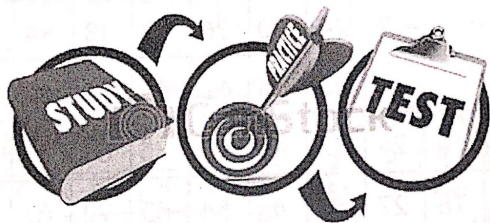# 3rd Grade Math

S.O.L.

"Parent" Study Guide

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Parents! We need your help...SOL testing time is approaching at warp speed! Please review this packet and work with your student on sample problems. We will be sending additional materials each week for student practice.

MULTIPLICATION CHART 1-10

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

Key Words

Addition		Subtraction	
more	sum	less	difference
in all	combine	fewer	decrease
total	increase	minus	take away
join	perimeter	remain	How many
plus	altogether	left	more?

Coins

Quarter	Dime	Nickel	Penny
25 cents	10 cents	5 cents	1 cent

Comparisons

$3 > 2$	$2 < 3$	$3 = 3$
Greater Than	Less Than	Equal To

Fraction Strips

1

| $\frac{1}{2}$ | $\frac{1}{2}$ |

| $\frac{1}{3}$ | $\frac{1}{3}$ | $\frac{1}{3}$ |

| $\frac{1}{4}$ | $\frac{1}{4}$ | $\frac{1}{4}$ | $\frac{1}{4}$ |

| $\frac{1}{5}$ | $\frac{1}{5}$ | $\frac{1}{5}$ | $\frac{1}{5}$ | $\frac{1}{5}$ |

| $\frac{1}{6}$ | $\frac{1}{6}$ | $\frac{1}{6}$ | $\frac{1}{6}$ | $\frac{1}{6}$ | $\frac{1}{6}$ |

| $\frac{1}{8}$ | $\frac{1}{8}$ | $\frac{1}{8}$ | $\frac{1}{8}$ | $\frac{1}{8}$ | $\frac{1}{8}$ | $\frac{1}{8}$ | $\frac{1}{8}$ |

| $\frac{1}{10}$ | $\frac{1}{10}$ | $\frac{1}{10}$ | $\frac{1}{10}$ | $\frac{1}{10}$ | $\frac{1}{10}$ | $\frac{1}{10}$ | $\frac{1}{10}$ | $\frac{1}{10}$ | $\frac{1}{10}$ |

| $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ |

1 – 120 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
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120

3:15

3:30

3:45

Place Value

Thousands			Ones			.	Decimals		
hundredthousands	ten thousands	thousands	hundreds	tens	ones		tenths	hundreths	thousandths

NUMBER SENSE

The student will read, write, and identify the place and value of each digit in a six-digit whole number, with and without models

Students should be able to identify the PLACE a digit is in, as well as the VALUE of that digit. These are very different questions!

Place Value Key

Hundred Thousand	Ten Thousand	Thousand	Hundred	Ten	One

Number	Place to Look At	What is the digit?	What is the **value** of the digit
89,206	hundreds	2	200
168,532	hundred thousands	1	100,000

Students should be able to write numbers in standard form, expanded form, & word form.

STANDARD FORM: 9, 185
WORD FORM: Nine thousand, one hundred eighty five
EXPANDED FORM: 9,000 + 100 + 80 +5

Standard Form	Expanded Form	Word Form
5,562	5,000+500+60+2	five thousand, five hundred sixty-two
968	900+60+8	nine hundred sixty-eight

PRACTICE

Thousands			Ones			What's the Number?
0	7	7	6	2	1	77,621
5	0	9	6	2	3	
0	0	3	1	9	4	

Standard Form	Expanded Form	Word Form
4,238		
	3,000+200+50+2	
		nine thousand, four hundred ten
	50,000+9,000+40+7	

NUMBER SENSE

3.1b The student will round whole numbers, 9,999 or less, to the nearest ten, hundred, and thousand; and
3.1c compare and order whole numbers, each 9,999 or less.

Students will be able to round to the nearest ten, hundred, and thousand.

Rounding

Number	Nearest Ten	Nearest Hundred	Nearest Thousand
897	900	900	1,000
2,356	2,360	2,400	2,000
7,063	7,060	7,000	7,000
1,826	1,830	1,800	2,000

*Students should be able to use inequality symbols (<,=,>) to make true
statements.*

Comparing

Greater Than	Less Than	Equal To
>	<	=

2,357 > 1,863

2,357 is greater than 1,863 because it has a 2 in the thousands place which represents
2,000 and 1,863 has a 1 in the thousands place which represents 1,000.

PRACTICE

Round each number to the place listed below.

Number	Nearest Ten	Nearest Hundred	Nearest Thousand
8,116			
7,726			
5,239			
1,065			
2,824			

Compare the number pairs below using <, >, or =.

7,958	<	9,958	1,575	1,577	8,754	8,574
275		257	1,123	5,132	812	8,120
6,952		6,951	4,230	2,350	8,526	2,530

Below, write 3 statements using the phrases "is greater than", "is equal to", or "is
less than". (ex. 98 is greater than 89)
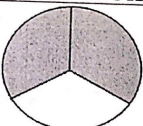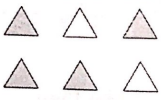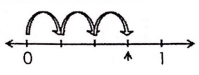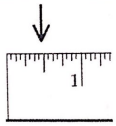
FRACTIONS

3.2a The student will name and write fractions and mixed numbers represented by a model;
3.2b represent fractions and mixed numbers with models and symbols; and
3.2c compare fractions having like and unlike denominators, using words and symbols
(>, <, or =), with models.

Name, Write & Model

A fraction is an equal part of a whole.
Students will need to name fractions that are represented in various ways. Given a fraction, students should be able to draw a model and write the name of the fraction.

Part of a WHOLE	Part of a SET	Part of a NUMBER LINE	Part of an INCH
$\frac{2}{3}$ 2 out of 3 two-thirds	$\frac{4}{6}$ 4 out of 6 four-sixths	$\frac{3}{4}$ 3 out of 4 three-fourths	$\frac{1}{2}$ 1 out of 2 one-half

Students will need to know a mixed number is a whole number and a fraction.

	There are 2 whole pizzas = 2 There is half of another pizza = ½ The mixed number is 2 ½ (read: two and a half)
	There are 3 whole pizzas = 3 There is 1 of 4 pieces of another pizza = ¼ The mixed number is 3 ¼ (read: three and one-fourth)

Color the fractions below to match the mixed number.

 $1\frac{4}{6}$

 $2\frac{2}{8}$
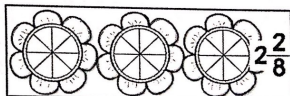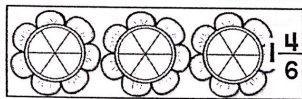
Compare

Students will be expected to compare fractions with like denominators, using the numerator.
When the denominator is the same, the number with the larger numerator is the greater fraction.
3/6 is greater than 1/6 because if a whole is split into 6 equal pieces, 3 of those pieces would be a bigger portion than one piece.

Students will be expected to compare fractions with unlike denominators, using models.
Four-sixths is greater than one-third because it has a larger portion shaded in.

 >

COMPUTATE & ESTIMATE

3.3a The student will estimate and determine the sum or difference of two whole numbers.
3.3b The student will create and solve single-step and multistep practical problems involving sums or differences of two whole numbers, each 9,999 or less.

Estimate

An estimate is a thoughtful guess, not an exact answer.

To estimate, you UNDERLINE ROUND FIRST, and then add, subtract, multiply, or divide.

For example: The exact answer to 65 + 23 is 88.
To estimate, I would round 68 up to 70 and 23 down to 20.
Now, I can easily add in my head. 70 + 20 = 90, the best *estimate* would be 90.

A key word that lets you know you need to estimate is "ABOUT".

Rob ate 34 Skittles for lunch and 39 for dinner. About how many Skittles did he eat today?

Trinity made 452 cookies for her Bakery. She sold 247 cookies. About how many cookies were left?

Estimate the solutions to the following problems:

894 + 234

984 – 189

764 + 86

Addition & Subtraction

All students are expected to solve AND check their solutions, showing or explaining all of their work.

Show your work to solve the problems below.

731 + 412 = _____

441 + 81 = _____

7,091 – 4,880 = _____

5,485 – 2,099 = _____

Tommy has 78 toy cars. He got 24 new cars for his birthday. How many cars does he have now?

Sally got 1,042 pieces of candy for Halloween. Her brother got 779. Together they ate 232 pieces. How much candy is left?

Mrs. Johnson bought 11 blue, 4 red, and 7 yellow notebooks at the store. There are 12 notebooks left. How many notebooks were there to begin with?
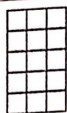
MULTIPLICATION

3.4 The student will
a) represent multiplication and division through 10 × 10, using a variety of approaches and models;
b) create and solve single-step practical problems that involve multiplication and division through 10 x 10; and
c) demonstrate fluency with multiplication facts of 0, 1, 2, 5, and 10; and
d) solve single-step practical problems where on factor is 99 or less and the second factor is 5 or less.

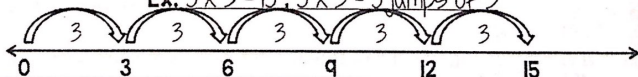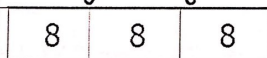|	
Area Model	One way to show multiplication is by making a grid. Use one factor for the number of rows and one factor for the number of columns. Counting up all of the squares will give you the product! **Ex.** $5 \times 3 = 15$
Array	One way to show multiplication is by making a set that shows groups in equal rows and columns. Use one factor for the number of rows and one factor for the number of columns. Counting up all of the objects will give you the product! **Ex.** $5 \times 3 = 15$
Equal Groups (Sets) Model	One way to show multiplication is by making equal groups. Use the smaller factor for the number of circles and larger factor for the number inside each circle. a line | = 10 a dot ● = 1 **Ex.** $45 \times 3 = 135$
Repeated Addition	## Multiplying a number is the same as repeatedly adding a number. **Ex.** $5 \times 3 = 3 + 3 + 3 + 3 + 3$ **or** $5 \times 3 = 5 + 5 + 5$
Number Line	One way to show multiplication is by using a number line. Use one factor for the number of jumps and one factor for the value of each jump. *Remember: Read "x" by saying "jumps of" **Ex.** $5 \times 3 = 15$, $5 \times 3 = 5$ jumps of 3 3 3 3 3 3 0 3 6 9 12 15
Bar Model	8 8 8 ? $3 \times 8 = ?$
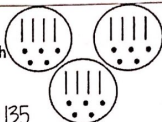
DIVISION

3.4 The student will
a) represent multiplication and division through 10 × 10, using a variety of approaches and models;
b) create and solve single-step practical problems that involve multiplication and division through 10 x 10;

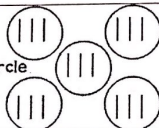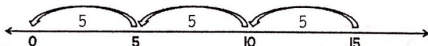| Area Model	One way to show division is by making a grid. Use the divisor for the number of rows and keep making columns until you reach the dividend. The number of columns will give you the quotient. **Ex.** $15 \div 5 = 3$
Array	One way to show division is by making a set that shows groups in equal rows and columns. Use the divisor for the number of rows and keep making columns until you reach the dividend. The number of columns will give you the quotient. **Ex.** $15 \div 5 = 3$
Equal Groups	One way to show division is by making equal groups. Use the divisor for the number of circles and start putting one tally mark in each circle until you reach the dividend. Counting the tallies in one circle will give you the quotient! *Remember: Count groups of 5 first! **Ex.** $15 \div 5 = 3$
Repeated Subtractio	Dividing a number is the same as repeatedly subtracting a number. **Ex.** $15 \div 5 =$ |$15 - 5 = 10$|$10 - 5 = 5$|$5 - 5 = 0$|
Number Line	One way to show division is by using a number line. Start at the dividend and jump back the value of the divisor until you reach zero. The number of jumps between the dividend and zero will be the quotient. **Ex.** $15 \div 5 = 3$
Related Facts	Division is the inverse operation of multiplication $6 \times 4 = 24$ $4 \times 6 = 24$ $24 \div 4 = 6$ $24 \div 6 = 4$ <u>If you know your multiplication facts you know your division facts because they are related in fact families.</u> $3 \times 4 = 12$ $2 \times 9 = 18$ $6 \times 7 = 42$ $4 \times 3 = 12$ $9 \times 2 = 18$ $7 \times 6 = 42$ $12 \div 3 = 4$ $18 \div 2 = 9$ $42 \div 6 = 7$ $12 \div 4 = 3$ $12 \div 9 = 2$ $42 \div 7 = 6$
Bar Model	24 is the total. so 24 divided into 3 equal groups gives how many in each group? 24 $24 \div 3 = ?$

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ADD & SUB. FRACTIONS

3.5 The student will solve problems that involve addition and subtraction with proper fractions having like denominators of 12 or less.

Adding Fractions

When you are adding fractions:

1 The denominator stays the same

$$\frac{3}{8} + \frac{4}{8} = \frac{}{8}$$

2 Add the numerators

$$\frac{3}{8} \oplus \frac{4}{8} = \frac{7}{8}$$

Mary and Paul baked 12 cupcakes. Mary ate 4 and Paul ate 3.
What fraction of the cupcakes did they eat? Write the equation and solve.

Greg bought his dog a box of 6 bones. His dog hid 2 bones Sunday and 3 bones Monday.
What fraction of the bones did he hide? Write the equation and solve.

Solve the equations below.

$$\frac{3}{8} + \frac{4}{8} \qquad\qquad \frac{2}{8} + \frac{5}{8} \qquad\qquad \frac{5}{12} + \frac{6}{12}$$

Subtracting Fractions

When you are subtracting fractions:

1 The denominator stays the same

$$\frac{12}{12} + \frac{6}{12} = \frac{}{12}$$

2 Subtract the numerators

$$\frac{12}{12} \ominus \frac{6}{12} = \frac{6}{12}$$

Mary and Paul baked 12 cupcakes. Mary ate four.
What fraction of the cupcakes were left?

Greg bought his dog a box of 6 bones. His dog hid 2 bones Sunday.
What fraction of the bones were left?

Solve the equations below.

$$\frac{4}{6} - \frac{3}{6} \qquad\qquad \frac{7}{10} - \frac{4}{10} \qquad\qquad \frac{6}{7} - \frac{4}{7}$$

LINEAR MEASUREMENT

Customary

INCH: An inch is about the size of your thumb. An inch is marked by the longest lines (the lines marked with numbers) on a ruler. An inch is about the length of your thumb.

½ INCH: ½ of an inch is half way between one inch and another. They are marked with the second longest lines on a ruler.

FOOT: A foot is 12 inches, the length of a ruler.

YARD: A yard is 3 feet (think 3 rulers), and 36 inches.

HOW TO USE A RULER: Make sure the item you are measuring is lined up with the ZERO and not just with the end of the ruler.

Measure each of the lines below to the nearest half-inch.

Metric
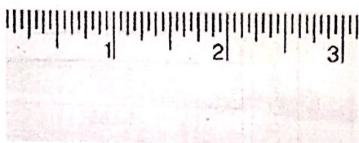
CENTIMETER: A centimeter is a small unit a measurement. It is less than an inch. A centimeter is about the width of your finger.

METER: A meter is 100 centimeters. It is about the width of a door.

KILOMETER: A kilometer is a larger unit of measurement. It takes about 10 minutes to walk one kilometer.

Measure each of the lines below to the nearest centimeter.

1   2   3   4
centimeters
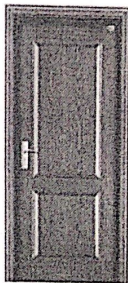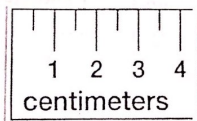
MONEY

3.6 The student will a) determine the value of a collection of bills and coins whose total value is $5.00 or less; b) compare the value of two sets of coins or two sets of coins and bills; and c) make change from $5.00 or less.

Counting Money

Students will be asked to count sets of bills and coins up to $5.00. Students should count bills and coins will the largest value first.

Coins	Value
	92¢ or $0.92
one dollar bill, 3 quarters, 1 dime, and 3 pennies	$1.88

Compar ing

Students will be asked to count sets of bills and coins and compare the values using comparison symbols (<, >, =).

two dollars, 3 dimes, 1 nickel $2.35	<	one dollar, 5 quarters, 2 dimes, 6 pennies $2.51

Making Change

Students will be asked to make change from $5.00 by subtracting or counting up.

The item cost...	I paid with...	My change will be...
$0.75	$1.00	$0.25
$2.85	$5.00	$2.15
	$1.00	34¢ or $0.34

PRACTICE

Coins	Value
two dollar bills, 2 quarters, and 4 nickels	
one dollar bill, 3 quarters, 2 dimes, 1 nickel, and 3 pennies	

The item cost...	I paid with...	My change will be...
$2.37	$4.00	
$1.43	$5.00	
	$5.00	

CAPACITY

The student will estimate and use U.S. Customary and metric units to measure liquid volume in cups, pints, quarts, gallons, and liters

CAPACITY: how much liquid a container can hold

smallest unit of measure	**CUP**	
2nd smallest	**PINT**	2 cups
2 largest	**QUART**	4 cups 2 pints
largest unit of measure	**GALLON**	16 cups 8 pints 4 quarts

Customary

Students need to know which unit is bigger and smaller, and be able to look at a container likes the ones below and estimate how much it can hold.

Estimate how much each container can hold.

small unit of measure	**MILILITER (mL)**	about 10 drops of water
large unit of measure	**LITER (L)**	about 1,000 drops of water, about the size of a large bottle of water

Would you use milliliters or liters to measure the amount of liquid in each container?
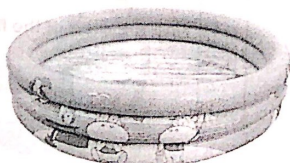
Metric
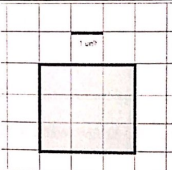
PERIMETER & AREA

3.8 The student will estimate and
a) measure the distance around a polygon in order to determine its perimeter using U.S. Customary and metric units; and
b) count the number of square units needed to cover a given surface in order to determine its area.

<u>PERIMETER:</u> the distance around the outside of a shape

Perimeter

Ways to Find Perimeter

| **Grid Shape** | Count around the outsides of each square unit in the shape. | | There are 12 black lines around the outside of the gray shape, so the perimeter is **12 units**. |
| **Polygon** | Add up the measurement of each side to find the total. | **1 in.** **1 in.** | 1 in. + 1 in. + 1 in. + 1 in. = 4 inches |

Find the perimeter of the figures below.

every side is the same length
4 cm

2 in.
5 in.
5 in.
7 in.
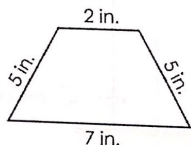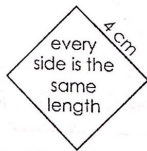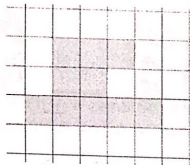
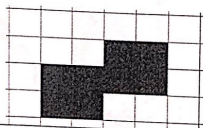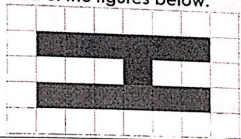<u>AREA:</u> the measure of space on the inside of a shape, in square units

Area
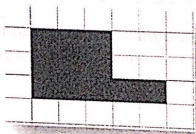
To find the area, count the number of squares filled in.

The shape to the left has 11 squares filled in, so the area is **11 square units**.

Find the area of the figures below.

TIME

3.9 The student will

a) tell time to the nearest minute, using analog and digital clocks;

b) solve practical problems related to elapsed time in one-hour increments within a 12- hour period

Telling Time

Hour Hand: Short Hand, Tells you the hour (1-12)
Minute Hand: Long Hand, Tells you the minute (:00-:59)
AM: morning, before noon (12:00)
PM: after noon (12:00) and evening

Reading Clock Times Aloud

O' Clock	Quarter Past	Half Past	Quarter 'Til
:00	:15	:30	:45

Write the time for each of the clocks shown below.

Elapsed Time

Elapsed Time is the amount of time between two events.
First, calculate the hours, then the minutes

Practice Questions

If Robin worked out for 3 hours and got home at 4:30, when did she start working out?

Bob left Virginia at 11:15 and reached Maryland at 1:15. How long was his drive?

If Sue went to the mall at 5:30 and left at 8:30, how long was she at the mall?

If Mark was at the mall for 5 hours and left at 6:45, what time did he get there?

How much time has passed between the 2 clocks below?

PERIODS OF TIME

3.9c The student will identify equivalent periods of time and solve practical problems related to equivalent periods of time.

Ways to Measure Time

60 seconds	1 minute
60 minutes	1 hour
24 hours	1 day
7 days	1 week
4 weeks	1 month
12 months	1 year
365 days	1 year
366 days	1 leap year

How many hours are in 3 days?

About how many weeks are in 4 months?

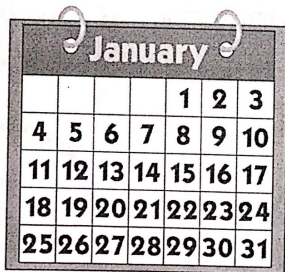How many months are in 2 years?

How many minutes are in 5 hours?

How many days are in 3 weeks?

What date is 3 weeks after the circled date?

January

			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

Periods of Time

TEMPERATURE

The student will read temperature to the nearest degree.

THERMOMETER: tool used to measure temperature
Fahrenheit (F)
Celsius (C)

Freezing Point	Scale	Boiling Point
32 degrees	Fahrenheit	212 degrees
0 degrees	Celsius	100 degrees

Reading a Thermometer:
1. What is the scale (Fahrenheit or Celsius)?
2. What is the pattern (count by 1, 2, 5, etc.)?
3. Go to the last marked number and then count using the pattern

What is the temperature shown on the thermometer in both Fahrenheit AND Celsius?

Temperature

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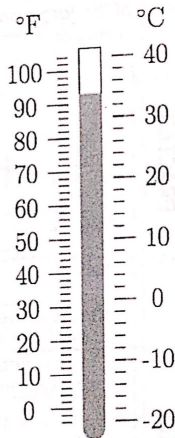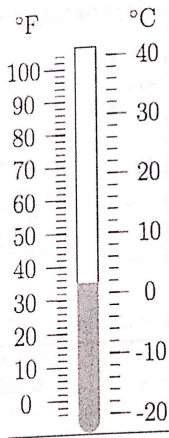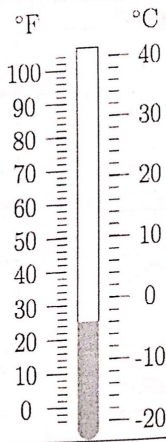
POLYGONS

3.12 The student will

a) define polygon;

b) identify and name polygons with 10 or fewer sides; and

c) combine and subdivide polygons with three or four sides and name the resulting polygon(s).
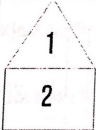
Polygons	✓ A polygon is a closed plane figure composed of at least three line segments that do not cross. ✓ Polygons may be described by their attributes (e.g., sides and vertices). ✓ Line segments form the sides of a polygon and angles are formed by two line segments coming together at a vertex of a polygon. ✓ A rectangle, square, trapezoid, parallelogram, and rhombus are all classified as quadrilaterals.

A polygon's name can tell you how many sides it has.

	Polygon Name	Number of Sides
Shape Sides	triangle	3
	quadilateral	4
	pentagon	5
	hexagon	6
	heptagon	7
	octagon	8
	nonagon	9
	decagon	10

Fill in the Table: What is the name of each of the combined polygons? What is the name of the large polygon created by the smaller polygons?

PRACTICE	Polygon			
	Shape 1			
	Shape 2			
	Shape 3			
	Shape Created by Smaller Polygons			

	Draw and name a polygon with 6 sides.	Draw and name a polygon with 5 sides.	Draw and name a polygon with 9 sides.
PRACTICE			

GEOMETRY

3.11 The student will identify and draw representations of points, line segments, rays, angles, and lines.

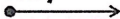3.13 The student will identify and describe congruent and noncongruent figures.

Lines

Line A line is a collection of points that continues on forever in both directions.

Line Segment A line segment is a portion of a line with a specific start and end point.

Ray A ray has one endpoint and continues on forever in the other direction.

Point A point is a specific location.

Angles

Right Angle Square Angle A right angle is a 90 degree angle that a square corner could fit into.

Label the 3 angles to   the right.

Acute Angle An acute angle is smaller (less than) a right angle.
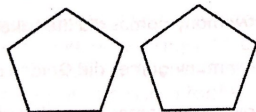
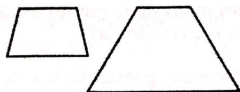**Obtuse Angle** An obtuse angle is larger (greater than) a right angle.

Congruency

Congruent shapes are EXACTLY the same size AND shape.

Draw a set of congruent shapes.

Noncongruent shapes are different sizes or different shapes.

Draw a set of noncongruent shapes.

GRAPHS

3.15	The student will
	a) collect, organize, and represent data, in pictographs or bar graphs; and
	b) read and interpret data represented in pictographs and bar graphs.

Bar Graph

- Represents almost any type of data
- Must contain a title, scale, and labels on each the horizontal and vertical axis
- There should be a space between each bar
- Can be drawn horizontally or vertically

Favorite Fruits
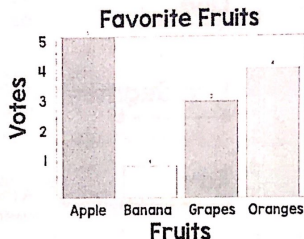
What fruit did students like the most?

What fruit did students like the least?

How many more students liked grapes than bananas?

How many students liked apples and oranges combined?

**How many students voted altogether?**

Write a sentence comparing the votes for apple with the votes for grapes.

Pictograph

- A graph with symbols (pictures) to represent data
- Uses a SINGLE symbol to represent all data
- Each symbol may represent more than one response
- Should have a key to indicate the scale
- Half of the symbol equals half of the value indicated by the key

Games Won

Key- 🏀=2 games

How many games did the Wizards win?

How many games did the Lakers win?

How many games did Golden State win?

How many games were played altogether?

How many more games did Golden State win than the Lakers?

How many games did the Wizards and Lakers win together?

PROBABILITY

The student will investigate and describe the concept of probability as a measurement of chance and list possible outcomes for a single event.

Probability

Probability: the chance that something will happen

We describe probability with specific terms:
- Certain – definitely WILL happen
- Likely – probably will happen
- Equally Likely – has an equal chance of happening as something else (50%)
- Unlikely – probably will NOT happen
- Impossible – definitely will NOT happen

Billy needed to find a matching pair of socks. He picked two socks out of his drawer without looking. Which of the following describes the chance that Billy will pick two matching socks? Circle your answer below.

Certain	Likely	Equally Likely	Unlikely	Impossible

Lisa had a bag of marbles. There were 10 blue marbles, 8 red, 5 green, and 1 purple. Lisa pulls one marble out of her bag without looking. Which of the following describes the chance that Lisa will pull a blue marble from the bag?

Certain	Likely	Equally Likely	Unlikely	Impossible

Cassie spins the spinner one time. Which of the following best describes the chances that the spinner will land on a 2 or a 3?

	1	2
	3	4
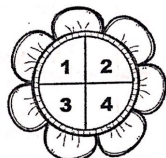
Certain	Likely	Equally Likely	Unlikely	Impossible

Combinations

Students will need to look at sets and describe all the possible combinations.

For example: If I have one red shirt, one blue shirt, and one black shirt, how many combinations can I make with one pair of blue pants and one pair of yellow pants? Our strategy is to make a table.

| Shirt	Pants
red	blue
blue	blue
black	blue
red	yellow
blue	yellow
black	yellow

Katie wants a sandwich and a piece of fruit for lunch. Use the data below to list all of the possible combinations she could choose.

Sandwiches			Fruit	
Turkey	Peanut Butter	Ham	Apple	Orange

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PATTERNS

3.16 The student will identify, describe, create, and extend patterns found in objects, pictures, numbers and tables.

Geometric
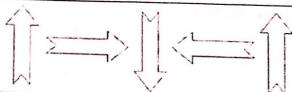
Draw the next 4 shapes:

Make the same pattern using letters:

Number

A number pattern is a series of numbers that follow a certain rule.

Count by a Number
3, 6, 9, 12, 15, 18, 21 - (counting by 3) - The next number would be: 24
Practice: 4, 9, 14, 19, 24,
Extend the Pattern by 4 numbers: _____, _____, _____, _____

Add a Number
2, 6, 10, 14, 18, 22, 26 - (add 4) - The next number would be: 30
Practice: 32, 38, 44, 50,
Extend the Pattern by 4 numbers: _____, _____, _____, _____

Subtract a Number
39, 37, 35, 33, 31, 29 – (subtract 2) - The next number would be: 27
Practice: 150, 147, 144, 141,
Extend the Pattern by 4 numbers: _____, _____, _____, _____

Multiply by a Number
2, 4, 8, 16, 32 – (multiply by 2) - The next number would be: 64
Practice: 7, 14, 21, 28,
Extend the Pattern by 4 numbers: _____, _____, _____, _____

Chart

Patterns can be represented in tables and charts

Day	Sit-ups
1	5
2	10
3	15
10	50

How many sit-ups would be done on day 4?
How many sit-ups on day 11?
What is the rule?
Add 5 each day

Month	1	2	3	4
Books Read	3	6	9	12

How many books would be read in month 6?

What is the rule?

Slices of pizza	Price
2	$4.00
4	$8.00
6	$12.00
15	$30.00

How much would one slice cost?

How much would 11 slices cost?
What is the rule?

EQUATIONS

Essential Knowledge

✓ Mathematical relationships can be expressed using equations (number sentences).

✓ A number sentence is an equation with numbers (e.g., $6 + 3 = 9$; or $6 + 3 = 4 + 5$).

✓ The equal symbol (=) means that the values on either side are equivalent (balanced).

✓ The not equal (≠) symbol means that the values on either side are not equivalent (not balanced).

✓ An expression is a representation of a quantity. It contains numbers, variables, and/or computational operation symbols. It does not have an equal symbol (e.g., 5, 4 + 3, 8 - 2, 2 × 7).

✓ An equation is a mathematical sentence in which two expressions are equivalent. It consists of two expressions, one on each side of an 'equal' symbol (e.g., $5 + 3 = 8$, $8 = 5 + 3$ and $4 + 3 = 9 - 2$).

✓ An equation can be represented using balance scales, with equal amounts on each side (e.g., $3 + 5 = 6 + 2$).

PRACTICE

Fill in the Table: Match each equation in the table with the equivalent equation from the box below.

Equation	3+5	15-5	4x4	6x2	45-13
Equivalent Equation					

Choose from the box below to match with the equations above.

30-14	8x4	4x2	7+3	8+4

PRACTICE

Look at each equation below. Place a = sign in between the two equations if they are equal. Place a ≠ in between the two equations if they are not equal.

Equation 1	Sign	Equation 2
20 + 13	=	10 + 23
40 - 5	≠	25 + 9
3 x 4		30 - 16
5 + 25		5 x 6
45 - 9		6 x 6
13 + 14		30 - 4
50 - 34		4 + 12
7 x 3		30 - 9
11 x 6		80-34
43-8		20+15
70-40		10x3