

7th Grade Summer Math

Here are some helpful hints for success:

- ❖ It's ok to have parents or other adults help you.
- ❖ Find a quiet work space where you can get organized and stay focused.
- ❖ Pay close attention to the examples and vocabulary.
- ❖ Complete all the problems on each page.
- ❖ Do NOT use calculators. You need these skills for middle school, so you need to continue practicing.
- ❖ The packet should be returned to your math teacher on the first day of school.

Have a great summer and we will see you in August!

- Summer Math Packet

Unit: Knowledge of Algebra, Patterns, and Functions

Objective: Determine the unknown in a linear equation with 1 or 2 operations

Remember, equations must always remain balanced.

- If you add or subtract the same number from each side of an equation, the two sides remain equal.
- If you multiply or divide the same number from each side of an equation, the two sides remain equal.

Example 1: Solve $x + 5 = 11$

$$\begin{array}{r} x + 5 = 11 \quad \text{Write the equation} \\ - 5 = - 5 \quad \text{Subtract 5 from both sides} \\ \hline x = 6 \quad \text{Simplify} \end{array}$$



$$\begin{array}{r} x + 5 = 11 \quad \text{Write the equation} \\ 6 + 5 = 11 \quad \text{Replace x with 6} \\ 11 = 11 \checkmark \quad \text{The sentence is true} \end{array}$$

Example 2: Solve $-21 = -3y$

$$\begin{array}{r} -21 = -3y \quad \text{Write the equation} \\ - 3 = - 3 \quad \text{Divide each side by } -3 \\ \hline 7 = y \quad \text{Simplify} \end{array}$$



$$\begin{array}{r} -21 = -3y \quad \text{Write the equation} \\ -21 = -3(7) \quad \text{Replace the y with 7} \\ -21 = -21? \quad \text{Multiply - is the sentence true?} \end{array}$$

Example 3: Solve $3x + 2 = 23$

$$\begin{array}{r} 3x + 2 = 23 \quad \text{Write the equation} \\ - 2 = - 2 \quad \text{Subtract 2 from each side} \\ \hline 3x = 21 \quad \text{Simplify} \\ \frac{3x}{3} = \frac{21}{3} \quad \text{Divide each side by 3} \\ x = 7 \quad \text{Simplify} \end{array}$$



$$\begin{array}{r} 3x + 2 = 23 \quad \text{Write the equation} \\ 3(7) + 2 = 23? \quad \text{Replace x with 7} \\ 21 + 2 = 23? \quad \text{Multiply} \\ 23 = 23? \quad \text{Add - is the sentence true?} \end{array}$$

1.) Solve $x - 9 = -12$

2.) Solve $48 = -6r$

3.) Solve $2t + 7 = -1$

4.) Solve $4t + 3.5 = 12.5$

5.) It costs \$12 to attend a golf clinic with a local pro. Buckets of balls for practice during the clinic cost \$3 each. How many buckets can you buy at the clinic if you have \$30 to spend?

6.) An online retailer charges \$6.99 plus \$0.55 per pound to ship electronics purchases. How many pounds is a DVD player for which the shipping charge is \$11.94?

On a scale of 1 – 5 (1: Weak, 5: Strong) rate yourself on this section of math: 1 2 3 4 5

Summer Math Packet

Unit: Knowledge of Algebra, Patterns, and Functions

Objective: Solve for the unknown in an inequality with one variable.

An **inequality** is a mathematical sentence that contains the symbols $<$, $>$, \leq , or \geq .

Words	Symbols
m is greater than 7.	$m > 7$
r is less than -4 .	$r < -4$
t is greater than or equal to 6.	$t \geq 6$
y is less than or equal to 1.	$y \leq 1$

Example 2: Solve $2x + 8 < 24$

$$\begin{array}{r}
 2x + 8 < 24 \quad \text{Write the inequality} \\
 -8 \quad -8 \quad \text{Subtract 8 from each side} \\
 \hline
 2x < 16 \quad \text{Simplify} \\
 \frac{2x}{2} < \frac{16}{2} \quad \text{Divide each side by 2} \\
 x < 8 \quad \text{Simplify}
 \end{array}$$

Example 1: Solve $v + 3 < 5$

$$\begin{array}{r}
 v + 3 < 5 \quad \text{Write the inequality} \\
 -3 \quad -3 \quad \text{Subtract 3 from each side} \\
 \hline
 v < 2 \quad \text{Simplify}
 \end{array}$$

Check: Try 1, a number less than 2

$$\begin{array}{r}
 v + 3 < 5 \quad \text{Write the inequality} \\
 1 + 3 < 5 \quad \text{Replace } v \text{ with } 1 \\
 4 < 5? \quad \text{Is this sentence true? } \mathbf{yes}
 \end{array}$$

Check: Try 7, a number less than 8

$$\begin{array}{r}
 2x + 8 < 24 \quad \text{Write the inequality} \\
 2(7) + 8 < 24 \quad \text{Replace } x \text{ with } 7 \\
 14 + 8 < 24 \quad \text{Multiply 7 by 2} \\
 22 < 24? \quad \text{Is the sentence true? } \mathbf{yes}
 \end{array}$$

1.) Solve $y + 5 \leq 14$

2.) Solve $6u \geq 36$

3.) Solve $5y + 1 < 36$

4.) Solve $4x - 6 > -10$

5.) The speed limit on highways in Florida is 70 miles per hour. Write and solve an inequality to find how long it will take you to travel the 105 miles from Orlando to St. Augustine if you travel at or below the speed limit.

6.) You have \$80. Jeans cost \$29 and shirts cost \$12. Mom told you to buy one pair of jeans and use the rest of the money to buy shirts. Use this information to write and solve an inequality. How many shirts you can buy?

On a scale of 1 – 5 (1: Weak, 5: Strong) rate yourself on this section of math: 1 2 3 4 5

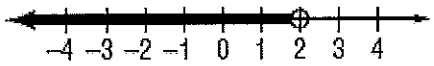
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Unit: Knowledge of Algebra, Patterns, and Functions

Objective: Identify or graph solutions of inequalities on a number line.

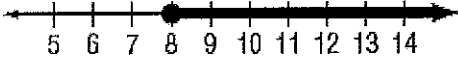
Examples: Graph each inequality on a number line.

$$x < 2$$



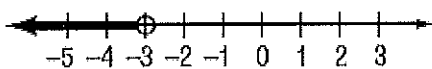
The open circle means that the number is **not** included in the solution.

$$y \geq 8$$



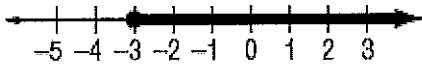
The closed circle means that the number is included in the solution.

$$m < -3$$

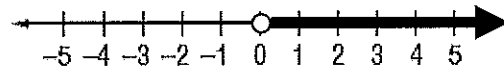


The solution is all numbers less than negative three.
-3 is **not** included in the solution.

1.) Write an inequality for the graph.

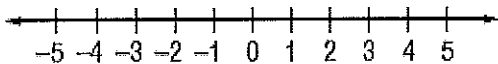


2.) Write an inequality for the graph.



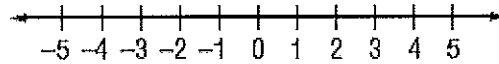
3.) Graph the inequality.

$$b \geq -1$$



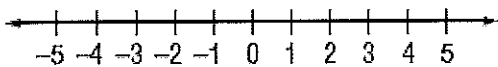
4.) Graph the inequality.

$$z < 3$$



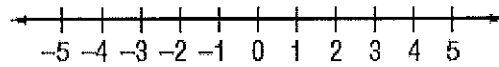
5.) Solve the inequality, then graph it on the number line.

$$y + 9 \leq 13$$



6.) Solve the inequality, then graph it on the number line.

$$4x - 6 > -10$$



On a scale of 1 – 5 (1: Weak, 5: Strong) rate yourself on this section of math: 1 2 3 4 5

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Unit: Knowledge of Algebra, Patterns, and Functions

Objective: Apply given formulas to a problem-solving situation using formulas having no more than three variables.

Example 1:

The perimeter of a rectangle is twice the length (L) plus twice the width (W). $P = 2L + 2W$

Use the given formula to find the perimeter of the rectangle.



8 cm

10 cm

$$P = 2L + 2W$$

$$P = 2(10) + 2(8)$$

$$P = 20 + 16$$

$$P = 36 \text{ cm}$$

Write the equation

Replace L and W with the length and width

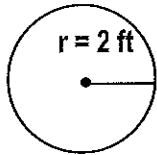
Multiply

Simplify and add the correct label

Example 2:

The area A of a circle equals the product of pi (π) and the square of its radius (r). $A = \pi r^2$ ($\pi \approx 3.14$)

Use the given formula to find the area of the circle.



$r = 2 \text{ ft}$

$$A = \pi r^2$$

$$A = 3.14 \cdot (2)^2$$

$$A = 3.14 \cdot 4$$

$$A = 12.56 \text{ ft}^2$$

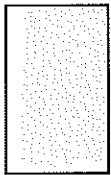
Write the equation

Replace π with 3.14 and r with 2

Square the 2

Simplify and add the correct label

- 1.) The formula for finding the area of a rectangle is $A = L \cdot W$. Use this formula to find the area of the rectangle.

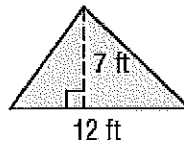


9 cm

4 cm

- 2.) The formula for finding the area of a triangle is

$$A = \frac{1}{2}bh. \text{ Find the area of the triangle below.}$$

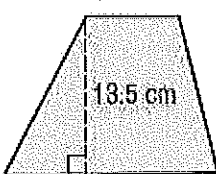


12 ft

- 3.) A trapezoid has two bases (b_1 and b_2). The formula for finding the area of a trapezoid is: $A = \frac{1}{2}h(b_1 + b_2)$

$b_1 = 8 \text{ cm}$

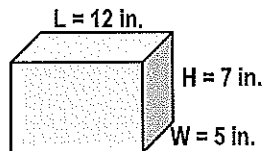
Find the area of the trapezoid.



13.5 cm

$b_2 = 18 \text{ cm}$

- 4.) The formula for finding the volume of a rectangular prism is $V = L \cdot W \cdot H$. Find the volume of the box.



$L = 12 \text{ in.}$

$H = 7 \text{ in.}$

$W = 5 \text{ in.}$

- 5.) Margot planted a rectangular garden that was 18 feet long and 10 feet wide. How many feet of fencing will she need to go all the way around the garden? $P = 2L + 2W$

- 6.) Juan ran all the way around a circular track one time. The diameter (d) of the track is 60 meters. The formula for circumference of a circle is $C = \pi d$. Use this formula to find out how far Juan ran.

On a scale of 1 – 5 (1: Weak, 5: Strong) rate yourself on this section of math: 1 2 3 4 5

Summer Math Packet

Unit: Knowledge of Algebra, Patterns, and Functions

Objective: Graph ordered pairs in a coordinate plane.

The **coordinate plane** is used to locate points. The horizontal number line is the **x-axis**. The vertical number line is the **y-axis**. Their intersection is the **origin**.

Points are located using **ordered pairs**. The first number in an ordered pair is the **x-coordinate**; the second number is the **y-coordinate**.

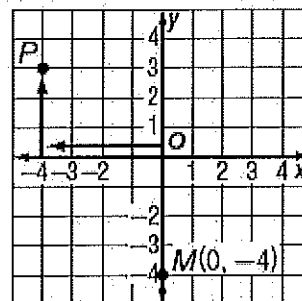
The coordinate plane is separated into four sections called **quadrants**.

Example 1: Name the ordered pair for point P. Then identify the quadrant in which P lies. Quadrant 2

- Start at the origin.
- Move 4 units left along the x-axis.
- Move 3 units up on the y-axis.

The ordered pair for point P is $(-4, 3)$.

P is in the upper left quadrant or quadrant II.



Quadrant 1

Example 2: Graph and label the point M $(0, -4)$.

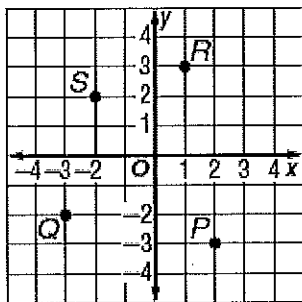
- Start at the origin.
- Move 0 units along the x-axis.
- Move 4 units down on the y-axis.
- Draw a dot and label it M $(0, -4)$.

Quadrant 3

Quadrant 4

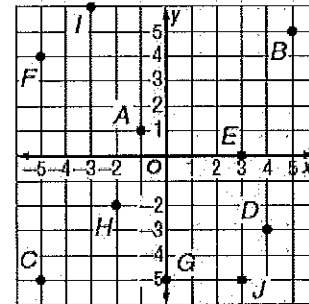
1.) Name the ordered pair for each point graphed at the right. Then identify the quadrant in which each point lies.

Coordinates	Quadrant
P (,)	_____
Q (,)	_____
R (,)	_____
S (,)	_____



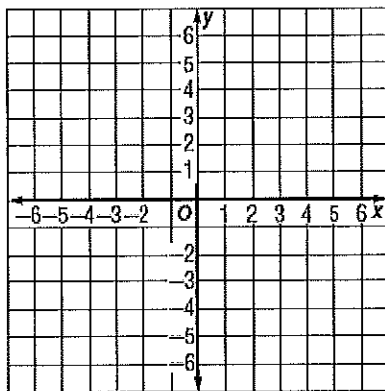
2.) Find each of the points below on the coordinate plane. Then identify the quadrant in which each point lies.

Coordinates	Quadrant
A (,)	_____
J (,)	_____
B (,)	_____
H (,)	_____



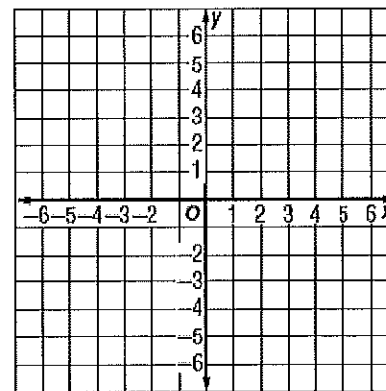
3.) Graph and label each point on the coordinate plane.

- N $(3, -1)$
- P $(-2, 4)$
- Q $(-3, -4)$
- R $(0, 0)$
- S $(-5, 0)$



4.) Graph and label each point on the coordinate plane.

- D $(0, 4)$
- E $(5, 5)$
- G $(-3, 0)$
- H $(-6, -2)$
- J $(0, -2)$



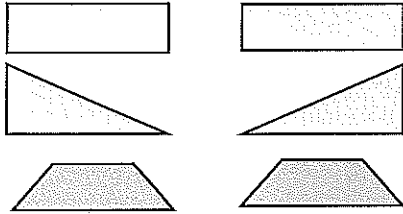
On a scale of 1 – 5 (1: Weak, 5: Strong) rate yourself on this section of math: 1 2 3 4 5

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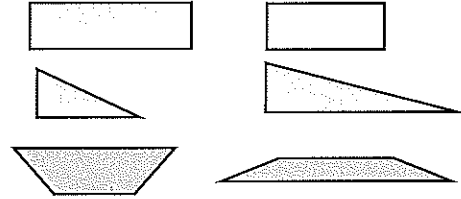
Unit: Knowledge of Geometry

Objective: Determine the congruent parts of polygons.

Congruent Polygons



Non Congruent Polygons



Congruent Polygons	Polygons that have exactly the same size and the same shape
Congruent Segments	Segments that have the same length
Congruent Angles	Angles that have the same measure
Corresponding Sides of a Polygon	Sides of a polygon that are matched up with sides of another congruent or similar polygon
Corresponding Angles of a Polygon	Angles of a polygon that match up with angles of another congruent or similar polygon
$\triangle ABC \cong \triangle DEF$ 	Corresponding sides and angles of congruent polygons are congruent: $\overline{AB} \cong \overline{DE}$ $\angle A \cong \angle D$ $\overline{BC} \cong \overline{EF}$ $\angle B \cong \angle E$ $\overline{AC} \cong \overline{DF}$ $\angle C \cong \angle F$

1.)

Polygon $FGHI \cong$ polygon $NMLK$
 Complete the following congruence statements.

a) $\overline{GH} \cong$ _____ b) $\overline{KL} \cong$ _____ c) $\overline{FJ} \cong$ _____

2.) Use the figures in problem #1 to complete the following congruence statements.

a) $\angle G \cong$ _____ b) $\angle K \cong$ _____

c) $\angle H \cong$ _____ d) $\angle F \cong$ _____

3.) Look at the figures in problem #1. Determine the measure of each segment or angle.

a) $x =$ _____ b) $y =$ _____ c) $z =$ _____

4.) Polygon $HJKLMNPQ$ is congruent to polygon $RSTUVXYZ$. What is the length, in units, of \overline{RZ} ? (Note: Figures are not drawn to scale.)

On a scale of 1 – 5 (1: Weak, 5: Strong) rate yourself on this section of math: 1 2 3 4 5

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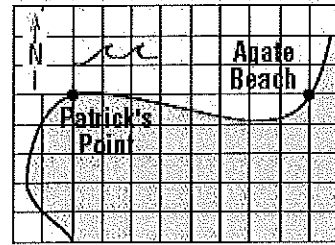
Unit: Knowledge of Measurement

Objective: Determine the distance between 2 points using a drawing and a scale.

A **scale drawing** represents something that is too large or too small to be drawn at actual size. Similarly, a **scale model** can be used to represent something that is too large or too small for an actual-size model. The **scale** gives the relationship between the drawing/model measure and the actual measure.

Example: On this map, each grid unit represents 50 yards. Find the distance from Patrick's Point to Agate Beach.

Scale		Patrick's Point to Agate Beach	
map →	1 unit	=	8 units ← map
actual →	50 yards	=	x yards ← actual



$$1 \cdot x = 50 \cdot 8 \quad \text{cross multiply}$$

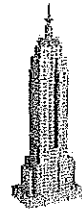
$$x = 400 \quad \text{simplify}$$

It is 400 yards from Patrick's Point to Agate Beach.

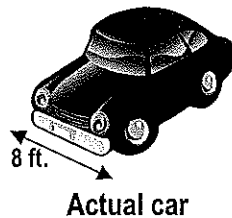
1.) On a map, the distance from Los Angeles to San Diego is 6.35 cm. The scale is 1 cm = 20 miles. What is the actual distance?



2.) Lexie is making a model of the Empire State Building. The scale of the model is 1 inch = 9 feet. The needle at the top is 31.5 feet tall. How big should the needle be on the model?



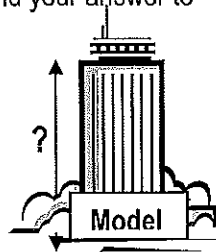
3.) A scale drawing of an automobile has a scale of 1 inch = 1/2 foot. The actual width of the car is 8 feet. What is the width on the scale drawing?



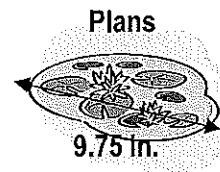
4.) A model ship is built to a scale of 1 cm : 5 meters. The length of the model is 30 centimeters. What is the length of the actual ship?



5.) Jose wants to build a model of a 180-meter tall building. He will be using a scale of 1.5 centimeters = 3.5 meters. How tall will the model be? Round your answer to the nearest tenth.



6.) A pond is being dug according to plans that have a scale of 1 inch = 6.5 feet. The maximum distance across the pond is 9.75 inches on the plans. What will be the actual maximum distance across the pond?



On a scale of 1 – 5 (1: Weak, 5: Strong) rate yourself on this section of math: 1 2 3 4 5

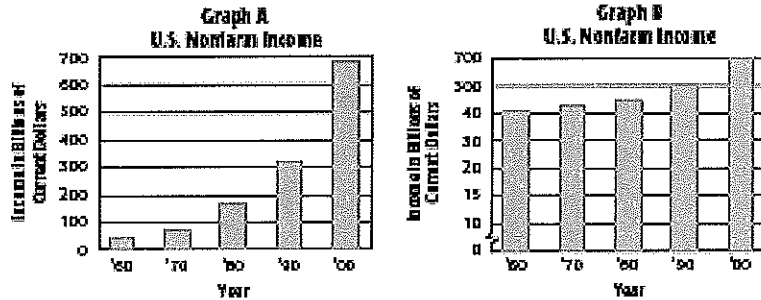
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Unit: Knowledge of Statistics

Objective: Analyze data and recognize the misuses of data

Examples:

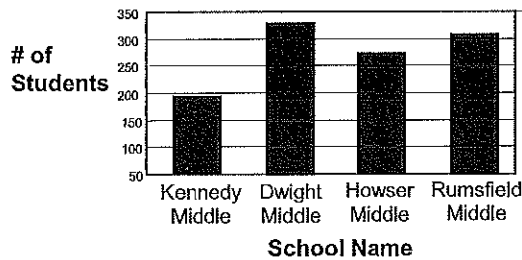
- Graphs can be misleading for many reasons: No title; the scale does not include 0; there are no labels on either axis; the intervals on a scale are not equal; or the size of the graphics misrepresents the data.



The bar graphs above show the total US National Income (nonfarm). Which graph is misleading? Explain.

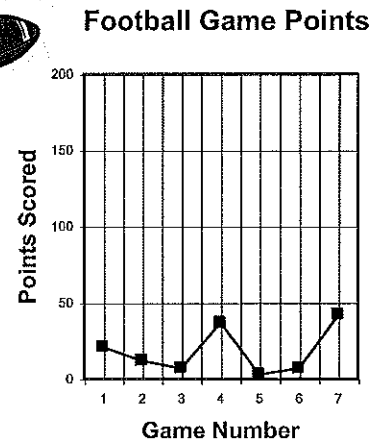
- Graph B is misleading because the scale on the vertical axis does not have equal intervals. It makes the income appear to be slower.

1.) Students in Middle School



The following bar graph represents the number of students in four different middle schools. Determine why this graph may be considered misleading.

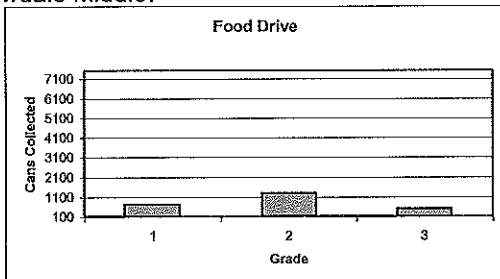
2.) The graph represents points scored by the Baltimore Ravens during the 2003-2004 football season. What makes this graph misleading? Explain.



3.) List 4 different situations that make a graph misleading.

4.) Look at #2, what would you change to make this graph not misleading

The graph below represents cans collected for a food drive at Willowdale Middle.



Use the graph to the left to answer questions 5 & 6.

5.) Determine what makes this graph misleading.

6.) Using the Canned Food Drive Graph, how would you change the graph to better show the data and not be misleading?

On a scale of 1 – 5 (1: Weak, 5: Strong) rate yourself on this section of math: 1 2 3 4 5

-- Summer Math Packet

Unit: Knowledge of Probability

Objective: Make predictions and express probability of the results of a survey or simulation as a fraction, decimal, or percent. - B

Examples:

Probability is a way to measure the chance that an event will occur. You can use this formula to determine the probability, P, of an event.

$$P = \frac{\text{number of favorable outcomes}}{\text{number of possible outcomes}}$$

Probability can be expressed as a FRACTION, DECIMAL, or PERCENT.

A jar contains 10 purple, 3 orange, and 12 blue marbles. A marble is drawn at random. Determine the probability that you will pick a purple marble. Express your answer in a fraction, decimal, and %.

Step 1 – Determine the total # of marbles. $10 + 3 + 12 = 25$

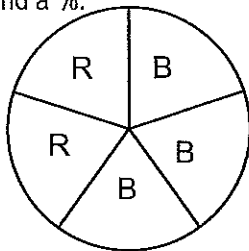
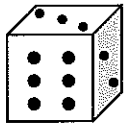
Step 2 – Determine the probability of picking a purple marble. $P(\text{purple}) = \frac{\text{number of purple}}{\text{Total marbles}} = \frac{10}{25} \div 5 = \frac{2}{5}$

Step 3 – Simplify the fraction.

Step 4 – Convert Fraction to a Decimal – Divide. $2 \div 5 = 0.4$

Step 5 – Convert Decimal to a % - Move decimal 2 places to the right. $0.4 = 40\%$

1.) A six-sided number cube is rolled, and the spinner below is spun. Determine the probability of rolling a 3 and spinning blue. (B=blue, R=red) Express your answer as a fraction, a decimal, and a %.



2.) When Monica rolled her number cube 100 times, she had these results:

Number on cube	Frequency
1	12
2	18
3	21
4	16
5	17
6	16

What is the experimental probability of rolling a number less than 3? Express your answer as a fraction, a decimal, and a percent.

3.) A jar contains 15 orange, 14 white, 10 pink, 2 green, and 9 blue marbles. A marble is drawn at random. Determine the probability for the following situation. Express your answer in Fraction, Decimal, and % forms.

P (not blue) =



4.) A jar contains 15 orange, 14 white, 10 pink, 2 green, and 9 blue marbles. A marble is drawn at random. Determine the probability for the following situation. Express your answer in Fraction, Decimal, and % forms.

P (pink or orange) =

5.) A six-sided die is rolled 20 times and the results are recorded as follows: 3 ones, 4 twos, 5 threes, 2 fours, 4 fives, 2 sixes. What is the experimental probability of rolling a number greater than four? Express your answer in Fraction, Decimal, and % forms.

6.) A six-sided die is rolled 25 times and the results are recorded as follows: 4 ones, 5 twos, 5 threes, 3 fours, 4 fives, 4 sixes. What is the experimental probability of rolling a number greater than four? Express your answer in fraction, decimal, and % forms.

On a scale of 1 – 5 (1: Weak, 5: Strong) rate yourself on this section of math: 1 2 3 4 5

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Unit: Knowledge of Number Relationships & Computation

Objective: Compare, order, and describe rational numbers.

Examples:

- **RATIONAL** numbers include fractions, decimal, and percents. To **COMPARE** or **ORDER** rational numbers, they must be in the same form (all fraction or all decimals, or all %s)

Example: Order 0.6, 48%, and $\frac{1}{2}$ from least to greatest.

Step 1 – Change all to decimals. 0.6 48% = 0.48 $\frac{1}{2} = 0.5$

Step 2 – Compare decimals & Order. 0.48, 0.5, 0.6

Step 3 – Write using original form. 48%, $\frac{1}{2}$, 0.6

1.) Order from least to greatest.

$$22\%, 0.3, \frac{1}{5}$$

2.) Order from least to greatest.

$$0.74, \frac{3}{4}, 70\%$$

3.) Replace \bigcirc with $<$, $>$, or $=$.

$$\frac{7}{12} \bigcirc 58\%$$

4.) Which is the largest?

$$1\frac{3}{8} \quad 1\frac{3}{10} \quad 1\frac{4}{9}$$

5.) According to the Pet Food Manufacturer's Association, 11 out of 25 people own large dogs and 13 out of 50 medium dogs. Do more fraction of people own large or medium dogs?



6.) Your PE teacher asked you to run for specific time period. You ran 0.6 of the time. Two of your friends ran $\frac{7}{10}$ and 72% of the time. Order the amount of time you and your friends ran from least to greatest.

Summer Math Packet

On a scale of 1 – 5 (1: Weak, 5: Strong) rate yourself on this section of math: 1 2 3 4 5

Unit: Knowledge of Number Relationships & Computation

Objective: Add, subtract, multiply and divide integers. - A

Examples:

ADDITION INTEGER RULES:

For integers with the same sign:

- The sum of two positive integers is **POSITIVE**.
- The sum of two negative integers is **NEGATIVE**.

For integers with different signs, subtract their absolute value. The sum is:

- Positive IF the positive integer has the greater absolute value.
- Negative IF the negative integers has the greater absolute value.

Examples:

$-6 + (-3) =$ add keep the sign = -9

$-34 + (-21) =$ add keep the sign = -55

$8 + (-7) =$ subtract keep the sign of the higher = 1

$-5 + 4 =$ subtract keep the sign of the higher = -1

SUBTRACTION INTEGER RULES:

- Keep the first number the same
- Switch the subtraction sign to **ADDITION**
- Change the second number to it's opposite. Opposite: -6 to 6
- Follow Addition rules above.

Examples:

$6 - 9 = 6 + (-9) = -3$

$-10 - (-12) = -10 + 12 = 2$

$-3 - 7 = -3 + (-7) = -10$

$1 - (-2) = 1 + 2 = 3$

1.) Add: $2 + (-7)$

2.) Subtract: $-13 - 8$

3.) Evaluate $a - b$ if $a = -2$ and $b = -7$

4.) Evaluate $x + y + z$ if $x = 3$, $y = -5$, and $z = -2$

5.) In Mongolia the temperature can dip down to -45°C in January. The temperature in July may reach 40°C . What is the temperature range in Mongolia?

6.) Write an addition expression to describe skateboarding situation. Then determine the sum.

Hank starts at the bottom of a half pipe 6 feet below street level. He rises 14 feet at the top of his kickturn.

- Summer Math Packet

On a scale of 1 – 5 (1: Weak, 5: Strong) rate yourself on this section of math: 1 2 3 4 5

Unit: Knowledge of Number Relationships & Computation

Objective: Add, subtract, multiply and divide integers. - B

Examples:

MULTIPLYING & DIVIDING INTEGER RULES:

- Two integers with **DIFFERENT** signs the answer is **NEGATIVE**.
- Two integers with **SAME** signs the answer is **POSITIVE**.

Examples:

$5(-2) = 5$ times -2 , the signs are different so the answer will be negative = -10

$(-6) \cdot (-9) =$ the signs are the same so the answer will be positive = 54

$30 \div (-5) =$ the signs are different so the answer will be negative = -6

$-100 \div (-5) =$ the signs are the same so the answer will be positive = 20

<p>1.) Multiply: $-14(-7)$</p>	<p>2.) Divide: $350 \div (-25)$</p>
<p>3.) Evaluate if $a = -3$ and $c = 5$</p> <p style="text-align: center;">$-3ac$</p>	<p>4.) Evaluate if $d = -24$, $e = -4$, and $f = 8$</p> <p style="text-align: center;">$\frac{de}{f}$</p>
<p>5.) A computer stock decreased 2 points each hour for 6 hours. Determine the total change in the stock value over the 6 hours.</p>	<p>6.) A submarine descends at a rate of 60 feet each minute. How long will it take it to descend to a depth of 660 feet below the surface?</p>

- Summer Math Packet

On a scale of 1 – 5 (1: Weak, 5: Strong) rate yourself on this section of math: 1 2 3 4 5

Unit: Knowledge of Number Relationships & Computation

Objective: Add, subtract, and multiply positive fractions and mixed numbers. - A

Examples:

- To add unlike fractions (fractions with different denominators), rename the fractions so there is a common denominator.

$$\text{Add: } \frac{1}{6} + \frac{2}{5} = \frac{5}{30} + \frac{12}{30} = \frac{17}{30}$$

$$\frac{1}{6} = \frac{1 \cdot 5}{6 \cdot 5} = \frac{5}{30}$$

$$\frac{2}{5} = \frac{2 \cdot 6}{5 \cdot 6} = \frac{12}{30}$$

$$\text{Add: } 12\frac{1}{2} + 8\frac{2}{3} =$$

$$12\frac{1}{2} = 12\frac{1 \cdot 3}{2 \cdot 3} = 12\frac{3}{6}$$

$$8\frac{2}{3} = 8\frac{2 \cdot 2}{3 \cdot 2} = 8\frac{4}{6}$$

$$12\frac{3}{6} + 8\frac{4}{6} = 20\frac{7}{6}$$

$\frac{7}{6}$ is improper so we must change it to proper. 7 divided by 6 = $1\frac{1}{6}$

$$20 + 1\frac{1}{6} = 21\frac{1}{6}$$

1.) Add: $\frac{1}{3} + \frac{1}{9}$

2.) Add: $7\frac{4}{9} + 10\frac{2}{9}$

3.) Add: $1\frac{5}{9} + 4\frac{1}{6}$

4.) Add: $2\frac{1}{2} + 2\frac{2}{3}$

5.) A quiche recipe calls for $2\frac{3}{4}$ cups of grated cheese. A recipe for quesadillas requires $1\frac{1}{3}$ cups of grated cheese. What is the total amount of grated cheese needed for both recipes?

6.) You want to make a scarf and matching hat. The pattern calls for $1\frac{7}{8}$ yards of fabric for the scarf and $2\frac{1}{2}$ yards of fabric for the hat. How much fabric do you need in all?

- Summer Math Packet

On a scale of 1 – 5 (1: Weak, 5: Strong) rate yourself on this section of math: 1 2 3 4 5

Unit: Knowledge of Number Relationships & Computation

Objective: Add, subtract, and multiply positive fractions and mixed numbers. - B

Examples:

- To subtract unlike fractions (fractions with different denominators), rename the fractions so there is a common denominator.

$$\text{Subtract: } \frac{7}{8} - \frac{1}{2} = \frac{7}{8} = \frac{7 \cdot 1}{8 \cdot 1} = \frac{7}{8} \quad \frac{1}{2} = \frac{1 \cdot 4}{2 \cdot 4} = \frac{4}{8} \quad \frac{7}{8} - \frac{4}{8} = \frac{3}{8}$$

$$\text{Subtract: } 5\frac{3}{4} - 2\frac{1}{3} = 5\frac{3}{4} = 5\frac{3 \cdot 3}{4 \cdot 3} = 5\frac{9}{12} \quad 2\frac{1}{3} = 2\frac{1 \cdot 4}{3 \cdot 4} = 2\frac{4}{12}$$

$$5\frac{9}{12} - 2\frac{4}{12} = 3\frac{5}{12}$$

****Note:** If you have to borrow from the whole number change to improper fractions, find a common denominator, subtract, and then change back to proper fractions.

1.) Subtract: $\frac{9}{10} - \frac{1}{10}$

2.) Subtract: $\frac{2}{3} - \frac{1}{6}$

3.) Subtract: $9\frac{7}{10} - 4\frac{3}{5}$

4.) Subtract: $5\frac{3}{8} - 4\frac{11}{12}$

*Hint: Change to improper fractions first!

5.) Melanie had $4\frac{2}{3}$ pounds of chopped walnuts. She used $1\frac{1}{4}$ pounds in a recipe. How many pounds of chopped walnuts did she have left?

6.) Lois has $3\frac{1}{3}$ pounds of butter. She uses $\frac{3}{4}$ pound in a recipe. How much does she have left? *Hint: Change to improper fractions first.

- Summer Math Packet

On a scale of 1 – 5 (1: Weak, 5: Strong) rate yourself on this section of math: 1 2 3 4 5

Unit: Knowledge of Number Relationships & Computation

Objective: Add, subtract, and multiply positive fractions and mixed numbers. - C

Examples:

- To multiply fractions – Multiply the numerators & denominators.
- Be sure to change mixed numbers to improper fractions before multiplying.

$$\frac{1}{3} \cdot \frac{5}{8} = \frac{5}{24}$$

$$1\frac{1}{3} \cdot 3\frac{2}{5} = \frac{4}{3} \cdot \frac{17}{5} = \frac{68}{15} = 4\frac{8}{15}$$

**Remember: Changing mixed numbers to improper fractions. $2\frac{3}{4} = 4 \cdot 2 + 3 = \frac{11}{4}$

$$1\frac{1}{3} \cdot 21 = \frac{4}{3} \cdot \frac{21}{1} = \frac{4 \cdot 21}{3 \cdot 1} = \frac{84}{3} = 28$$

1.) $\frac{2}{3} \cdot \frac{4}{5} =$

2.) $\frac{7}{3} \cdot 4\frac{1}{2} =$

3.) $2\frac{1}{2} \cdot 2\frac{1}{3} =$

4.) $3 \cdot 5\frac{2}{9} =$

5.) Anna wants to make 4 sets of curtains. Each set requires $5\frac{1}{8}$ yards of fabric. How much fabric does she need?

6.) One sixth of the students at a local college are seniors. The number of freshmen students is $2\frac{1}{2}$ times that amount. What fraction of the students are freshmen?