Name: _____ #: _____

Math Study Guide Assigned to Student: Wednesday, January 25, 2017

Math Study Guide Due: Monday, February 6, 2017

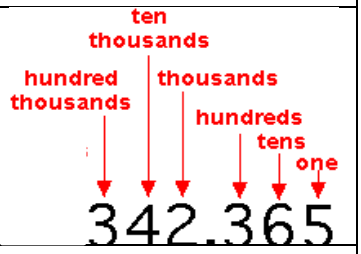
Semester 1 3rd Grade Math Benchmark Study Guide

Your 35 question Math Benchmark will take place on February 6th and 7th. This test will be split in half over those two days; tests MUST be completed by the end of each school day. You will NOT be able to go back and check your work at the end of the test therefore you MUST justify each question as you go along throughout the test.

***Questions and concepts on the study guide will be SIMILAR to what you'll be asked on you Math Benchmark, but not the exact questions. Please review and go over all old math tests, assignments, and other materials in addition to this study guide to ensure that you're as prepared as possible. If you're having trouble with any of the concepts below please reach out to your student's teacher in order for additional review and practice resources! ***

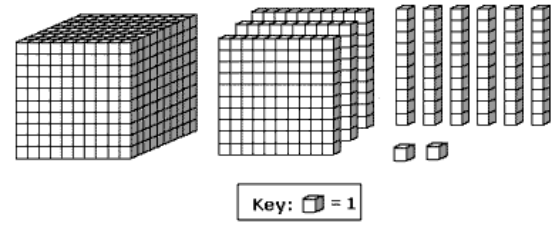
Number & Number Sense *(7 of the 35 Items on the Math Benchmark Test)*

SOL 3.1a I can identify place value.

Standard Form	Word Form	Expanded Form	Label the Place Values and/or Create a Place Value Chart
			
665,234			
	Seven hundred forty three thousand, five hundred twenty one		
		700,000+90,000+8,000+200+4	

SOL 3.1a I can read and write 6 digit numerals.

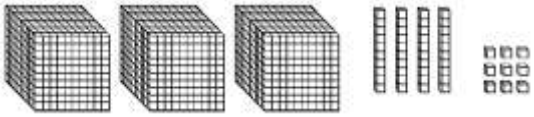
Using the following images, write the numbers represented by the place value blocks in standard, expanded, and word form!



Standard Form: _____

Expanded Form: _____

Word Form: _____



Standard Form: _____

Expanded Form: _____

Word Form: _____

Which shows the number 78,025 written in word form?

Opt 1 Seven hundred eight thousand, two hundred fifty

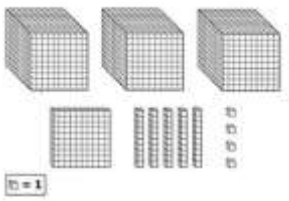
Opt 2 Seven hundred eight thousand, twenty-five

Opt 3 Seventy-eight thousand, two hundred fifty

Opt 4 Seventy-eight thousand, twenty-five

Justification: (label ALL the place values ALWAYS!)

The place value model shown represents a number.



What number is represented by this place value model?

Opt 1 354

Opt 2 454

Opt 3 3,154

Opt 4 4,054

Justification: (label ALL the place values ALWAYS!)

Which of the following shows "one hundred thirty thousand, sixty-nine" in standard form?

Opt 1 130,069

Opt 2 100,369

Opt 3 130,690

Opt 4 1,003,069

Justification: (label ALL the place values ALWAYS!)

SOL 3.1b I can round to the nearest ten, hundred, and thousand.

Complete the table below!

Original Number	Round to the Nearest Ten	Round to the Nearest Hundred	Round to the Nearest Thousand
5,691			
9,999			
1,111			
6,789			
4,004			
3,999			

Identify all numbers that could round to 4,000.

(Yes, we know that there are TONS of possibilities!) Write AT LEAST 4 different numbers below that will round to 4, 000:

1. _____ 2. _____ 3. _____ 4. _____

2.

Directions: Click and drag a number to each correct box in the table.

Round 5,647 to the places shown.

- Nearest thousand
- Nearest hundred
- Nearest ten

Rounded to the Nearest Thousand	Rounded to the Nearest Hundred	Rounded to the Nearest Ten

5,000	5,640
5,600	6,000
5,650	5,700

Justification: (label ALL the place values ALWAYS!)

Fred's Nature Store sold 2,046 pounds of birdseed last month. What is 2,046 rounded to the nearest hundred?

Opt 1 2,000

Opt 2 2,040

Opt 3 2,100

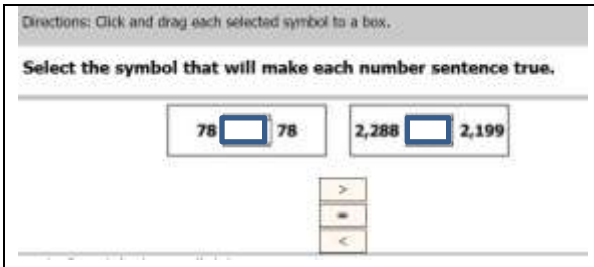
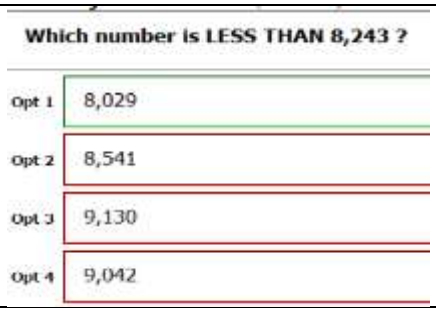
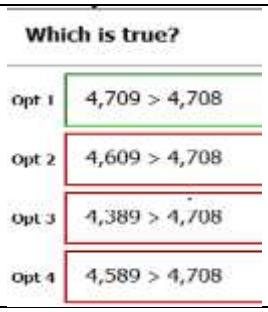
Opt 4 3,000

Justification: (label ALL the place values ALWAYS!)

SOL 3.1c I can compare numbers using symbols (<,>, =)

In the table below, compare the following numbers using both symbols and words (see example)

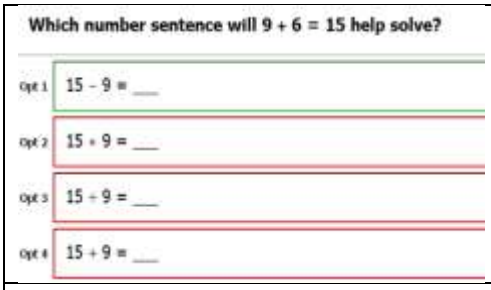
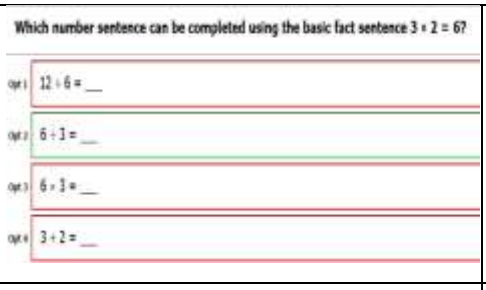
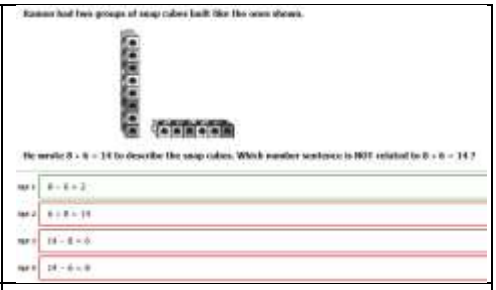
First Number	Comparison SYMBOL and Comparison WORDS	Second Number
1,111	< Less than	2,222
3,456		3,564
6,893		6,938
9,999		9,990
1,345		1,345

		
Justification: *(Be sure to label the place values, the value of each digit allows mathematicians to compare place values!)*	Justification: *(Be sure to label the place values, the value of each digit allows mathematicians to compare place values!)*	Justification: *(Be sure to label the place values, the value of each digit allows mathematicians to compare place values!)*

SOL 3.2 I can recognize inverse relationships in addition and subtraction. SOL 3.2 I can recognize inverse relationships in multiplication and division.

Inverse is a fancy word for _____. Addition and subtraction are _____ operations! Multiplication and Division are _____ operations! In the table below, given one either addition/subtraction equation or multiplication/division equation, write the other three equations that are found in the same fact family!

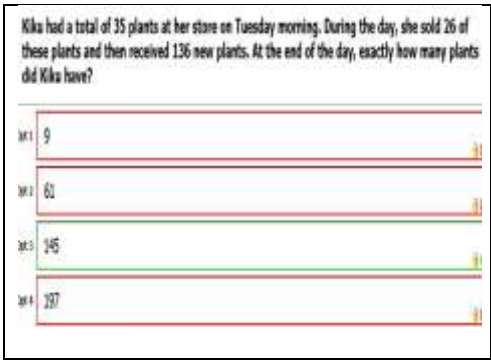
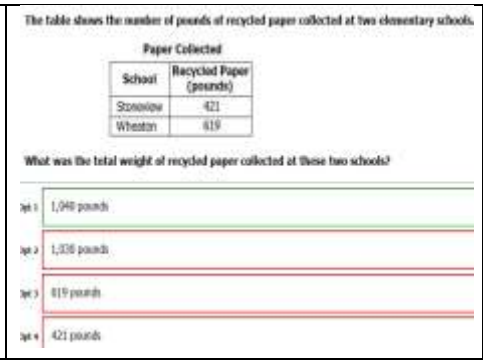
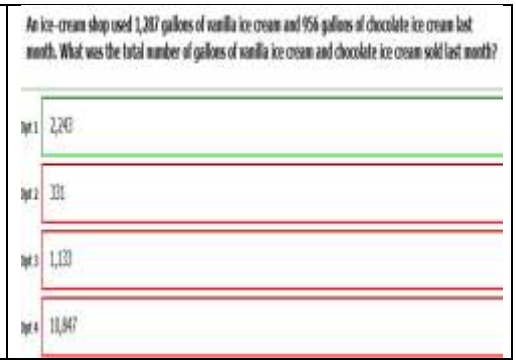
Given Equation:	2nd Equation in Fact Family:	3rd Equation in Fact Family:	4th Equation in Fact Family	3 numbers that this fact family contains: Write the
8+9=17	9+8=17	17-8=9	17-9=8	17, 9, 8
23-3=20				
41+8=49				
12x12=144				
121÷11=11				
7x8=56				
42÷7=6				

		
Justification: *(Be sure to write out ALL four equations in the fact family and the three numbers that compose the fact family!)*	Justification: *(Be sure to write out ALL four equations in the fact family and the three numbers that compose the fact family!)*	Justification: *(Be sure to write out ALL four equations in the fact family and the three numbers that compose the fact family!)*

Computation & Estimation *(7 of the 35 Items on the Math Benchmark Test)*

SOL 3.4 I can solve addition and subtraction word problems (including multistep problems)

6,098-1,754=_____ *(Be sure to rewrite the equation below in order to solve, LINE UP YOUR PLACE VALUES!)*	3,000-285=_____ *(Be sure to rewrite the equation below in order to solve, LINE UP YOUR PLACE VALUES!)*	4,980+5,173=_____ *(Be sure to rewrite the equation below in order to solve, LINE UP YOUR PLACE VALUES!)*	5,000-2,695=_____ *(Be sure to rewrite the equation below in order to solve, LINE UP YOUR PLACE VALUES!)*
Justification: *(Be sure to show how you regrouped and how you checked your work with the inverse!)*	Justification: *(Be sure to show how you regrouped and how you checked your work with the inverse!)*	Justification: *(Be sure to show how you regrouped and how you checked your work with the inverse!)*	Justification: *(Be sure to show how you regrouped and how you checked your work with the inverse!)*

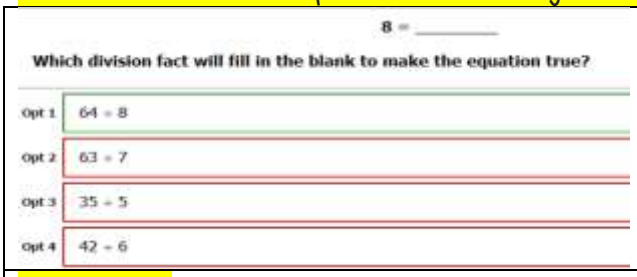
		
Justification:	Justification:	Justification:

SOL 3.4 I can estimate to solve addition and subtraction word problems.

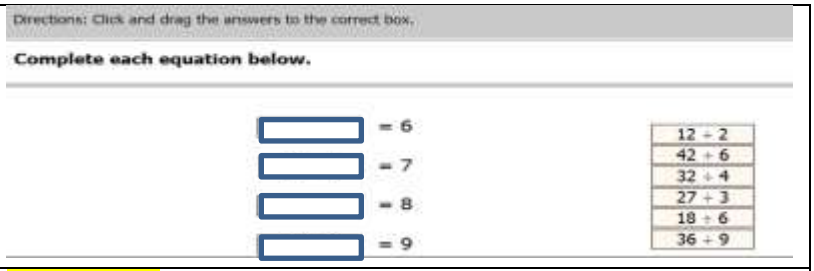
What does it mean to estimate? _____ If the problem doesn't specify or tell us what place to round to when estimating sums and differences then we must round to the _____ place value of the numbers in the problem!

Benny scored 493 points on the video game and Jason scored 817 points. About how many points did they score together?		
Actual/Exact Sum:	Estimated Sum to the greatest place value:	Check with your inverse:
Keith is reading a book that contains 943 pages. He has read 166 pages. About how many pages were unread?		
Actual/Exact Difference:	Estimated Difference to the greatest place value:	Check with your inverse:

SOL 3.5 I can recall multiplication facts through 12x12.



Justification:



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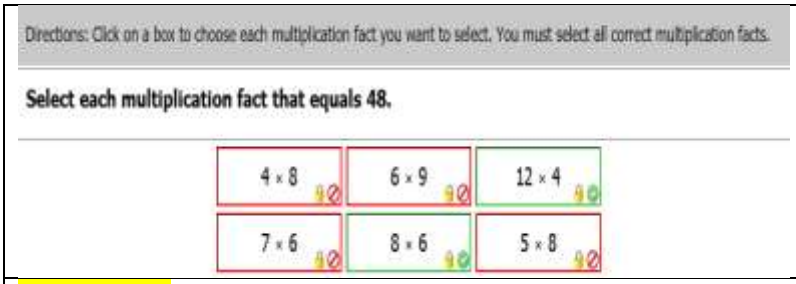
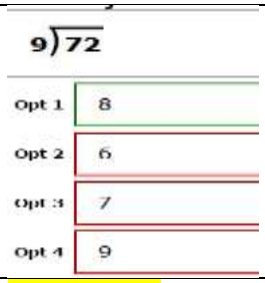


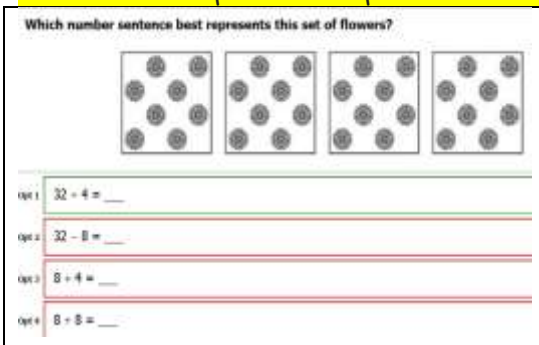
Justification:

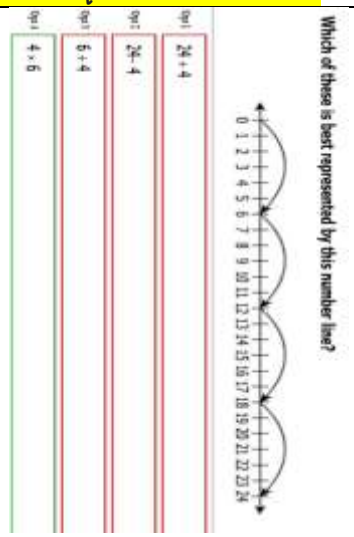


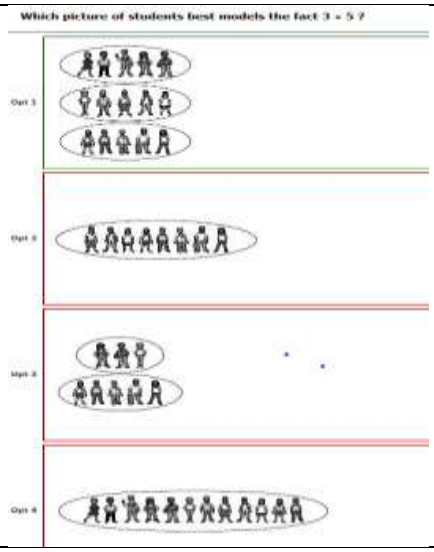
Justification:

7 x 5 =	6 x 7 =	84 ÷ 12 =	60 ÷ 10 =	18 ÷ 9 =
108 ÷ 9 =	5 x 4 =	9 x 4 =	45 ÷ 9 =	60 ÷ 12 =
36 ÷ 6 =	7 x 9 =	9 x 7 =	8 ÷ 4 =	4 x 3 =
4 x 4 =	20 ÷ 5 =	10 x 2 =	88 ÷ 11 =	14 ÷ 2 =
18 ÷ 6 =	18 ÷ 9 =	12 x 3 =	27 ÷ 9 =	10 ÷ 5 =
18 ÷ 2 =	48 ÷ 6 =	60 ÷ 6 =	6 x 3 =	54 ÷ 9 =

SOL 3.6 I can represent multiplication and division equations with models.







Justification:	Justification:	Justification:

1. For a joke competition, 5 people each told 9 jokes. How many jokes were told in all?

Multiplication Equation:	Equal Sets:	Inverse Equation:	Repeated Addition:
Array:	Number line:		Label the parts of the Multiplication Equation:

2. There are 8 poets who write for a literary magazine. For an upcoming issue, each poet wrote 2 poems. How many poems are there in all?

Multiplication Equation:	Equal Sets:	Inverse Equation:	Repeated Addition:
Array:	Number line:		Label the parts of the Multiplication Equation:

3. Fudge from Zack's Sweet Treats costs $4 per pound. How much does 10 pounds of fudge cost?

Multiplication Equation:	Equal Sets:	Inverse Equation:	Repeated Addition:
Array:	Number line:		Label the parts of the Multiplication Equation:

1. 4. Joe has 18 toy turkeys. He wants to give an equal amount to his 6 friends. How many would each friend get from Joe?

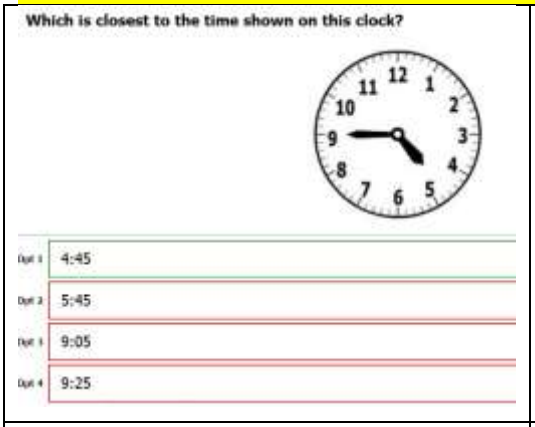
Division Equation:	Equal Sets:	Inverse Equation:	Repeated Addition:
Array:	Number line:		Label the parts of the Division Equation:

5. Janelle went to the grocery store and bought 4 boxes of granola bars. There were 5 granola bars in each box. How many granola bars did Janelle buy in all?

Multiplication Equation:	Equal Sets:	Inverse Equation:	Repeated Addition:
Array:	Number line:		Label the parts of the Multiplication Equation:

Measurement & Geometry *(10 of the 35 Items on the Math Benchmark Test)*

SOL 3.11a I can tell time to the nearest minute.



Justification: (Be sure to label the hour and minute hand, and count by 5s on the minutes all the way around the analog clock face!)

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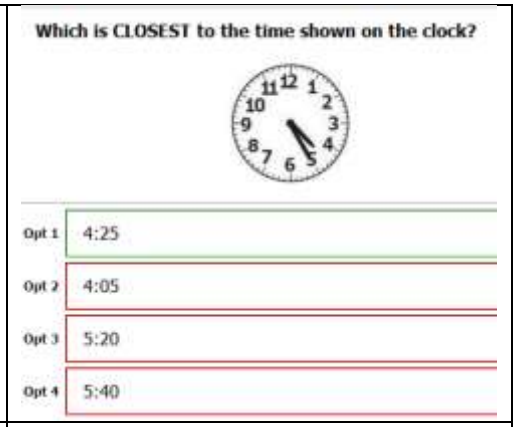
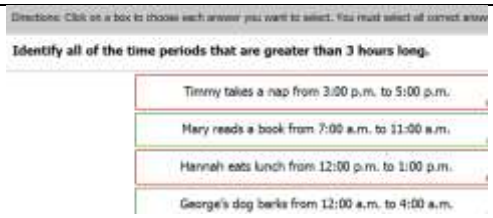


Justification: (Be sure to label the hour and minute hand, and count by 5s on the minutes all the way around the analog clock face!)

SOL 3.11b I can calculate elapsed time.

Justification: (Be sure to create an elapsed time number line!)



Justification: (Be sure to create an elapsed time number line!)

Justification: (Be sure to create an elapsed time number line!)

Forever & Always Rules:

____ months = 1 year

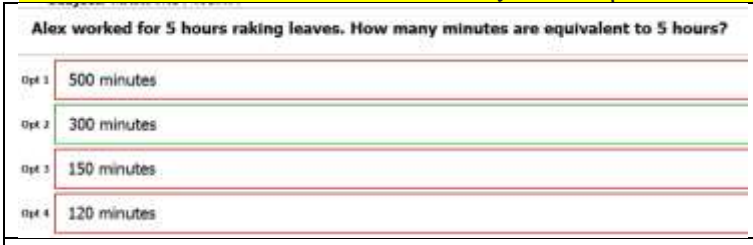
____days = 1 week

____days = 1 year

____minutes = 1 hour

____hours = 1 day

SOL 3.12 I can identify and determine equivalent periods of time.



Justification: (Be sure to start with your forever & always rule!)

How many minutes are equal to two hours? Opt 1: 120 minutes Opt 2: 20 minutes Opt 3: 100 minutes Opt 4: 200 minutes	What is the total number of hours in exactly 1 day? Opt 1: 24 Opt 2: 7 Opt 3: 12 Opt 4: 30	Mr. Garrett lived in Fredericksburg for exactly 1 year. Which is closest to the total number of days Mr. Garrett lived in Fredericksburg? Opt 1: 365 Opt 2: 30 Opt 3: 12 Opt 4: 7
Justification: (Be sure to start with your forever & always rule!)	Justification: (Be sure to start with your forever & always rule!)	Justification: (Be sure to start with your forever & always rule!)

SOL 3.9a I can estimate and measure length.

What're we Measuring?	Word:	Abbreviation (if there is one):	US Customary Unit or Metric Unit?	Definition:	Tools Used to Measure with this Unit:	Real Life Items that you Could Measure with this unit:
Length	Inch		US Customary Unit			
	Foot					
	Yard					
	Centimeter		Metric Unit			
	Meter					

Which is the most reasonable length of a bed? Opt 1: 6 feet Opt 2: 6 inches Opt 3: 6 meters Opt 4: 6 centimeters	Which is CLOSEST to the length of the spider pictured?  Opt 1: 1 centimeter Opt 2: 1.5 centimeters Opt 3: 2 centimeters Opt 4: 2.5 centimeters	Which is a better estimate of the height of a basketball goal? Opt 1: 10 Feet Opt 2: 10 Yards Opt 3: 10 Inches Opt 4: 10 Centimeters
Justification:	Justification:	Justification:

SOL 3.9b I can estimate and measure liquid volume.

What're we Measuring?	Word:	Abbreviation (if there is one):	US Customary Unit or Metric Unit?	Definition:	Tools Used to Measure with this Unit:	Real Life Items that you Could Measure with this unit:
Capacity (Liquid Volume)	Cup		US Customary Unit			
	Pint					
	Quart					
	Gallon					
	Liter		Metric Unit			

Mr. Franklin bought a bottle of cooking oil like the one shown in the picture.  Which is CLOSEST to the amount of cooking oil Mr. Franklin bought? Opt 1 1 gallon Opt 2 10 gallons Opt 3 50 cups Opt 4 1 cup	Which is CLOSEST to the amount of water Peter's glass will hold when full?  Opt 1 2 cups Opt 2 2 quarts Opt 3 2 pints Opt 4 2 gallons	Which is closest to the amount of liquid a small juice box can hold when full?  Opt 1 1 liter Opt 2 1 cup Opt 3 1 quart Opt 4 1 gallon
Justification:	Justification:	Justification:

SOL 3.9c I can estimate and measure weight.

What're we Measuring?	Word:	Abbreviation (if there is one):	US Customary Unit or Metric Unit?	Definition:	Tools Used to Measure with this Unit:	Real Life Items that you Could Measure with this unit:
Weight/Mass	Ounce		US Customary Unit			
	Pound					
	Gram		Metric Unit			
	Kilogram					

Which of the following units can be used to record the weight of a bicycle? Opt 1 Pounds Opt 2 Cups Opt 3 Gallons Opt 4 Miles	This scale shows the weight, in pounds, of some apples.  According to the scale, which is closest to the total weight of these apples? Opt 1 5 pounds Opt 2 6 pounds Opt 3 8 pounds Opt 4 7 pounds	Which of the following weighs about the same as a paper clip? Opt 1 A piece of notebook paper Opt 2 A desk Opt 3 A math book Opt 4 A pair of scissors
Justification:	Justification:	Justification:

SOL 3.9c I can estimate and measure area/perimeter. SOL 3.10a I can measure to determine perimeter. SOL 3.10b I can count square units to determine area.

Use your centimeter ruler to help you answer this question.

Which is *closest* to the distance around this figure?

Opt 1 8 centimeters

Opt 2 6 centimeters

Opt 3 4 centimeters

Opt 4 2 centimeters

Perimeter can be defined as

_____.

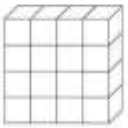
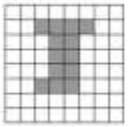
Some synonyms of the word perimeter are

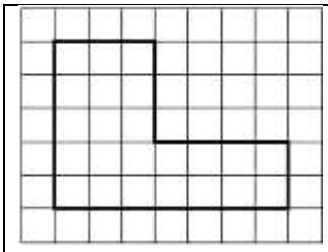
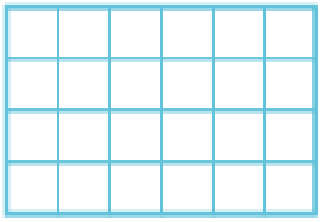
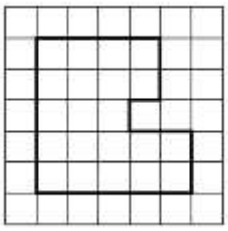
_____.

Area can be defined as _____.

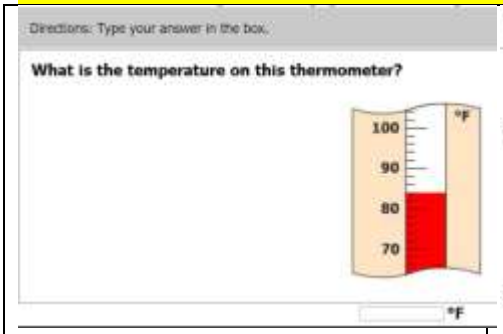
Synonyms of area are

_____!

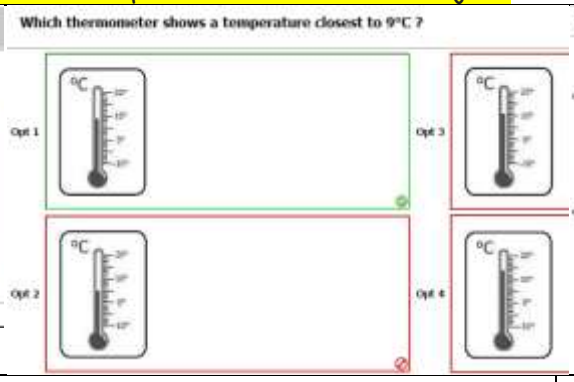
Each side of this figure is the same length.  Key: ⟷ = 1 foot Which measurement is closest to the perimeter of this figure? 5 feet 8 feet 10 feet 12 feet	This is 1 block.  How many of these blocks are needed to make the stack shown here?  10 20 24 25	Jackson colored small squares on grid paper to make this design.  If ☐ is equal to 1 square unit, what is the area of Jackson's design? 13 square units 14 square units 16 square units 20 square units
Justification:	Justification:	Justification:

	Perimeter: _____ Explain your strategy, how did you calculate the perimeter? _____ _____	Area: _____ Explain your strategy, how did you calculate the perimeter? _____ _____
	Perimeter: _____ Explain your strategy, how did you calculate the perimeter? _____ _____	Area: _____ Explain your strategy, how did you calculate the perimeter? _____ _____
	Perimeter: _____ Explain your strategy, how did you calculate the perimeter? _____ _____	Area: _____ Explain your strategy, how did you calculate the area? _____ _____

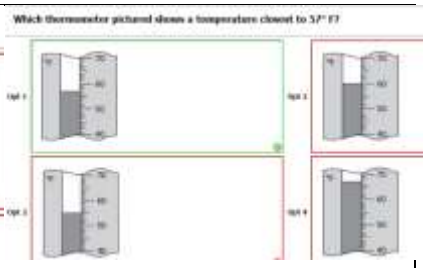
SOL 3.13 I can read a thermometer to measure temperature to the nearest degree.



Justification: (Be sure to identify the scale that the thermometer is counting by and label ALL of the degree lines!)



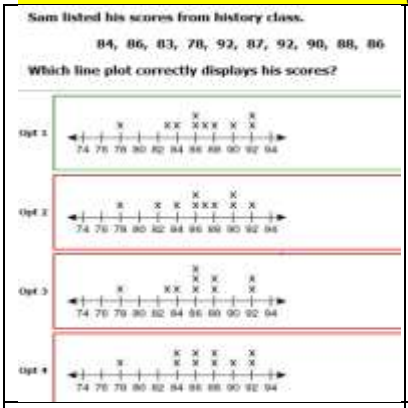
Justification: (Be sure to identify the scale that the thermometer is counting by and label ALL of the degree lines!)



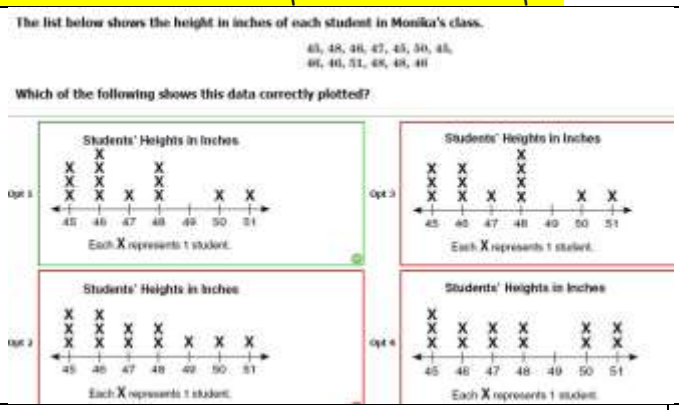
Justification: (Be sure to identify the scale that the thermometer is counting by and label ALL of the degree lines!)

Probability and Statistics, Patterns, Functions, and Algebra *(11 of the 35 Items on the Math Benchmark Test)*

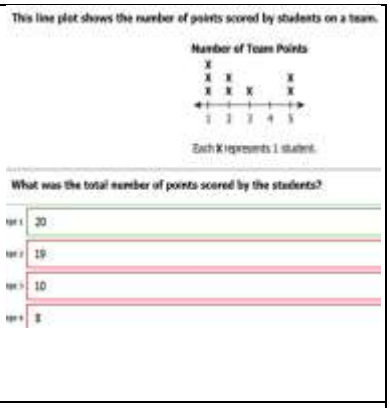
SOL 3.17b I can construct a line plot. SOL 3.17c I can interpret data on a line plot.



Justification:

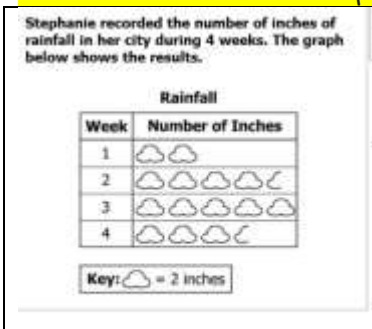


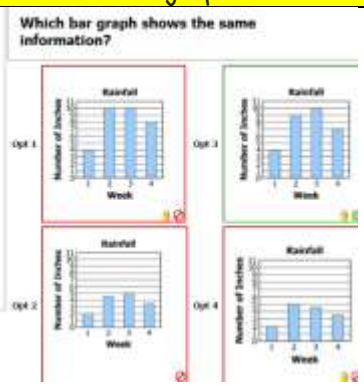
Justification:



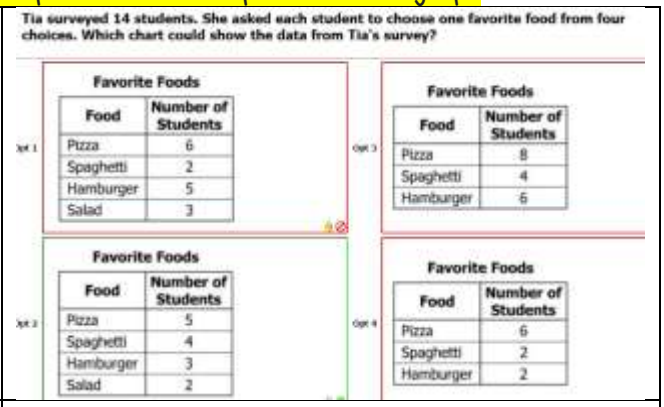
Justification:

SOL 3.17b I can construct a picture or bar graph. SOL 3.17c I can interpret data from a picture or bar graph.





Justification:



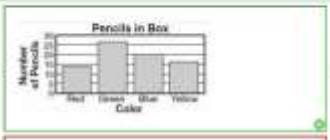
Justification:

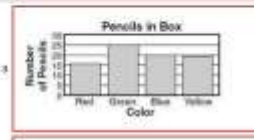
The table below shows the number of each color pencil in a box.

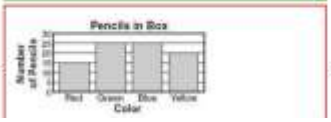
Pencils in Box

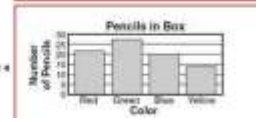
Color	Number in Box
Red	13
Green	26
Blue	20
Yellow	16

Which graph below shows the correct number of pencils in the box?

Opt 1 

Opt 3 

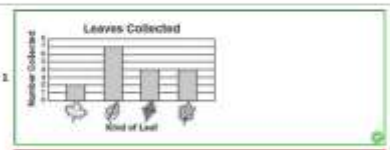
Opt 2 

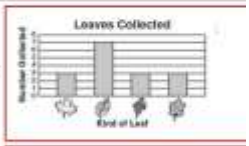
Opt 4 

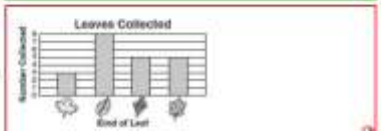
Justification:

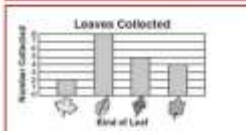
These are the leaves Sandy collected for school.

Which bar graph correctly shows the number of each kind of leaf?

Opt 1 

Opt 3 

Opt 2 

Opt 4 

Justification:

Look at the pictograph.

Car Colors at the Car Wash

Color	Number of Cars
White	
Red	
Blue	
Silver	

Key: Each = 2 cars.

Based on the graph, what was the total number of cars at the car wash?

Opt 1 20

Opt 2 18

Opt 3 14

Opt 4 10

Justification:

The pictograph below shows the number of each color of button Elsa used to decorate a box.

Buttons Used on Box

Color	Number Used
Blue	
Green	
Pink	
Purple	

Key: Each represents 5 buttons.

Based on the data in the graph, what was the total number of blue buttons Elsa used?

Opt 1 20

Opt 2 4

Opt 3 13

Opt 4 65

Justification:

This graph shows the number of students on the honor roll at three schools.

Students on the Honor Roll

School	Number of Students
A	
B	
C	

Key: = 50 students

What is the total number of students on the honor roll at these three schools?

Opt 1 375

Opt 2 525

Opt 3 550

Opt 4 600

Justification:

SOL 3.19 I can recognize, describe, and extend a number pattern.

This table shows the number of minutes it takes Kendal to run laps around a track.

Laps Around a Track

Total Number of Laps	Number of Minutes
2	6
4	12
6	18
8	24

If the pattern in the table continues in the same way, which of the following should be used to determine how many minutes it takes Kendal to run 10 laps?

Opt 1 10 + 3

Opt 2 10 + 6

Opt 3 10 + 24

Opt 4 10 + 8

Justification: (Label all of the units!)

Pattern Rule: _____

Look at this pattern.

1, 3, 9, 27, 81

Which describes the rule used in this pattern?

Opt 1 Divide by 9

Opt 2 Multiply by 3

Opt 3 Subtract 2

Opt 4 Add 2

Justification: (Label all of the units!)

Pattern Rule: _____

Look at this pattern of numbers.

3, 7, 11, 15, 19, ...

If this pattern continues following the same rule, what should be the next number?

Opt 1 23

Opt 2 24

Opt 3 22

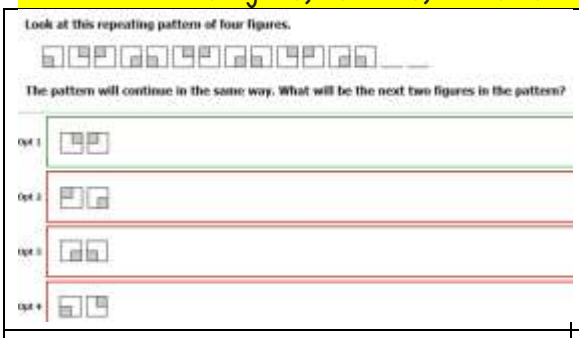
Opt 4 28

Justification: (Label all of the units!)

Pattern Rule:

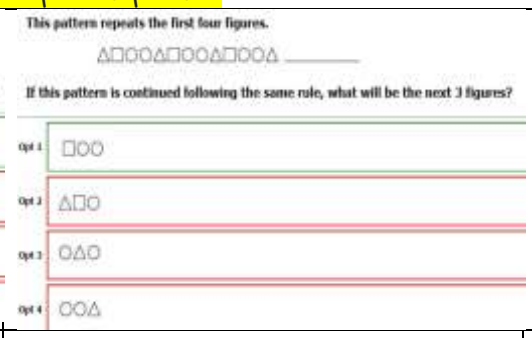
_____

SOL 3.19 I can recognize, describe, and extend a picture pattern.



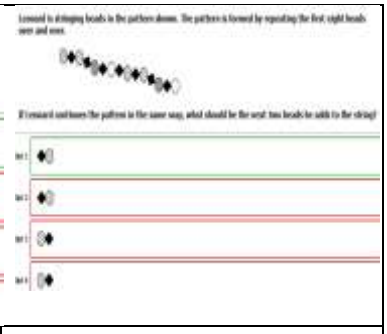
Justification: (Label all of the units!)

Pattern Rule: _____



Justification: (Label all of the units!)

Pattern Rule: _____

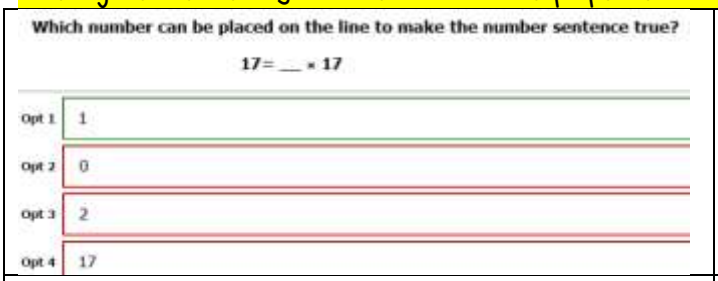


Justification: (Label all of the units!)

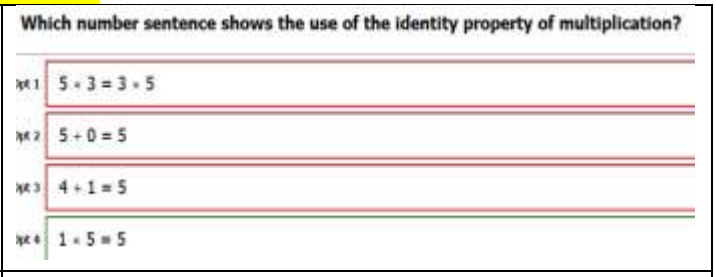
Pattern Rule:

_____

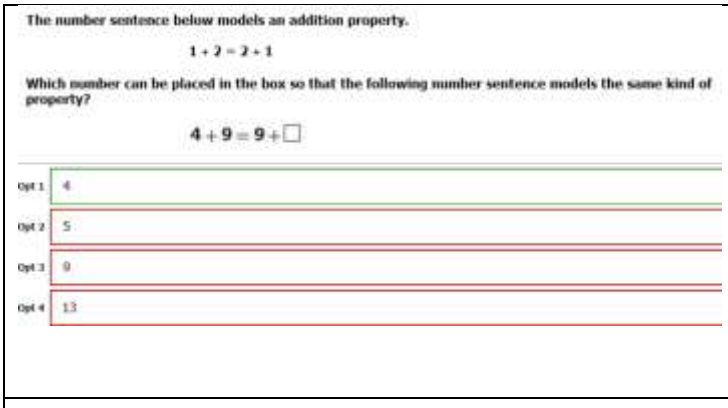
SOL 3.20b I can identify the commutative property. SOL 3.20b I can identify the identity property. SOL 3.20a I can investigate the identity and the commutative properties for addition



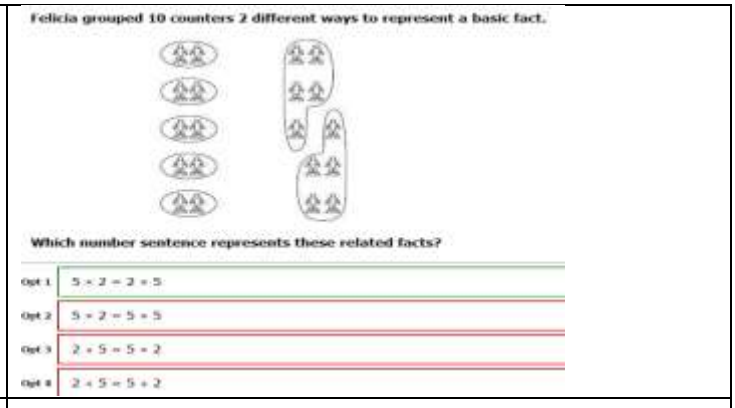
Justification:



Justification:



Justification:



Justification:

Commutative Property of Multiplication	Identity Property of Multiplication
Definition:	Definition:
Examples:	Examples:
Commutative Property of Addition	**Identity Property of Addition**
Definition:	Definition:
Examples:	Examples:

Make sure you're practicing your "Math Memory Key," too!!

If there's anything you don't know how to do or you're not sure if you got it correct, be sure to ask your teacher... we can't wait to see you ROCK out your Math Benchmark Test!

Work Hard, Be AMAZING!

Multiplication Chart (12 x 12)

X	0	1	2	3	4	5	6	7	8	9	10	11	12
0													
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													

You have 12 evenings to work through this study guide and ensure that you're prepared as possible for your upcoming Math Benchmark!

Work your hardest on several problems each evening so that you're ready to show the world what an amazing mathematician you truly are on Monday, February 6th!

***Turning this in accurately and completely is one of the steps to get you into the game truck and ice cream party rewards for all of your hard work ☺ ***