Algebra 1

Dear Rising 8th Graders,

Attached you will find your summer enrichment work. To acquire the greatest benefit, please be sure to work on these pages a little at a time over the course of the summer.

Keep these points in mind:
- You are only required to print the answer sheets; you do not have to print the packet unless it is your preference.
- My expectation for this assignment is the same as during the school year: copy each problem and show all your work.
    - Do your work on loose leaf. Do <u>not</u> use a calculator.
    - Write the answers on the answer sheets.
    - Attach the loose leaf to the back of the answer sheets.
- If you need any help, please reach out to me.
- This assignment is due the first day of school. It will serve as your first grade of the first trimester.

I hope you have a pleasant summer. Read every day, spend time outside (wear your sunscreen), smile, eat delicious food, and do fun things – you know, besides this packet. ☺
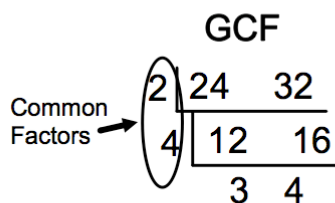
Pray for me; I will be praying for you.
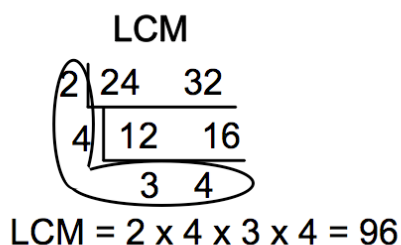
Take good care,
Mrs. Weening

GCF & LCM

Example:

Find the Greatest Common Factor (GCF) and Least Common Multiple (LCM) of 24 and 32.

GCF

Common Factors →

2	24	32
4	12	16
	3	4

GCF= 2 x 4 = 8

LCM

2	24	32
4	12	16
	3	4

LCM = 2 x 4 x 3 x 4 = 96

Exercises: USE FACTOR TREES.

Find the GCF.

1.   42, 60

2. $24xy^2, 42xy$

3. $27x^2y^2, 45x^2$

4.   11, 21

Find the LCM

5.   27, 18

6.   15x, $18xy$

7. $9x^2y, 15xy^2$

8.   64, 48

Fractions
(Addition, Subtraction, Multiplication, and Division)

Miscellaneous

Write the fractions in lowest terms.

1. $\dfrac{8}{24}$

2. $\dfrac{18}{24}$

3. $\dfrac{15x^2y}{20xy}$

4. $\dfrac{36abc^4}{45a^3bc^2}$

Solve for x.

5. $\dfrac{16}{48} = \dfrac{x}{12}$

6. $\dfrac{12}{42} = \dfrac{4}{x}$

7. $\dfrac{20}{32} = \dfrac{x}{16}$

8. $\dfrac{6}{9} = \dfrac{12}{x}$

Write as improper fractions.

9. $2\dfrac{1}{3}$

10. $-4\dfrac{6}{7}$

Write as mixed numbers.

11. $-\dfrac{9}{4}$

12. $\dfrac{38}{3}$

Addition and Subtraction

Find each sum or difference. Write your answer in simplest form.

13. $\quad -\frac{2}{3}+\frac{1}{4}$

14. $\quad 3\frac{5}{9}+2\frac{1}{6}$

15. $\quad \frac{3}{10}-\frac{4}{5}$

16. $\quad 6\frac{7}{10}+\left(-1\frac{1}{5}\right)$

17. $\quad 5\frac{4}{11}-2\frac{2}{3}$

18. $\quad 2\frac{7}{12}-9\frac{2}{3}$

Multiplication and Division

Find each product or quotient. Write your answer in simplest form.

19. $\quad -\frac{5}{6}\cdot\frac{6}{15}$

20. $\quad -\frac{3}{4}\div\left(-\frac{9}{16}\right)$

21. $\quad 2\frac{2}{5}\cdot\left(-3\frac{3}{4}\right)$

22. $\quad -3\frac{3}{4}\div 4\frac{2}{3}$

23. $\quad \frac{2}{9}\cdot\frac{3}{16}\cdot\frac{3}{6}$

24. $\quad 6\frac{3}{4}\div 4$

Order of Operations

When several operations are indicated in a numerical expression, proceed in the following order: work within the parentheses, expand each power, multiply and divide (whichever comes first), and finally, add or subtract (whichever comes first).

PEMDAS ("**P**lease **E**xcuse **M**y **D**ear **A**unt **S**ally") is an acronym that provides a good way to remember your order of operation.

P: Parentheses
E: Exponents
MD: Multiply or Divide, whichever comes first
AS: Add or Subtract, whichever comes first

Simplify.

1. $2^4 - 3(3^2 - 8)$

2. $(4^2 + 10)4 - 10(5^2 - 20)$

3. $4^2 - 4(5^2 - 32 \div 8 \cdot 4)$

4. $(8 \cdot 5 \div 10 + 2)(2^5 - 8^2 \div 2)$

5. $5^2 - 3[6 + (-2)(20 + (-15))]$

6. $[4^3 + (-10)(30 - 8 \cdot 5)]$

7. $[15 - 3(4^2 - 10) + 25 \div 5 \cdot 15]$

8. $\{10 - 5[20 - 2(3^2 + 1)]\}$

9. $|-32| + 32$

10. $\dfrac{48 - 24 \div 2^3}{3 + 2 \cdot 6}$

Working with Integers

Adding and Subtracting:

1st: Rewrite all subtraction as addition then…
- If the integers have the same signs, add their absolute values. The sum will have the same sign of the addends.
- If the integers have different signs, subtract their absolute values. The sum has the sign of the addend with the greater absolute value.

Multiplying and Dividing:

- The product or quotient of two integers having the same sign is positive.
- The product or quotient of two integers having different signs is negative.

Find each sum, difference, product, or quotient.

1. $-13 + 19$

2. $37 + (-13)$

3. $-18 + (-29)$

4. $-27 - 93$

5. $-46 - (-32)$

6. $9 - 83$

7. $-45 \div 9$

8. $-84 \div -12$

9. $\frac{132}{-11}$

10. $8(-17)$

11. $-24 \cdot -6$

12. $-62(8)$

13. There is a 6° drop in temperature over the past hour. If it is 55° now, what was the temperature an hour ago?

14. It is $-9°$ now. The temperature will drop 5° in two hours. What will the temperature be in two hours?

Evaluating Expressions and Formulas

To evaluate an expression, first replace the variable by a given value. Then simplify the resulting numerical expression.

Evaluate the expression when $x = -2$ and $y = 5$.

1. $x + y$

2. $x^2 + y^3$

3. $2x - y$

4. $-2(y - 2x)$

5. $\frac{3x-y}{11}$

6. $\frac{x}{3-y}$

Properties of Operations

Commutative Property of Addition:
$a + b = b + a$

Commutative Property of Multiplication:
$a \times b = b \times a$

Associative Property of Addition:
$(a + b) + c = a + (b + c)$

Associative Property of Multiplication:
$(a \times b) \times c = a \times (b \times c)$

Identity Property of Addition:
$a + 0 = a$

Identity Property of Multiplication:
$a \times 1 = a$

Name the property illustrated by each expression.

1. $8 \times 12 = 12 \times 8$

2. $3 \times (2 \times 5) = (3 \times 2) \times 5$

3. $2 + 5 + 12 = 5 + 2 + 12$

4. $xy + 0 = xy$

5. $1x = x$

6. $5 + 7 = 7 + 5$

7. $3 + (4 + 5) = 3 + (5 + 4)$

8. $3xy = 3xy(1)$

9. $(4 + 8) + 5 = 4 + (8 + 5)$

10. $5 \times 6 \times 8 = 8 \times 5 \times 6$

Solving Multi-Step Equations

Procedure: To solve multi-step equations...
1. Fully simplify both sides of the equation
2. Get all variables to one side of the equation.
3. Use inverse operations to isolate the variable
   undo addition and subtraction first

Ex.
$$2x+3 = 7$$
$$ -3 \quad -3$$
$$2x = 4$$
$$\frac{2x}{2} = \frac{4}{2}$$
$$\boxed{x = 2}$$

Ex.
$$2(x + 5) = 3x - 5$$
$$2x + 10 = 3x - 5$$
$$-2x \qquad -2x$$
$$10 = x - 5$$
$$+5 \qquad +5$$
$$\boxed{x = 15}$$

Exercises

Solve and check each equation.

1. $-2x + 7 = 25$

2. $3 - 8x = -141$

3. $15 - 2(w + 5) = 11$

4. $12 - 4r = 6r + 2$

5. $-4(n + 5) = -32$

6. $12 - 2x + 5 = -1$

7. $3 - 2x = 15$
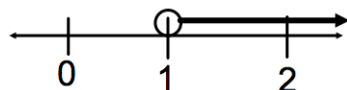
8. $\frac{z}{2} - 7 = 12$

9. $17 + 3x = 4x - 9$
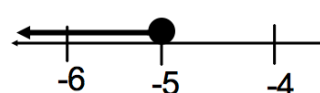
10. $-3(6f - 12) = 36 - 18f$

Solving Multi-Step Inequalities

Note: Solve a multi-step inequality just like you would solve a multi-step equation. However, if you multiply or divide both sides of an inequality by a negative number, then the inequality sign reverses.

Ex.

$$2x + 5 > 7$$
$$\underline{-5 \quad -5}$$
$$\frac{2x}{2} > \frac{2}{2}$$
$$\boxed{x > 1}$$

Ex.

$$10 \leq -2(x - 4)$$
$$10 \leq -2x + 8$$
$$\underline{-8 \qquad -8}$$
$$\frac{10}{-2} \leq \frac{-2x}{-2}$$
$$\boxed{-5 \geq x \ \text{ or } x \leq -5}$$

Exercises

Find and graph the solution set of each inequality.

1. $3x + 8 > 17$

2. $-6y + 3 > 9 - 7y$

3. $2v + 7 \geq 11$

4. $7 > 3 + \dfrac{b}{3}$

5. $\dfrac{c-2}{3} \leq 4$

6. $4b + 4 < 4(5 - 3b)$

7. $2z - 5 < -21 - 2z$

8. $8b - 10 \geq 6(3 - a)$

9. $3x - 5 > 6x + 13$

1. $7(y + 5) - 10 \leq 2y$

Pre-Algebra – Summer Math Packet

Unit: Knowledge of Algebra, Patterns, and Functions
Objective: Write equations and **inequalities - B**

An **inequality** is a mathematical sentence that contains the symbols $\langle$, $\rangle$, $\leq$, 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.	$y \leq 1$

Examples:

1) Two times a number is greater than 10   **2x $\rangle$ 10**
2) Three less than a number is less than or equal to 7.   **x – 3 = 7**
3) The sum of a number and 1 is at least 5.   **x + 1 $\geq$ 5**
4) Cody has $50 to spend. How many shirts can he buy at $16.50 each?   **16.50x $\leq$ 50**

Write an inequality for each of the following:

1.) Five times a number is greater than 25.	**2.)** The sum of a number and 6 is at least 15.
3.) 24 divided by some number is less than 7.	**4.)** Five dollars less than two times Chris' pay is at most $124.
5.) In Ohio, you can get your license when you turn 16. Write an inequality to show the age of all drivers in Ohio.	**6.)** Suppose a DVD costs $19 and a CD costs $14. Write an inequality to find how many CDs you can buy along with one DVD if you have $65 to spend.

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

2

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

x + 5 = 11	Write the equation
- 5 = - 5	Subtract 5 from both sides
x = 6	Simplify

Check

x + 5 = 11	Write the equation
6 + 5 = 11	Replace x with 6
11 = 11✓	The sentence is true

Example 2: Solve - 21 = - 3y

- 21 = - 3y	Write the equation
- 3 = - 3	Divide each side by – 3
7 = y	Simplify

Check

- 21 = - 3y	Write the equation
- 21 = - 3(7)	Replace the y with 7
-21 = - 21?	Multiply – is the sentence true?

Example 3: Solve 3x + 2 = 23

3x + 2 = 23	Write the equation
- 2 = - 2	Subtract 2 from each side
3x = 21	Simplify
3 3	Divide each side by 3
x = 7	Simplify

Check

3x + 2 = 23	Write the equation
3(7) + 2 = 23?	Replace x with 7
21 + 2 = 23?	Multiply
23 = 23?	Add – is the sentence true?

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

Pre-Algebra – 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 $\langle$, $\rangle$, $\leq$, 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 1: Solve **v + 3 < 5**
　v + 3 < 5　Write the inequality
　- 3　- 3　Subtract 3 from each side
　$\overline{\text{v } < \text{ 2}}$　Simplify

Check: Try 1, a number less than 2
　　　v + 3 < 5　Write the inequality
　　　1 + 3 < 5　Replace **v** with **1**
　　　　4 < 5? Is this sentence true? **yes**

Example 2: Solve **2x + 8 < 24**
　2x + 8 < 24　Write the inequality
　- 8　- 8　Subtract 8 from each side
　$\overline{\dfrac{2x}{2}} \;\; < \;\; \dfrac{16}{2}$　Simplify
　　　　　　Divide each side by 2
　　x < 8　Simplify

Check: Try 7, a number less than 8
　　2x + 8 < 24　Write the inequality
　　2(7) + 8 < 24　Replace **x** with **7**
　　　14 + 8 < 24　Multiply 7 by 2
　　　　22 < 24? Is the sentence true? **yes**

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?

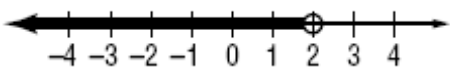**On a scale of 1 – 5 (1: Weak, 5: Strong) rate yourself on this section of math:　1　2　3　4　5**

4

Pre-Algebra – Summer Math Packet

Unit: Knowledge of Algebra, Patterns, and Functions
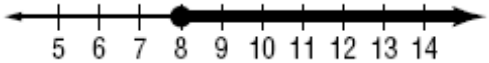**Objective:** Identify or graph solutions of inequalities on a number line.

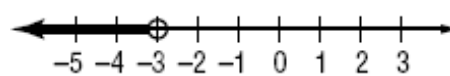**Examples:** Graph each inequality on a number line.

x < 2

The open circle means that the number is **not** included in the solution.
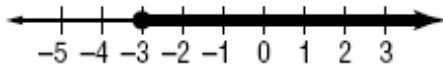
y ≥ 8

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.
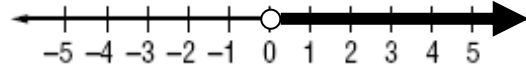
3.) Graph the inequality.

$$b \geq -1$$

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

5

Pre-Algebra – Summer Math Packet

Unit: Knowledge of Measurement

Objective: Determine the distance between 2 points using a drawing and a scale.
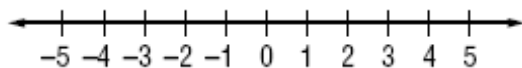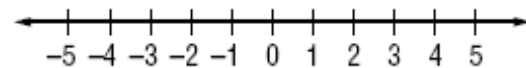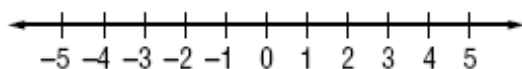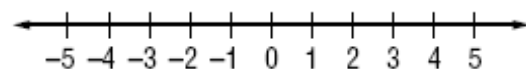
> A **scale drawing** represents something that is too large or too small to be drawn at actual size. Similarly, a **scale model** can be used to represent something that is too large or too small for an actual-size model. The **scale** gives the relationship between the drawing/model measure and the 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 $\longrightarrow$ $\dfrac{1 \text{ unit}}{50 \text{ yards}}$ = $\dfrac{8 \text{ units}}{x \text{ yards}}$ $\longleftarrow$ **map**

actual $\longrightarrow$ 50 yards   x yards $\longleftarrow$ **actual**

$1 \cdot x = 50 \cdot 8$ **cross multiply**
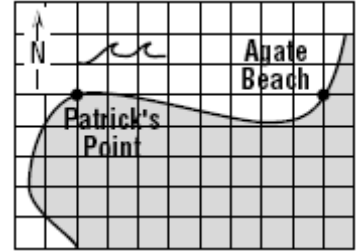
$x = 400$ **simplify**

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 = ½ foot. The actual width of the car is 8 feet. What is the width on the scale drawing?

8 ft.
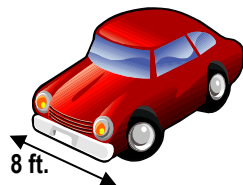
Actual car

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?

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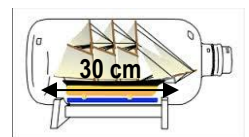
5.) Jose wants to build a model of a 180-meter tall building. He will be using a scale of 1.5 centimeters = 3.5 meters. How tall will the model be? Round your answer to the nearest tenth.

?

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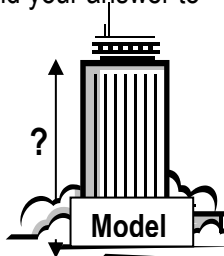
6.) A pond is being dug according to plans that have a scale of 1 inch = 6.5 feet. The maximum distance across the pond is 9.75 inches on the plans. What will be the actual maximum distance across the pond?

Plans

9.75 in.

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 Probability

Objective: Determine the probability of an event comprised of 2 independent events.

Examples:

- **INDEPENDENT EVENTS:** the outcome of one event does NOT affect the outcome of the 2nd event.
- **The probability of two independent events can be found by multiplying the probability of the first event by the probability of the second event.**
- **P(A and B) = P (A) • P (B)**

A number cube is rolled, and the spinner at the right is spun. Determine the probability of rolling a 2 and spinning a vowel.

P (2 and vowel) = P (2) • P (vowel)

$$\frac{1}{6} \quad \bullet \quad \frac{2}{5} = \frac{2}{30} = \frac{1}{15}$$

A coin is tossed and a number cube is rolled. Find the probability of tossing tails and rolling a 5.

P (tails, 5) = P (tails) x P (5)

$$\frac{1}{2} \quad x \quad \frac{1}{6} = \frac{1}{12}$$

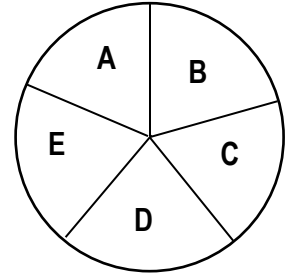|	
1.) A coin is tossed, and a number cube is rolled. What is the probability of tossing heads, and rolling a 3 or a 5?	**2.)** A red and a blue number cube are rolled. Determine the probability that an odd number is rolled on the red cube and a number greater than 1 is rolled on the blue cube.
3.) One letter is randomly selected from the word PRIME and one letter is randomly selected from the word MATH. What is the probability that both letters selected are vowels?	**4.)** What is the probability of spinning a number greater than 5 on a spinner numbered 1 to 8 and tossing a tail on a coin?

5.)

```
        Kid's Carnival Meals
      Choose 1 from each column
   Chicken Nuggets      French Fries
   Hamburger            Apple slices
   Cheeseburger
   Pizza
```

What is the probability that Joey will choose a hamburger and apple slices?

6.)

Red	Blue
Yellow	Green
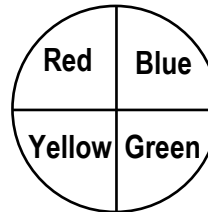
For his probability experiment, Ryan is going to spin a spinner and roll a six-sided number cube. What is the probability of spinning "Red" and rolling a "2"?

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

Pre-Algebra – 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. - **A**
Examples: Experimental probability can also be based on past performances and can be used to make predictions on future events.

In a survey, 100 people were asked to name their favorite Independence Day side dishes. What is the experimental probability of macaroni salad being someone's favorite dish?
   There were 100 people surveyed and 12 chose macaroni salad, SO the experimental probability is $\dfrac{12}{100} = \dfrac{3}{25}$.

SIDE DISH	# of People
Potato Salad	55
Green Salad Or vegetables	25
Macaroni salad	12
Coleslaw	8

Suppose 250 people attend the city's Independence Day barbecue. How many can be expected to choose macaroni salad as their favorite side dish?

   Write a proportion. $\dfrac{3}{25} = \dfrac{x}{250}$ (Use the experimental probability in the proportion.)

   Solve by using cross products. 25x = 3(250)
About 30 will choose macaroni salad. x = 30

1.) Using the table in the example, what is the experimental probability of potato salad being someone's favorite dish?	**2.)** Using the information in the example and question 1, about how many people can be expected to choose potato salad as their favorite dish if 400 attend the barbecue?
3.) In a survey, 50 people were asked to pick which movie they would see this weekend. Twenty chose *Horror Story*, 15 chose *The Ink Well*, 10 chose *The Monkey House*, and 5 chose *Little Rabbit*. What is the experimental probability of someone wanting to see *The Monkey House*?	**4.)** Using the information from question # 3, suppose 300 people are expected to attend a movie theater this weekend to see one of the four movies listed. How many can be expected to see *The Monkey House*?
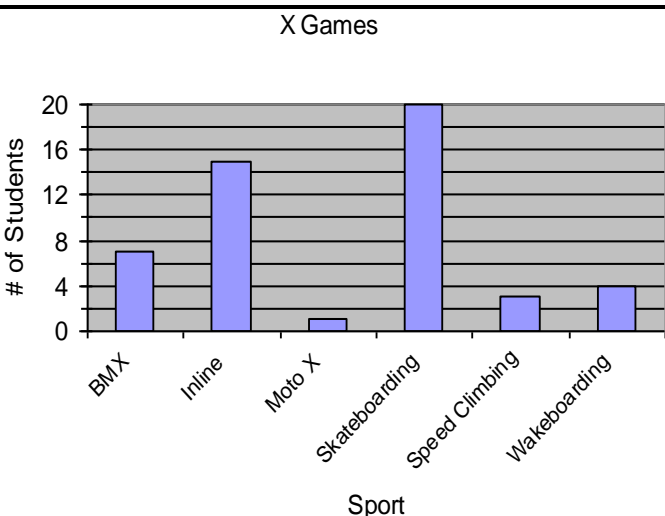
X Games

Sport

For questions 5 & 6, use the graph shown at the left. The graph shows the results of a survey in which 50 students were asked to name their favorite X Game sport.
5.) Suppose 500 people attend the X Games. How many can be expected to choose Inline as their favorite sport?

6.) Suppose 500 people attend the X Games. How many can be expected to choose speed climbing as their favor sport?

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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Pre-Algebra – 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(purple) = __number of purple__ **= 10 ÷ 5 = 2**
                                                                                                                    Total marbles   25 ÷ 5 = 5

Step 3 – Simplify the fraction.
Step 4 – Convert Fraction to a Decimal – Divide.   **2 ÷ 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 %.
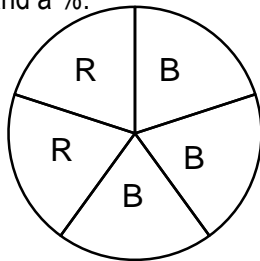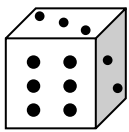
2.) When Monica rolled her number cube 100 times, she had these results:

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

Pre-Algebra – Summer Math Packet

Unit: Knowledge of Number Relationships & Computation
Objective: Determine equivalent forms of rational numbers expressed as **fractions, decimals**, percents, and ratios. - **A**
Examples:
   To write a decimal as a fraction, divide the numerator of the fraction by the denominator.
   Use a power of ten in the denominator to change a decimal to a fraction.

Write $\dfrac{5}{9}$ **as a decimal.**

$$9\overline{)5.000} \quad \begin{array}{r} 0.555 \\ \hline \end{array}$$

$= 0.\overline{5}$ **because 5 repeats forever.**

$\begin{array}{r} -45 \\ \hline 50 \\ -45 \\ \hline 50 \\ -45 \end{array}$

Write 0.32 as a fraction in simplest form. $0.32 = \dfrac{32}{100} = \dfrac{\div 4}{\div 4} = \dfrac{8}{25}$

5/1.) Write 0.735353535… using bar notation to represent the repeating decimal.

2.) Write $\dfrac{3}{5}$ as a decimal.

3.) Write $4\dfrac{5}{8}$ as a decimal.

4.) Write 0.94 as a fraction in simplest form.

5.) Write 0.48 as a fraction in simplest form.

6.) There were 6 girls and 18 boys in Mrs. Johnson's math class. Write a ratio of the # of girls to the # of boys in fraction form. Then write the fraction as a repeating decimal.

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: Determine equivalent forms of rational numbers expressed as **fractions,** decimals, **percents, and ratios**.- B

Examples:

   A RATIO is a comparison of two numbers by division. When a ratio compares a number to 100, it can be written as a PERCENT. To write a ratio or fraction as a percent, find an equivalent fraction with a denominator of 100. You can also use the meaning of percent to change percents to fractions.

Write $\dfrac{19}{20}$ as a percent.

$$\dfrac{19}{20} \cdot \dfrac{\bullet 5}{\bullet 5} = \dfrac{95}{100} = 95\%$$ **Since 100 ÷ 20 = 5, multiply the numerator and denominator by 5.**

Write 92% as a fraction in simplest form.

$$\dfrac{92}{100} = \dfrac{\div 4}{\div 4} = \dfrac{23}{25}$$

Write 92% as a decimal.   **Move decimal two places to the left. Add zeros if needed.**   **92.0% = 0.92**

Write 0.4 as a percent.   **Move decimal two places to the right. Add zeros if needed.**   **0.4 = 40%**

1.) Write $\dfrac{7}{25}$ as a percent and decimal.	**2.)** Write 19% as a decimal and fraction in simplest form.
3.) Write $\dfrac{9}{50}$ as a percent and decimal.	**4.)** Write 75% as a decimal and fraction in simplest form.
5.) Ms. Crest surveyed her class and found that 15 out of 30 students brushed their teeth more than twice a day. Write this ratio as a fraction in simplest form, then write it as a % and a decimal.	**6.)** A local retail store was having a sale and offered all their merchandise as a 25% discount. Write this percent as a fraction in simplest form, then write it as a decimal.

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: 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?

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

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.

Pre-Algebra – 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 – 45º C in January. The temperature in July may reach 40º 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. |

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Pre-Algebra – Summer Math Packet

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) • (- 9) = the signs are the same so the answer will be positive = 54

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

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

1.) Mulitply**:** - 14 (- 7)	**2.)** Divide: 350 ÷ (- 25)
3.) Evaluate if a = - 3 and c = 5 - 3ac	**4.)** Evaluate if d = - 24, e = - 4, and f = 8 $\dfrac{de}{f}$
5.) A computer stock decreased 2 points each hour for 6 hours. Determine the total change in the stock value over the 6 hours.	**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?

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.**

Add: $\dfrac{1}{6} + \dfrac{2}{5} =$ $\dfrac{1}{6} = \dfrac{1 \bullet 5}{6 \bullet 5} = \dfrac{5}{30}$ $\dfrac{2}{5} = \dfrac{2 \bullet 6}{5 \bullet 6} = \dfrac{12}{30}$

$\dfrac{5}{30} + \dfrac{12}{30} = \dfrac{17}{30}$

Add: $12\dfrac{1}{2} + 8\dfrac{2}{3} =$ $12\dfrac{1}{2} = 12\dfrac{1 \bullet 3}{2 \bullet 3} = 12\dfrac{3}{6}$ $8\dfrac{2}{3} = 8\dfrac{2 \bullet 2}{3 \bullet 2} = 8\dfrac{4}{6}$

$12\dfrac{3}{6} + 8\dfrac{4}{6} = 20\dfrac{7}{6}$ $\dfrac{7}{6}$ is improper so we must change it to proper.   7 divided by 6 = $1\dfrac{1}{6}$

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

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

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

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

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

5.) A quiche recipe calls for $2\dfrac{3}{4}$ cups of grated cheese. A recipe for quesadillas requires $1\dfrac{1}{3}$ 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 $1\dfrac{7}{8}$ yards of fabric for the scarf and $2\dfrac{1}{2}$ yards of fabric for the hat. How much fabric do you need in all?

Pre-Algebra – 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.**

Subtract: $\dfrac{7}{8} - \dfrac{1}{2} =$ $\dfrac{7}{8} = \dfrac{7 \bullet 1}{8 \bullet 1} = \dfrac{7}{8}$ $\dfrac{1}{2} = \dfrac{1 \bullet 4}{2 \bullet 4} = \dfrac{4}{8}$ $\dfrac{7}{8} - \dfrac{4}{8} = \dfrac{3}{8}$

Subtract: $5\dfrac{3}{4} - 2\dfrac{1}{3} =$ $5\dfrac{3}{4} = 5\dfrac{3 \bullet 3}{4 \bullet 3} = 5\dfrac{9}{12}$ $2\dfrac{1}{3} = 2\dfrac{1 \bullet 4}{3 \bullet 4} = 2\dfrac{4}{12}$

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

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: $\dfrac{9}{10} - \dfrac{1}{10}$

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

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

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

*Hint: Change to improper fractions first!

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

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

Pre-Algebra – 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.**

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

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

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

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

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

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

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

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

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?

NAME _____ **GRADE** _____ **DATE** _____

RISING 8TH GRADERS
SUMMER WORK ANSWER SHEET

Page 1 – GCF and LCM

1.	2.	3.	4.
5.	5.	7.	8.

Pages 2-3 – Fractions

1.	2.	3.	4.
5.	6.	7.	8.
9.	10.	11.	12.
13.	14.	15.	16.
17.	18.	19.	20.
21.	22.	23.	24.

Page 4 – Order of Operations

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

Page 5 – Working With Integers

1.	2.	3.	4.
5.	6.	7.	8.
9.	10.	11.	12.
13.	14.		

Page 6 – Evaluating Expressions and Formulas

1.	2.	3.	4.
5.	6.		

Page 7 – Solving Multi-Step Equations

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

Page 8 – Solving Multi-Step Inequalities (Write the solution in the first box and the graph in the second.)

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

Page 9 – Write Equations and Inequalities

1.	2.	3.	4.
5.	6.		

Page 10 – Solve Equations

1.	2.	3.	4.
5.	6.		

Pages 11-12 – Solve Inequalities (Write the solution in the first box and the graph in the second.)

1.	1.	2.	2.
3.	3.	4.	4.
5.	5.	6.	6.
1.	1.	2.	2.
3.	3.	4.	4.
5.	5.	6.	6.

Page 13 – Scale

1.	2.	3.	4.
5.	6.		

Page 14 – Probability

1.	2.	3.	4.
5.	6.		

Page 15 – Experimental Probability

1.	2.	3.	4.
5.	6.		

Page 16 – Probability

1.	2.	3.	4.
5.	6.		

Page 17 – Express Fractions as Decimals and Decimals as Fractions

1.	2.	3.	4.
5.	6.		

Page 18 – Fractions, Decimals, and Percents

1.	2.	3.	4.
5.	6.		

Page 19 – Compare, Order, and Describe Rational Numbers

1.	2.	3.	4.
5.	6.		

Page 20 – Add and Subtract Integers

1.	2.	3.	4.
5.	6.		

Page 21 – Multiply and Divide Integers

1.	2.	3.	4.
5.	6.		

Page 22 – Add Fractions and Mixed Numbers

1.	2.	3.	4.
5.	6.		

Page 23 – Subtract Fractions and Mixed Numbers

1.	2.	3.	4.
5.	6.		

Page 24 – Multiply Fractions and Mixed Numbers

1.	2.	3.	4.
5.	6.		

SUMMER READING 8th GRADE

This assignment is due the first full week of school.

"Out of the Dust" Final Project Planning Sheet

Directions: You will be creating a Slide Presentation for our final project on "Out of the Dust".

Please follow the planning sheet to help you create your presentation.
Helpful Hints: Think about: clip art, pictures, animation, sound effects, and layout. Animation and clip art help to enhance your presentation, but you must add that last! You must type the information first.

Slide 1: Title On this slide you will list your name, the title of the book, the author, and the genre
Name: _____
Title: _____
Author: _____
Genre: _____

Slide 2: About Author On this slide you will include five interesting facts about the author.

Slide 3: Background Information On this slide you will include five interesting facts about the Dust Bowl.

Slide 4: Summary On this slide you will write a paragraph (at least 5 sentences) detailing important parts of Out of the Dust. Use the graphic organizer to help plan your paragraph:
Someone: Who is the main character?
Wanted: What did the character want?
But: What was the problem?
So: How did the character try to solve the problem?
Then: How did the story end?

Slide 5: Setting On this slide you will describe the setting of Out of the Dust using imagery. •
See:_____
_____ •
Taste:_____
_____ •
Touch:_____
_____ •
Hear:_____
_____ •
Smell:_____

Feel:_____

_____

Slide 6: Protagonist On this slide you will write a paragraph describing Billie Jo and how she has changed throughout the story. In your paragraph, you can describe her physical traits or discuss any character traits she possesses.

Slide 7: Quote Me On this slide you will select 3-5 quotes from the book that are meaningful and represent the story. 1. On page _____ it said,"_____

_____

2. On page _____ it said,"_____

_____

3. On page _____ it said,"_____

_____

Slide 8: Theme On this slide you will write a paragraph discussing one or more of the themes of Out of the Dust.

Slide 9: Symbolism On this slide you will pick one symbol from Out of the Dust and describe it. (2-3 sentences)