 42 \\ + 32 \\ \hline 74 \end{array}$$

<http://www.math-salamanders.com/image-files/first-grade-addition-worksheets-column-addition-2-digits-no-carrying-1ans.gif>

- Circle one question from each row and do the question on the white board - without checking the answers.

GOT IT!

- Make an addition sentence to show a solution to this problem.



http://smathsmarts.com/wp-content/uploads/2017/03/IMG_6388-e1488385933501.jpg

$$\underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

- Add up the symbols below:

Two groups of smiley faces are shown separated by a plus sign. The first group has 7 smiley faces (two rows of two and one single). The second group has 6 smiley faces (two rows of two and one single). To the right is an empty rectangular box for the answer.

Two groups of suns are shown separated by a plus sign. The first group has 8 suns (two rows of four). The second group has 6 suns (two rows of three). To the right is an empty rectangular box for the answer.

Two groups of hearts are shown separated by a plus sign. The first group has 5 hearts (two rows of two and one single). The second group has 7 hearts (two rows of three and one single). To the right is an empty rectangular box for the answer.

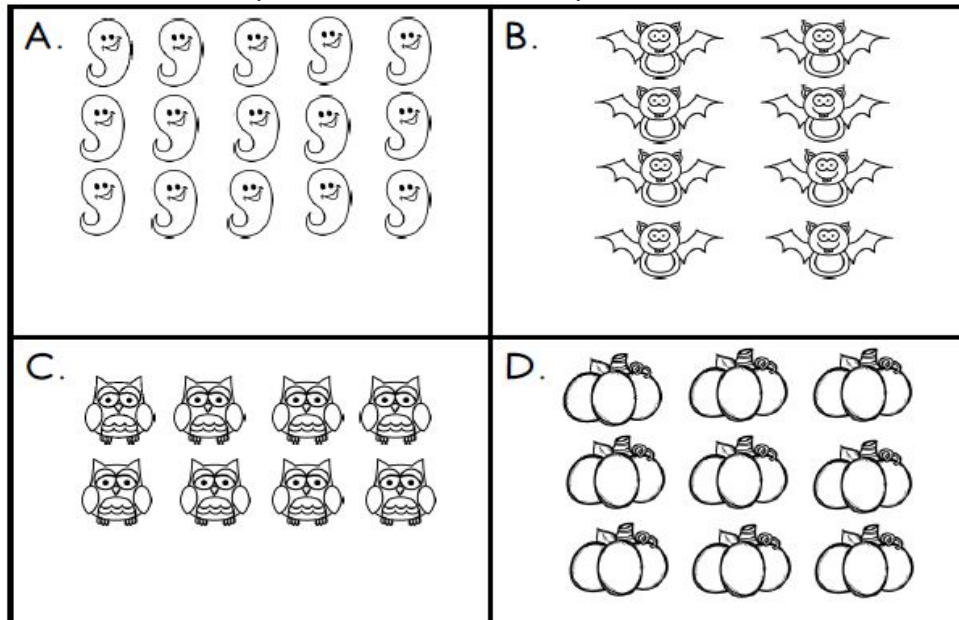
Two groups of stars are shown separated by a plus sign. The first group has 12 stars (two rows of six). The second group has 3 stars (one row of two and one single). To the right is an empty rectangular box for the answer.

<http://4.bp.blogspot.com/-8tteSiKyvNo/T9E8LZzgn5I/AAAAAAAAA8/JpdLeqHzLHI/s1600/1st-grade-addition-worksheets.jpg>

How well did you do the tasks in this lesson?	Like a Trailblazer (expert)	Like a Pathfinder (apprentice)	Like a rookie (not yet)

RULE: We can use arrays when numbers can be organized in equal rows and columns.

- Write these arrays to add these pictures.



[http://3.bp.blogspot.com/-](http://3.bp.blogspot.com/-3TUKdmHOZwM/VDM6SaaZknl/AAAAAAAAADRg/neeBYKxqtPs/s1600/Halloween%2B%2BArrays.JPG)

[3TUKdmHOZwM/VDM6SaaZknl/AAAAAAAAADRg/neeBYKxqtPs/s1600/Halloween%2B%2BArrays.JPG](http://3.bp.blogspot.com/-3TUKdmHOZwM/VDM6SaaZknl/AAAAAAAAADRg/neeBYKxqtPs/s1600/Halloween%2B%2BArrays.JPG)

TECH CHECK:

- <https://www.youtube.com/watch?v=e0tMOj5wGUI>

RECIPROCAL TEACHING:

- "Like a teacher" explain how to add simple numbers between 0 and 100.
- Share examples and explain to a friend or family member about adding and subtracting.
- Use scrap paper.
- Have your friend or family member change places and replay what you taught.


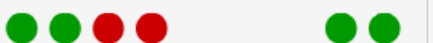
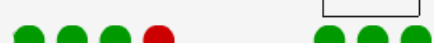


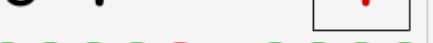
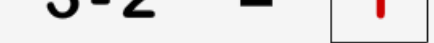
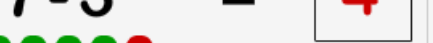
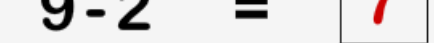
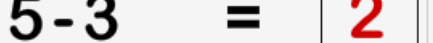
12. Easy Subtracting

RULE: When we subtract one or more numbers we get a difference. When you subtract "0" from a number, it remains the same.

EXAMPLES:

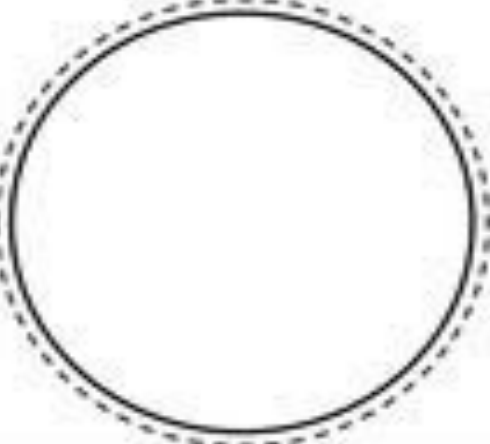


Subtract to find difference.

1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----

$5 - 2 = 3$ 	$4 - 2 = 2$ 
$4 - 1 = 3$ 	$6 - 3 = 3$ 
$6 - 2 = 4$ 	$5 - 1 = 4$ 
$3 - 2 = 1$ 	$7 - 3 = 4$ 
$9 - 2 = 7$ 	$5 - 3 = 2$ 

<https://cdn.turtlediary.com/worksheets/answer/answer-subtracting-using-dot-figures.png>

- Fill in the chart for the number 21.

<p>TODAY'S NUMBER</p> 	<p>DRAW IT </p> <p>WRITE IT</p> <hr/> <hr/> <hr/>
<p>ADD 1</p>	<p>SUBTRACT 1</p>
<p>ADD 10</p>	<p>SUBTRACT 10</p>
<p>NEXT 5 NUMBERS _____</p>	
	<p>MAKE IT _____ ○ _____ ○ _____</p>

Fewer, More than and Same As

When comparing numbers of people or things, you can usually say, there are _____ as another number.

- (a) Fewer
- (b) More Than or,
- (c) The same

REAL WORLD PROBLEMS:

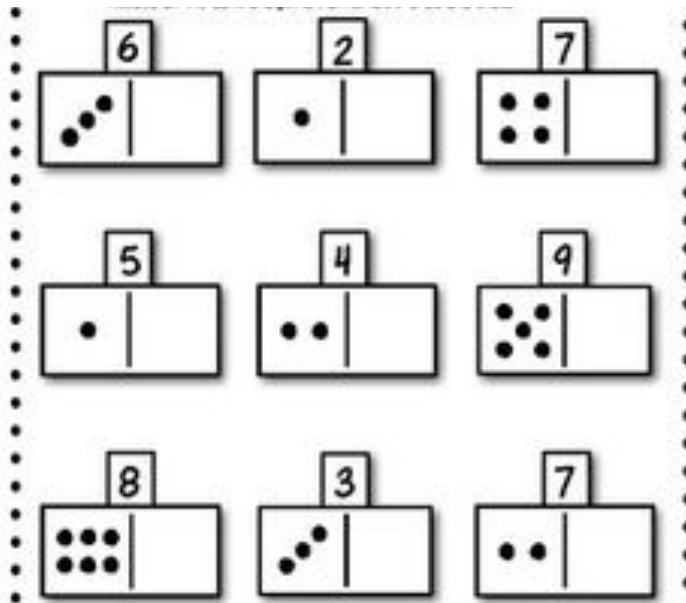
If you ate 7 grapes and I ate 12 grapes, I can say either

- (a) "I ate 5 more grapes than you did", or
- (b) "You ate 5 fewer grapes than I did."

STEP OUTSIDE:

- Each person will keep track of data about the number of insects, birds or other animals viewed during a 15-minute hike for 3 days in a row.
- When back in class, add up everyone's total's each day.
- At the end of the second and third day, discuss how the numbers were "more than by _____ (how much)", "less than by _____ (how many) or the same as the day before.

- Look at these dominoes and draw in the missing dots to make the number above:



- Play dominoes and guess and check what number you need to add to get 12 with each domino.

GOT IT!

- You can use number lines to add and subtract numbers.
- Complete the subtraction questions using the number line.

$4 - 2 = 2$

$5 - 3 = \underline{\quad}$	
$8 - 1 = \underline{\quad}$	
$6 - 2 = \underline{\quad}$	
$5 - 5 = \underline{\quad}$	

- Complete three of the following and then show your teacher how to subtract easy 2 digit numbers.

$$\begin{array}{r} 46 \\ - 33 \\ \hline \end{array}$$

$$\begin{array}{r} 59 \\ - 25 \\ \hline \end{array}$$

$$\begin{array}{r} 88 \\ - 45 \\ \hline \end{array}$$

$$\begin{array}{r} 48 \\ - 13 \\ \hline \end{array}$$

$$\begin{array}{r} 69 \\ - 41 \\ \hline \end{array}$$

$$\begin{array}{r} 57 \\ - 17 \\ \hline \end{array}$$

$$\begin{array}{r} 44 \\ - 20 \\ \hline \end{array}$$

$$\begin{array}{r} 49 \\ - 12 \\ \hline \end{array}$$



<https://s-media-cache-ak0.pinimg.com/736x/30/3c/cd/303ccd5d5ada05d69016190bd0dc3972.jpg>

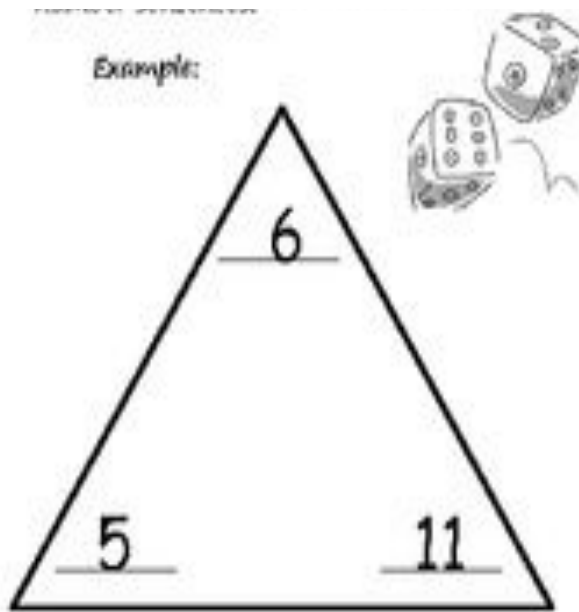
How well did you do the tasks in this lesson?	Like a Trailblazer (expert)	Like a Pathfinder (apprentice)	Like a rookie (not yet)

13. Fact Families

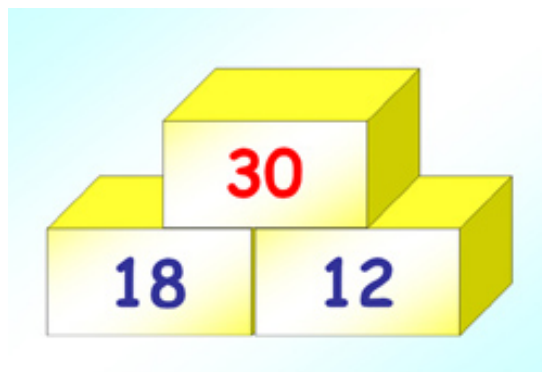
RULE: Fact families show the relationship between addition and subtraction. Fact Families can be displayed in triangles, blocks and circles.

EXAMPLES:

Example:


$$\begin{array}{r} 6 \\ \hline \end{array} + \begin{array}{r} 5 \\ \hline \end{array} = \begin{array}{r} 11 \\ \hline \end{array}$$
$$\begin{array}{r} 5 \\ \hline \end{array} + \begin{array}{r} 6 \\ \hline \end{array} = \begin{array}{r} 11 \\ \hline \end{array}$$
$$\begin{array}{r} 11 \\ \hline \end{array} - \begin{array}{r} 6 \\ \hline \end{array} = \begin{array}{r} 5 \\ \hline \end{array}$$
$$\begin{array}{r} 11 \\ \hline \end{array} - \begin{array}{r} 5 \\ \hline \end{array} = \begin{array}{r} 6 \\ \hline \end{array}$$

<https://s-media-cache-ak0.pinimg.com/736x/dc/a8/c9/dca8c959cb55cdaecdb6ebe33cb843d4.jpg>



Use each fact family to write down two subtraction number sentences.

$$\begin{array}{c} 15 \\ 7 \quad 8 \end{array}$$

$$15 - 8 = 7$$

$$15 - 7 = 8$$

$$\begin{array}{c} 17 \\ 9 \quad 8 \end{array}$$

$$17 - 8 = 9$$

$$17 - 9 = 8$$

$$\begin{array}{c} 16 \\ 9 \quad 7 \end{array}$$

$$16 - 7 = 9$$

$$16 - 9 = 7$$

$$\begin{array}{c} 13 \\ 5 \quad 8 \end{array}$$

$$13 - 5 = 8$$

$$13 - 8 = 5$$

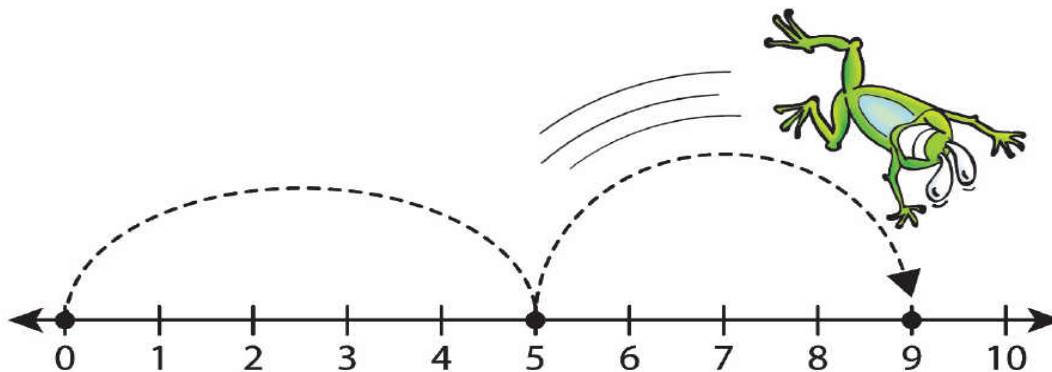
<https://cdn.turtlediary.com/worksheets/answer/answer-write-subtraction-sentences-using-given-numbers.png>

REAL WORLD PROBLEMS: Stopwatch Problem

Mr. Rogers only has 5 stopwatches. He needs 4 more so students can time their 12 minute runs.

- How many does he need all together?
- Count how many stopwatches are needed using the number line.





<https://illuminations.nctm.org/uploadedImages/Content/Lessons/Images/preK-2/355-frogline-smaller.jpg>

The frog moved 4 places to the right to land on 9.

Number Sentence: $4 + 5 = 9$

Mr. Rogers needs 9 stopwatches all together.

Mr. Rogers had to know **how to add** to solve his problem.

- Let's change his problem around to see how he can use subtraction to solve a problem.

Mr. Rogers has 9 stopwatches. 4 are brand new.

How many stopwatches have been used before?



$$9 - 4 =$$

https://media.gcflearnfree.org/ctassets/topics/227/sub_slideshow_numberline_08.png

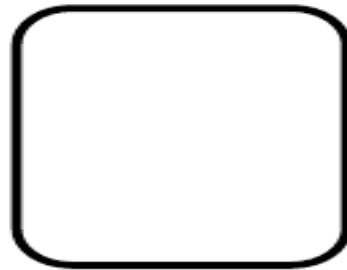
- Move 4 numbers to the left on the number line with an arrow counting each number.

Mr. Rogers had _____ used stopwatches.

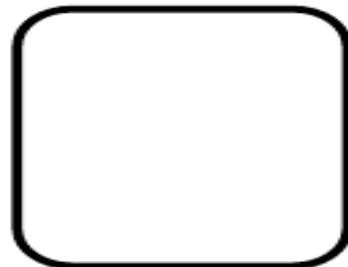
Mr. Rogers had to know **how to subtract** to solve his problem.

- Use 9 counters to show your teacher how to solve each of Mr. Roger's problems.
- Make a fact triangle, block or circle to show the numbers in Mr. Roger's problem.
- Explain your fact family to your teacher.
- Try these problems and create fact families for each.

1. Crissy found 3 carrots and 2 new juicy leaves in the forest. She found another 6 carrots in Mrs. Andrew's garden. How many carrots does Crissy have?




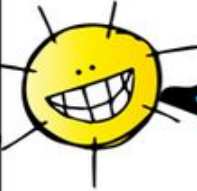




2. Crissy met up with 11 of her friends. They played all afternoon. 6 of her friends had to go home for dinner. How many friends stayed with Crissy?



<http://www.teach-nology.com/worksheets/math/Grade1/gr1m38.gif>

FUN & GAMES:

- Play the game with a classmate.

start	9+1		8+9	6+7	12+7	2+6					
8+8	  <p>Build a Sandcastle Addition Game a game for 2 – 4 players Need: counters, dice</p>					9+9					
13+6						8+4					
7+2						8+7					
7+4											
4+9						15+5					
11+7						5+6					
						5+4					
9+3						9+6	5+3	10+7	5+9		7+9

Each player puts a counter on Start. Players take turns to roll the dice, move forward that many spaces, answer the addition, then cover the answer on the sandcastle with a counter. If the number is covered the player doesn't cover any number on this turn. If a player lands on a starfish, they can cover a number of their choice. The winner is the player who covers the last number on the sandcastle.

<https://s-media-cache-ak0.pinimg.com/736x/ac/8b/04/ac8b04203a0c01aaf7d60843f6ef74--addition-and-subtraction-games-addition-games.jpg>

GOT IT! Mystery Puzzles

Puzzle	Rough Work
<p>I am double 6, plus 2.</p> <p>I am = _____</p>	
<p>I am 17 subtract (minus) 4, plus a dozen</p>	
<ul style="list-style-type: none"> • Create your own 	

How well did you do the tasks in this lesson?	Like a Trailblazer (expert)	Like a Pathfinder (apprentice)	Like a rookie (not yet)


14. RE-grouping Numbers in Addition

RULE: When you add part of a number and the answer is greater than 10, place the last number under the column and any remaining numbers above the column to the left (carry it over).

EXAMPLE:

HOW TO:
Add with Regrouping

Only one number can be in a float.
Drop the **one** and lift the **ten** to regroup!

$$\begin{array}{r|l} 1 & 25 \\ + & 17 \\ \hline & 42 \end{array} \rightarrow 12$$


http://thirdgrademath1516.weebly.com/uploads/5/4/9/4/54946417/____2872297_orig.jpg

*Regrouping in
2-Digit
Addition*

$$\begin{array}{r}
 14 \\
 +28 \\
 \hline
 42
 \end{array}$$

The diagram shows the addition of 14 and 28. A horizontal line is drawn under the 28. A curved arrow points from the 4 in the ones place of 28 up to the 1 in the tens place of 14, indicating the regrouping of 10 ones into 1 ten. The final sum, 42, is written below the line.

<https://i.ytimg.com/vi/rT55rmXXLrg/maxresdefault.jpg>

FUN & GAMES:

- Work with a partner and do three questions in a row.

$ \begin{array}{r} 64 \\ +26 \\ \hline \end{array} $	$ \begin{array}{r} 44 \\ +28 \\ \hline \end{array} $	$ \begin{array}{r} 74 \\ +18 \\ \hline \end{array} $
$ \begin{array}{r} 37 \\ +37 \\ \hline \end{array} $	$ \begin{array}{r} 55 \\ +27 \\ \hline \end{array} $	$ \begin{array}{r} 79 \\ +14 \\ \hline \end{array} $
$ \begin{array}{r} 23 \\ +57 \\ \hline \end{array} $	$ \begin{array}{r} 17 \\ +13 \\ \hline \end{array} $	$ \begin{array}{r} 18 \\ +66 \\ \hline \end{array} $

<http://www.theteachersguide.com/twodigitaddition/tictactoemathtwodigitadditionregroupingtg.jpg>

TECH TIME:

- <https://www.youtube.com/watch?v=N8jL8UaUGN8>
- https://www.youtube.com/watch?v=Buyaqe_L5-Y

GOT IT:

(a) $96 - 48$

(b) $32 + 49$

How well did you do the tasks in this lesson?	Like a Trailblazer (expert)	Like a Pathfinder (apprentice)	Like a rookie (not yet)

15. Re-Grouping in Subtraction

RULE: When you subtract numbers where the digit is smaller on top, than you borrow from the left to make the digit larger. This reduces the value of the digit on the left by 1. (regrouping)

EXAMPLES:

Subtraction
When do I regroup?

Look at the ones place.
Is the bigger number on top?

yes!

no!

-Subtract the ones.
-Subtract the tens.

Regroup:
-Take a ten from the tens place.
(The number goes down by one.)
-Add ten to the ones place.
(The number goes up by 10.)
-Subtract the ones.
-Subtract the tens.

$$\begin{array}{r} 42 \\ -28 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \ 12 \\ \cancel{4}2 \\ -28 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \ 12 \\ \cancel{4}2 \\ -28 \\ \hline 14 \end{array}$$

Created by E. Buckler

<http://edweb.tusd1.org/eryan/screen-shot-2012-01-22-at-11-53-34-am.png>

Think:
I have 3 tens and 4 ones. I want to take away 9 ones.

Workmat	
Tens	Ones

Think:
I need more ones.
I will regroup 1 ten as 10 ones.

Workmat	
Tens	Ones

Think:
I now have 2 tens and 14 ones so I can take away 9 ones, leaving 2 tens and 5 ones.

Workmat	
Tens	Ones

2 tens 5 ones = 25

https://www.eduplace.com/math/mw/background/2/06/graphics/ts_2_6_wi3.gif

$ \begin{array}{r} 15 \\ 765 \\ - 39 \\ \hline 726 \end{array} $	<p>I am adding a 10</p> <p>I'm adding one here too.</p>
<p>Borrow and Pay Back Method Or Equal Additions</p>	

$ \begin{array}{r} 5 \ 15 \\ 765 \\ - 39 \\ \hline 726 \end{array} $	
<p>Borrow and Regroup Method Or Decomposition</p>	

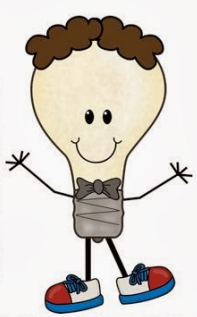

<http://www.littlehouseinthevalley.com/wp-content/themes/images/subtraction.jpg>

SOLVE:

$$\begin{array}{r}
 \overset{4}{3} \overset{11}{5} 1 \\
 - 213 \\
 \hline
 138
 \end{array}$$

Renamed values:

3 hundreds
+
4 tens
+
11 ones
equals
351

http://3.bp.blogspot.com/-R2zTb1EFxq0/UsiB5jUhcwI/AAAAAAAAAKo/an_dMzdQDN8/s1600/Subtraction+Strategies+Photos+2.008.jpg

Subtraction Poem

More on top?
No need to stop!

More on the floor?
Go next door..
And get 10 more!

Numbers the same?
Zero's the game!

$$\begin{array}{r}
 38 \\
 -16 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 58 \\
 -29 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 88 \\
 -68 \\
 \hline
 \end{array}$$

<http://1.bp.blogspot.com/-q1sn1Xh6pVQ/UGpfy6rtpvI/AAAAAADGs/zSbca4iCM6w/s1600/Picture+7.png>

TECH TIME:

- <http://quizmoz.com/tests/Maths-Tests/a/Adding-and-subtracting-Test.asp>
- <http://www.mathsisfun.com/numbers/subtraction-regrouping.html>
- <http://www.myschoolhouse.com/courses/O/1/40.asp>
- http://www.mathsteacher.com.au/year7/ch01_whole/03_sub/sub.htm
- <http://www.youtube.com/watch?v=jPb2SDBUGns>

GOT IT!

- Do one from each row - and show your teacher how you know how to subtract with re-grouping:

$\begin{array}{r} 52 \\ -37 \\ \hline \end{array}$	$\begin{array}{r} 45 \\ -24 \\ \hline \end{array}$	$\begin{array}{r} 71 \\ -52 \\ \hline \end{array}$	$\begin{array}{r} 74 \\ -30 \\ \hline \end{array}$	$\begin{array}{r} 90 \\ -42 \\ \hline \end{array}$
$\begin{array}{r} 63 \\ -33 \\ \hline \end{array}$	$\begin{array}{r} 80 \\ -9 \\ \hline \end{array}$	$\begin{array}{r} 82 \\ -43 \\ \hline \end{array}$	$\begin{array}{r} 53 \\ -44 \\ \hline \end{array}$	$\begin{array}{r} 73 \\ -26 \\ \hline \end{array}$
$\begin{array}{r} 90 \\ -59 \\ \hline \end{array}$	$\begin{array}{r} 73 \\ -44 \\ \hline \end{array}$	$\begin{array}{r} 63 \\ -33 \\ \hline \end{array}$	$\begin{array}{r} 61 \\ -53 \\ \hline \end{array}$	$\begin{array}{r} 80 \\ -42 \\ \hline \end{array}$
$\begin{array}{r} 42 \\ -26 \\ \hline \end{array}$	$\begin{array}{r} 84 \\ -36 \\ \hline \end{array}$	$\begin{array}{r} 97 \\ -09 \\ \hline \end{array}$	$\begin{array}{r} 55 \\ -22 \\ \hline \end{array}$	$\begin{array}{r} 73 \\ -14 \\ \hline \end{array}$

<http://www.2ndgradeworksheets.net/twodigitssubtraction/twodigitssubtractionwithregrouping.jpg>

How well did you add and subtract within 100?	Like a Trailblazer (expert)	Like a Pathfinder (apprentice)	Like a rookie (need more help & practice)

ET - Add & subtract at least four digit numbers.

16. 3 and 4 digit Addition

EXAMPLES:

$$\begin{array}{r} 11 \\ 1574 \\ + 6287 \\ \hline 7861 \end{array}$$

	1	1	1	
	Th	H	T	O
	2	3	1	4
+ 3	8	8	6	
	6	2	0	0

<http://images.tutorvista.com/cms/images/67/addition-with-regrouping1.png>

1) $\begin{array}{r} 1 \\ 327 \\ + 145 \\ \hline 472 \end{array}$	2) $\begin{array}{r} 428 \\ + 134 \\ \hline 562 \end{array}$	3) $\begin{array}{r} 505 \\ + 165 \\ \hline 670 \end{array}$	4) $\begin{array}{r} 356 \\ + 129 \\ \hline 485 \end{array}$
5) $\begin{array}{r} 427 \\ + 344 \\ \hline 771 \end{array}$	6) $\begin{array}{r} 308 \\ + 126 \\ \hline 434 \end{array}$	7) $\begin{array}{r} 625 \\ + 133 \\ \hline 758 \end{array}$	8) $\begin{array}{r} 357 \\ + 326 \\ \hline 683 \end{array}$
9) $\begin{array}{r} 253 \\ + 129 \\ \hline 382 \end{array}$	10) $\begin{array}{r} 438 \\ + 217 \\ \hline 655 \end{array}$	11) $\begin{array}{r} 326 \\ + 108 \\ \hline 434 \end{array}$	12) $\begin{array}{r} 352 \\ + 236 \\ \hline 588 \end{array}$
13) $\begin{array}{r} 163 \\ + 118 \\ \hline 281 \end{array}$	14) $\begin{array}{r} 528 \\ + 66 \\ \hline 594 \end{array}$	15) $\begin{array}{r} 426 \\ + 57 \\ \hline 483 \end{array}$	16) $\begin{array}{r} 315 \\ + 229 \\ \hline 544 \end{array}$
17) $\begin{array}{r} 608 \\ + 172 \\ \hline 780 \end{array}$	18) $\begin{array}{r} 179 \\ + 518 \\ \hline 697 \end{array}$	19) $\begin{array}{r} 342 \\ + 156 \\ \hline 498 \end{array}$	20) $\begin{array}{r} 537 \\ + 248 \\ \hline 785 \end{array}$

Remember to add the ones first, then the tens and then the hundreds.

Shade the biggest answer green and the smallest answer yellow.



a

http://www.2nd-grade-math-salamanders.com/im_files/2nd-grade-math-worksheets-column-addition-3-digits-1ans.gif

RECIPROCAL TEACHING:

- "Like a teacher" explain how to add 4-digit numbers.
- Share examples and explain to a friend or family member about adding 4-digit numbers.
- Use scrap paper.
- Have your friend or family member change places and replay what you taught.

GOT IT!

Match the addition sentence in column A with its answer in column B. Write the letter of the correct answer on the box before each addition sentence.

A	B
<input type="checkbox"/> 1. 4 576 + 5 364 	 A. 12 349
<input type="checkbox"/> 2. 5 692 + 3 833 	 B. 10 722
<input type="checkbox"/> 3. 9 493 + 1 229 	 C. 11 640
<input type="checkbox"/> 4. 6 575 + 3 905 	 D. 9 575
<input type="checkbox"/> 5. 3 429 + 8 337 	 E. 5 173
<input type="checkbox"/> 6. 2 115 + 2 839 	 F. 10 958
<input type="checkbox"/> 7. 8 409 + 3 940 	 G. 11 766
<input type="checkbox"/> 8. 8 574 + 2 384 	 H. 4 954

<http://www.letsshareknowledge.com/wp-content/uploads/2016/05/grade-3-maths-worksheets-4-digit-addition-with-regrouping-page-3.jpg>

How well did you subtract 3 and 4 digit numbers?	Like a Trailblazer (expert)	Like a Pathfinder (apprentice)	Like a rookie (need more help & practice)

17. 3 & 4 Digit Subtraction

EXAMPLES:

$$\begin{array}{r} 9485 \\ - 3217 \\ \hline 6268 \end{array}$$

$$\begin{array}{r} 5665 \\ - 4336 \\ \hline 1329 \end{array}$$

$$\begin{array}{r} 7550 \\ - 5221 \\ \hline 2329 \end{array}$$

$$\begin{array}{r} 8371 \\ - 1223 \\ \hline 7148 \end{array}$$

$$\begin{array}{r} 4635 \\ - 3365 \\ \hline 1270 \end{array}$$

$$\begin{array}{r} 3928 \\ - 3630 \\ \hline 298 \end{array}$$

$$\begin{array}{r} 6378 \\ - 2526 \\ \hline 3852 \end{array}$$

$$\begin{array}{r} 2200 \\ - 1301 \\ \hline 899 \end{array}$$

$$\begin{array}{r} 9342 \\ - 8500 \\ \hline 842 \end{array}$$

$$\begin{array}{r} 5172 \\ - 4995 \\ \hline 177 \end{array}$$

$$\begin{array}{r} 7981 \\ - 2397 \\ \hline 5584 \end{array}$$

$$\begin{array}{r} 8624 \\ - 6340 \\ \hline 2284 \end{array}$$

$$\begin{array}{r} 4166 \\ - 2781 \\ \hline 1385 \end{array}$$

$$\begin{array}{r} 3120 \\ - 1559 \\ \hline 1561 \end{array}$$

$$\begin{array}{r} 6880 \\ - 4573 \\ \hline 2307 \end{array}$$

$$\begin{array}{r} 2752 \\ - 2352 \\ \hline 400 \end{array}$$

$$\begin{array}{r} 9846 \\ - 5906 \\ \hline 3940 \end{array}$$

$$\begin{array}{r} 5795 \\ - 4955 \\ \hline 840 \end{array}$$

$$\begin{array}{r} 7223 \\ - 3582 \\ \hline 3641 \end{array}$$

$$\begin{array}{r} 8551 \\ - 7660 \\ \hline 891 \end{array}$$

$$\begin{array}{r} 5478 \\ - 2154 \\ \hline 3324 \end{array}$$

$$\begin{array}{r} 2943 \\ - 1732 \\ \hline 1211 \end{array}$$

$$\begin{array}{r} 3862 \\ - 3102 \\ \hline 760 \end{array}$$

$$\begin{array}{r} 7515 \\ - 6502 \\ \hline 1013 \end{array}$$

$$\begin{array}{r} 1659 \\ - 517 \\ \hline 1142 \end{array}$$

RECIPROCAL TEACHING:

- "Like a teacher" explain how to subtract 4-digit numbers.
- Share examples and explain to a friend or family member about subtracting 4-digit numbers.
- Use scrap paper.
- Have your friend or family member change places and replay what you taught.

GOT IT!

Solve the addition problems and write the answers underneath each flap.



$$\begin{array}{r} 863 \\ -520 \\ \hline \end{array}$$

$$\begin{array}{r} 726 \\ -413 \\ \hline \end{array}$$

$$\begin{array}{r} 949 \\ -337 \\ \hline \end{array}$$

$$\begin{array}{r} 492 \\ -160 \\ \hline \end{array}$$

$$\begin{array}{r} 588 \\ -264 \\ \hline \end{array}$$

$$\begin{array}{r} 674 \\ -421 \\ \hline \end{array}$$

<https://s-media-cache-ak0.pinimg.com/736x/d1/44/db/d144db8ec9d3eba36a87413916b4dae5--addition-and-subtraction-practice-math-addition.jpg>

- Complete one question from each row.

$$\begin{array}{r} 1) \quad 5 \ 2 \ 7 \ 4 \\ - \quad 4 \ 6 \ 5 \\ \hline \end{array}$$

$$\begin{array}{r} 2) \quad 7 \ 0 \ 4 \ 9 \\ - \quad 3 \ 5 \ 1 \ 7 \\ \hline \end{array}$$

$$\begin{array}{r} 3) \quad 6 \ 7 \ 0 \ 4 \\ - \quad 3 \ 6 \ 4 \ 5 \\ \hline \end{array}$$

$$\begin{array}{r} 4) \quad 7 \ 7 \ 2 \ 3 \\ - \quad 5 \ 8 \ 4 \ 6 \\ \hline \end{array}$$

$$\begin{array}{r} 5) \quad 4 \ 7 \ 3 \ 8 \\ - \quad 9 \ 7 \ 6 \\ \hline \end{array}$$

$$\begin{array}{r} 6) \quad 7 \ 2 \ 6 \ 7 \\ - \quad 3 \ 7 \ 4 \ 9 \\ \hline \end{array}$$

$$\begin{array}{r} 7) \quad 6 \ 8 \ 0 \ 2 \\ - \quad 5 \ 2 \ 9 \ 5 \\ \hline \end{array}$$

$$\begin{array}{r} 8) \quad 9 \ 3 \ 1 \ 7 \\ - \quad 4 \ 6 \ 5 \ 2 \\ \hline \end{array}$$

$$\begin{array}{r} 9) \quad 6 \ 0 \ 0 \ 4 \\ - \quad 3 \ 5 \ 2 \ 9 \\ \hline \end{array}$$

<http://www.math-salamanders.com/image-files/free-subtraction-worksheets-column-subtraction-4-digits-3.gif>

How well did you subtract 4 digit numbers?	Like a Trailblazer (expert)	Like a Pathfinder (apprentice)	Like a rookie (need more help & practice)

18. Adding to Multiply

EXAMPLES:

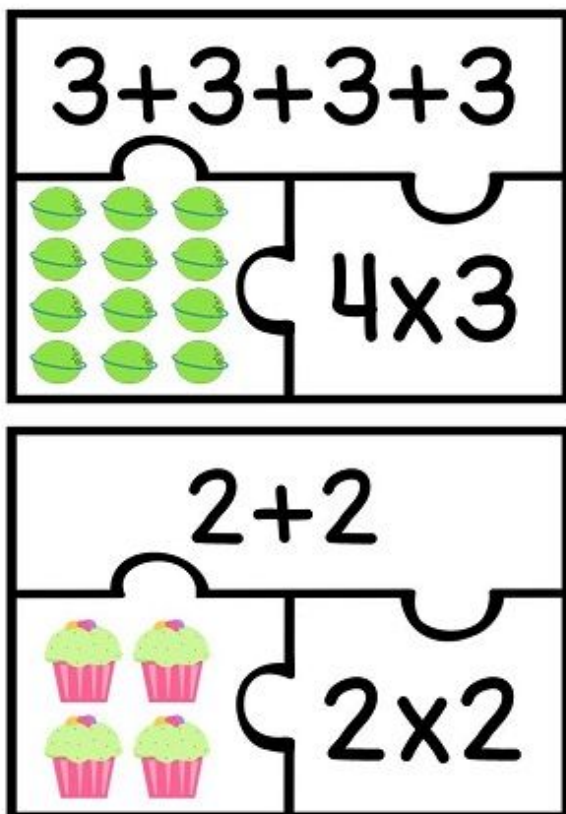
When you are tiling a floor that needs 15 tiles, you have some choices:

Start with 9 tiles and add 6

Or

Start with _____ and add _____.

Start with _____ and subtract _____.



If I have 12 tiles and four people to glue them in, how many tiles each would they get?

Use counters to represent tiles.

Show that 4 groups of 3 is equal to $3 + 3 + 3 + 3$

$$4 \times 3 = 12$$

<https://s-media-cache-ak0.pinimg.com/736x/86/26/69/86266907ead0e8973d7f7070b38e2bee--repeated-addition-daily--math.jpg>

$$\begin{aligned} 5 \times 3 &= \text{five 3s} \\ &= 3 + 3 + 3 + 3 + 3 \\ &= 15 \end{aligned}$$



<https://i1.wp.com/www.alamandamaths.com/wp-content/uploads/2015/09/4016944241.gif?w=1040>

GOT IT!

Create your own repeated addition and multiplication sentence.
Draw a picture to show how it works.

EXTENSION:

- Multiply & Divide within one & two digit numbers (distributive property)

BIG THINK

Date: _____

Dear Math Teacher,

I have completed my first year of Primary Whole Numbers.

Did I make any mistakes? _____

Did I learn from making mistakes? _____

I am proudest about the work I did on page ____ because....

I think the trickiest part of this Math was....

because....

I enjoyed working (with others or on my own) because....

Yours in mathematics,

_____ (name)



Your Math Learning Log:

- ___ You used a ruler to underline steps
- ___ You did rough work in spaces easy to find
- ___ You did work that was neat and easy to read
- ___ You tried using the examples as patterns.
- ___ You drew at least three pictures of "doing math" in your learning reflection journal.

Classroom Work	
Worked well on task with other students during paired or group activity	
Worked on own without disruption	
Helped others when needed	
Contributed well to classroom discussions	
Opted to do optional activities	
TOTAL (up to 10 points)	

Appendix A: Ontario Ministry of Education and Training Mathematics Expectations

1A. NUMBER SENSE AND NUMERATION

1A.1.1 represent, compare, and order whole numbers to 50 using a variety of tools and contexts

1A.1.2 read and print in words whole numbers to ten, using meaningful contexts (e.g., storybooks, posters)

1A.1.3 demonstrate, using concrete materials, the concept of conservation of number

1A.1.4 relate numbers to the anchors of 5 and 10 (e.g., 7 is 2 more than 5 and 3 less than 10)

1A.1.8 compose and decompose numbers up to 20 in a variety of ways, using concrete materials

1A.2.1 demonstrate, using concrete materials, the concept of one-to-one correspondence between number and objects when counting

1A.2.2 count forward by 1's, 2's, 5's, and 10's to 100, using a variety of tools and strategies; place counters on a hundreds chart; connect cubes to show equal groups

1A.2.3 count backwards by 1's from 20 and any number less than 20, with and without the use of concrete materials and number lines

1A.2.4 count backwards from 20 by 2's and 5's, using a variety of tools

1A.2.5 use ordinal numbers to thirty-first in meaningful contexts

1A.3.1 solve a variety of problems involving the addition and subtraction of whole numbers to 20, using concrete materials and drawings

1A.3.2 solve problems involving the addition and subtraction of single-digit whole numbers, using a variety of mental strategies

1D.1.1 identify, describe, and extend, through investigation, geometric repeating patterns involving one attribute

1D.1.2 identify and extend, through investigation, numeric repeating patterns

1D.1.3 describe numeric repeating patterns in a hundreds chart

1D.1.4 identify a rule for a repeating pattern

1D.1.5 create a repeating pattern involving one attribute

1D.1.6 represent a given repeating pattern in a variety of ways

1D.2.1 create a set in which the number of objects is greater than, less than, or equal to the number of objects in a given set

1D.2.2 demonstrate examples of equality, through investigation, using a "balance" model

1D.2.3 determine, through investigation using a "balance" model and whole numbers to 10, the number of identical objects that must be added or subtracted to establish equality

2A.1.1 represent, compare, and order whole numbers to 100, using a variety of tools

2A.1.2 read and print in words whole numbers to twenty, using meaningful contexts

2A.1.3 compose and decompose two-digit numbers in a variety of ways, using concrete materials

2A.1.4 determine, using concrete materials, the ten that is nearest to a given two-digit number, and justify the answer

2A.2.1 count forward by 1's, 2's, 5's, 10's, and 25's to 200, using number lines and hundreds charts, starting from multiples of 1, 2, 5, and 10

2A.2.2 count backwards by 1's from 50 and any number less than 50, and count backwards by 10's from 100 and any number less than 100, using number lines and hundreds charts

2A.2.3 locate whole numbers to 100 on a number line and on a partial number line

2A.3.1 solve problems involving the addition and subtraction of whole numbers to 18, using a variety of mental strategies – describe relationships between quantities by using whole-number addition and subtraction

2A.3.2 represent and explain, through investigation using concrete materials and drawings, multiplication as the combining of equal groups

2A.3.3 represent and explain, through investigation using concrete materials and drawings, division as the sharing of a quantity equally

2A.3.4 solve problems involving the addition and subtraction of two-digit numbers, with and without regrouping, using concrete materials, student-generated algorithms, and standard algorithms

2D.1.1 identify and describe, through investigation, growing patterns and shrinking patterns generated by the repeated addition or subtraction of 1's, 2's, 5's, 10's, and 25's on a number line and on a hundreds chart

2D.1.2 identify, describe, and create, through investigation, growing patterns and shrinking patterns involving addition and subtraction, with and without the use of calculators

2D.1.4 represent a given growing or shrinking pattern in a variety of ways

2D.1.6 create a repeating pattern by combining two attributes

2D.1.7 demonstrate, through investigation, an understanding that a pattern results from repeating an operation or making a repeated change to an attribute

2D.2.1 demonstrate an understanding of the concept of equality by partitioning whole numbers to 18 in a variety of ways, using concrete materials

2D.2.2 represent, through investigation with concrete materials and pictures, two number expressions that are equal, using the equal sign

2D.2.3 determine the missing number in equations involving addition and subtraction to 18, using a variety of tools and strategies

2D.2.4 identify, through investigation, and use the commutative property of addition to facilitate computation with whole numbers

2D.2.5 identify, through investigation, the properties of zero in addition and subtraction

DATA MANAGEMENT AND PROBABILITY

1E.1.1 demonstrate an ability to organize objects into categories by sorting and classifying objects using one attribute, and by describing informal sorting experiences

2E.1.1 demonstrate an ability to organize objects into categories, by sorting and classifying objects using two attributes simultaneously

1E.1.2 collect and organize primary data that is categorical, and display the data using one-to-one correspondence, prepared templates of concrete graphs and pictographs, and a variety of recording methods

2E.1.2 gather data to answer a question, using a simple survey with a limited number of responses

2E.1.3 collect and organize primary data that is categorical or discrete, and display the data using one-to-one correspondence in concrete graphs, pictographs, line plots, simple bar graphs, and other graphic organizers, with appropriate titles and labels and with labels ordered appropriately along horizontal axes, as needed

1E.2.1 read primary data presented in concrete graphs and pictographs, and describe the data using comparative language

2E.2.1 read primary data presented in concrete graphs, pictographs, line plots, simple bar graphs, and other graphic organizers, and describe the data using mathematical language

1E.2.2 pose and answer questions about collected data

2E.2.2 pose and answer questions about class generated data in concrete graphs, pictographs, line plots, simple bar graphs, and tally charts (e.g., Which is the least favourite season?);

1E.3.1 describe the likelihood that everyday events will occur, using mathematical language (i.e., impossible, unlikely, less likely, more likely, certain) (e.g., "It's unlikely that I will win the contest shown on the cereal box.").

2E.2.4 demonstrate an understanding of data displayed in a graph, by comparing different parts of the data and by making statements about the data as a whole

2E.3.1 describe probability as a measure of the likelihood that an event will occur, using mathematical language

2E.3.2 describe the probability that an event will occur, through investigation with simple games and probability experiments and using mathematical language

Appendix B: Alberta Education Mathematics Expectations

Grade 1

1A. NUMBER

Specific Outcomes

1A.1. Say the number sequence 0 to 100 by:

- _1s forward between any two given numbers
- _1s backward from 20 to 0
- _2s forward from 0 to 20
- _5s and 10s forward from 0 to 100.

1A.2. Subitize (recognize at a glance) and name familiar arrangements of 1 to 10 objects or dots.

1A.3. Demonstrate an understanding of counting by:

- _indicating that the last number said identifies "how many"
- _showing that any set has only one count
- _using counting-on
- _using parts or equal groups to count sets.

1A.4. Represent and describe numbers to 20, concretely, pictorially and symbolically.

1A.5. Compare sets containing up to 20 elements, using:

- _referents
- _one-to-one correspondence to solve problems.

1A.6. Estimate quantities to 20 by using referents.

1A.7. Demonstrate an understanding of conservation of number.

1A.8. Identify the number, up to 20, that is:

- _one more
- _two more
- _one less
- _two less

than a given number

1A.9. Demonstrate an understanding of addition of numbers with answers to 20 and their corresponding subtraction facts, concretely, pictorially and symbolically, by:

- using familiar mathematical language to describe additive and subtractive actions
- creating and solving problems in context that involve addition and subtraction
- modelling addition and subtraction, using a variety of concrete and visual representations, and recording the process symbolically.

1A.10. Describe and use mental mathematics strategies, such as:

- counting on and counting back
- making 10
- using doubles
- thinking addition for subtraction for basic addition facts and related subtraction facts to 18.

**Understand and apply strategies for addition and related subtraction facts to 18.

Recall addition and related subtraction facts to 5

.

1B. PATTERNS AND RELATIONS (Patterns)

Specific Outcomes

1B.1 Demonstrate an understanding of repeating patterns (two to four elements) by:

- describing
- reproducing
- extending
- creating patterns using manipulatives, diagrams, sounds and actions.

1B.2. Translate repeating patterns from one representation to another.

PATTERNS AND RELATIONS (Variables and Equations)

Specific Outcomes

1B.4. Describe equality as a balance and inequality as an imbalance, concretely and pictorially (0 to 20).

1B.5. Record equalities, using the equal symbol

Grade 2

NUMBER

2A.1. Say the number sequence 0 to 100 by:

- 2s, 5s and 10s, forward and backward, using starting points that are multiples of 2, 5 and 10 respectively
- 10s, using starting points from 1 to 9
- 2s, starting from 1.

2A.2. Demonstrate if a number (up to 100) is even or odd.

2A.3. Describe order or relative position, using ordinal numbers (up to tenth).

2A.4. Represent and describe numbers to 100, concretely, pictorially and symbolically.

2A.5. Compare and order numbers up to 100.

2A.6. Estimate quantities to 100, using referents.

2A.7. Illustrate, concretely and pictorially, the meaning of place value for numerals to 100.

2A.8. Demonstrate and explain the effect of adding zero to, or subtracting zero from, any number.

2A.9. Demonstrate an understanding of addition (limited to 1- and 2-digit numerals) with answers to 100 and the corresponding subtraction by:

- using personal strategies for adding and subtracting with and without the support of manipulatives
- creating and solving problems that involve addition and subtraction
- using the commutative property of addition (the order in which numbers are added does not affect the sum)
- using the associative property of addition (grouping a set of numbers in different ways does not affect the sum)
- explaining that the order in which numbers are subtracted may affect the difference.

2A.10. Apply mental mathematics strategies, such as:

- using doubles
- making 10
- one more, one less
- two more, two less
- building on a known double
- thinking addition for subtraction for basic addition facts and related subtraction facts to 18.

Understand and apply strategies for addition and related subtraction facts to 18.

Recall addition and related subtraction facts to 10.

PATTERNS AND RELATIONS (Patterns)

Specific Outcomes

2B.1. Demonstrate an understanding of repeating patterns (three to five elements) by:

- describing
- extending
- comparing
- creating patterns using manipulatives, diagrams, sounds and actions.

2B.2. Demonstrate an understanding of increasing patterns by:

- describing
- reproducing
- extending
- creating numerical (numbers to 100) and non-numerical patterns using manipulatives, diagrams, sounds and actions.

PATTERNS AND RELATIONS (Variables and Equations)

Specific Outcomes

2B.4. Demonstrate and explain the meaning of equality and inequality, concretely and pictorially.

2B.5. Record equalities and inequalities symbolically, using the equal symbol or the not equal symbol.

Appendix C:

Headwaters Connections to US Common Core State Standards

1.NBT.B.2 Understand that the two digits of a two-digit number represent amounts of tens and ones

1.OA.A.1- Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem

1.OA.B.3 - Apply properties of operations as strategies to add and subtract.²

1.NBT.B.2 Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:

1.NBT.B.2a 10 can be thought of as a bundle of ten ones — called a “ten.”

1.NBT.B.2b The numbers from 11 to 19 are composed of ten and one, two, three, four, five, six, seven, eight, or nine ones.

1.NBT.B.2c The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).

1.OA.B.3 - Apply properties of operations as strategies to add and subtract.

1.NBT.B.2 Understand that the two digits of a two-digit number represent amounts of tens and ones.

1.NBT.B.2a 10 can be thought of as a bundle of ten ones — called a “ten.”

1.NBT.B.2b The numbers from 11 to 19 are composed of ten and one, two, three, four, five, six, seven, eight, or nine ones.

1.NBT.B.2c The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).

2.NBT.A.2 Count within 1000; skip-count by 5s, 10s, and 100s

2.OA.C.4 Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

2.NBT.A.1 Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones.

2.NBT.A.1a 100 can be thought of as a bundle of ten tens — called a “hundred.”

2.NBT.A.1b The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds.

2.NBT.A.1 Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones.

2.NBT.A.1a 100 can be thought of as a bundle of ten tens — called a “hundred.”

2.NBT.A.1b The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).



