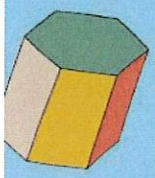
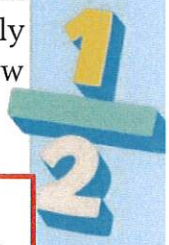
Entering Pre-Algebra
Summer Math Maintenance

Dear Parents,

Summer is nearly here - hooray! While we look forward to a summer of rest and relaxation, we want to ensure that our students do enough math review and practice to keep their skills sharp for the fall! The purpose of this packet is to make sure you have options that will work for you and your child(ren). **Teachers will test students at the beginning of the year on the topics listed under "Required Skills."** Furthermore, although teachers will not be collecting math work from students in the fall, students are encouraged to keep up their arithmetic skills, review math concepts, and continue to explore other topics they are interested in. Intentionally incorporating math into daily activities will promote student success in the new school year. Have a wonderful summer!





Required Skills: (WILL BE TESTED IN THE FALL)

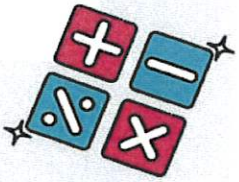
It is expected that students are proficient with <u>0-12 multiplication facts.</u> Multiplication is *fundamental* to more advanced work in math. Furthermore, students will be expected to complete <u>computations with negative numbers</u> (integers), <u>decimals, and fractions</u>. 5-10 minutes of practice per day can make a big difference. A variety of practice options are provided in this list.

Skills to review before Pre-Algebra:

- Solid memorization of multiplication facts 0-12
- Operations with integers, decimals, and fractions
- Comparing using inequality signs
- Order of operations
- Solving one-step equations
- Multiply and divide by powers of 10
- Exponents and square roots
- Converting between decimals, fractions, and percents
- Perimeter and Circumference
- Area (square, rectangle, triangle, parallelogram, circle)
- Graphing points on the coordinate plane

Tech Free Resources:

- Students will receive a hard copy math packet from their current math teacher with an answer key. Students are strongly encouraged to complete it.
- Math review workbooks. Some options below:
  - Spectrum Math - Grade 6 (ISBN 978-0769636962)
  - Spectrum Math - Grade 7 (ISBN 978-0769636979)
  - Spectrum Enrichment Math - Grade 6 (ISBN 978-0769659169)
  - Spectrum Enrichment Math - Grade 7 (ISBN 978-0769663371)
  - Summer Skills - Summer Math Sharpener 6th Grade (https://www.summerskills.com)



Online Resources:

- **IXL** (www.ixl.com): IXL is a website that provides a wide variety of practice problems and explanations. Families may purchase a monthly subscription ($13-$20 monthly). With an account the student receives targeted practice in weak areas. Exercises for students entering Pre-Algebra can be found in the 7th grade section of the website.
- **Khan Academy** (www.khanacademy.org): free; provides step by step instructions and practice problems covering a wide variety of topics with video explanations of topics if the student is confused and needs a refresher. You can create a free account to track progress. Students should review Khan Academy's 6th grade math course, as well as 7th grade math unit 2 (proportions), units 3 and 5 (operations with negative numbers and order of operations), unit 6 (distributive property), and unit 9 (circumference and area of a circle).
- **Arcademics** (www.arcademics.com/games): free (optional subscription adds data analysis); provides games covering arithmetic, ratios, time, decimals, and fractions.
- **Mathigon** (www.mathigon.org): free; interactive fun practice and exposure to mathematical concepts. Great problem solving activities and multiplication practice. The flashcards provide fluency practice with visual models.
- **Math Playground** (www.mathplayground.com): free; math games providing good fluency practice. Website was developed by a teacher
- **Puzzle Playground** (https://www.puzzleplayground.com): free; same developer as Math Playground but focusing on logic puzzles.
- **Primary Games - Math Flashcards** (https://www.primarygames.com/math/flashcards): free flashcards for fluency practice, including multiplication facts.
- **Buzz Math** (www.buzzmath.com): free 30 day trial

Apps:

- **iDevBooks: Long Division, Long Multiplication, Order of Operations, and Fraction Math**: apps for practicing arithmetic skills
- **Math Board**: Great for drilling math facts.
- **Quick Math+ - Multiplication Table and Arithmetic Game**: Good practice for math facts while trying to beat the clock.
- **Spin!t Integers**: game designed to help students practice integer operations and the order of operations in a fun way

Day 1

1. Write each ratio in simplest form.

   9 to 30 = _____ 12:18 = _____

2. Find the equivalent fraction, decimal, and percent.

   $\frac{75}{100}$

   Fraction (in simplest terms): _____

   Decimal: _____

   Percent: _____

3. $3.9 + 9.1 + 53 =$

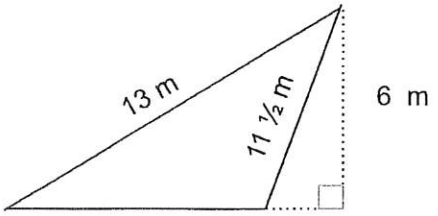
4. $1\frac{5}{6} + 6\frac{1}{9} =$

5. Simplify.

   $2 \cdot 4^2 + (-10 + 4) \div 3 =$

6. $-15 + (-10) =$

Use the following figure for questions 7 and 8.



7. Find the area.

8. Find the perimeter.

9. Each shelf can hold 15 snow globes. How many snow globes might be displayed on 5 shelves? Write an <u>inequality</u> to represent the number of snow globes. Then graph the inequality.

   Inequality: _____

10. Write an equivalent expression using the distributive property.

    $6\,(x - 7) =$

Day 2

1. Complete the ratio table.

x	7		21	28	
y	2	4	6		10

2. Fabric costs $14 per yard. If you buy 5 yards or more, you get 20% off. How much would 5 yards cost with the discount?

3. $87.3 - 53.5 =$

4. $\frac{7}{8} - \frac{1}{2} =$

5. Solve.

$28 - 56 =$

$-28 - 56 =$

6. Test Scores:

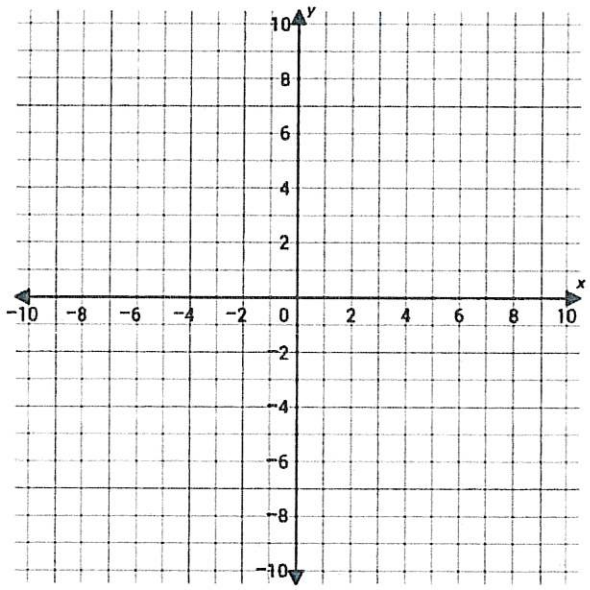
96, 88, 76, 91, 93, 93

Mean = _____ Median = _____

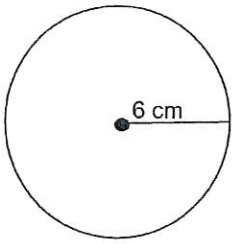
Mode(s) = _____ Range = _____

7. Graph the points on the coordinate plane. Then label the polygon formed.

(-3, 1), (-3, 7), (3, 1), (3, 7)



8. What is the circumference of the circle? Use 3.14 for π.



Circumference: _____

9. 697 cm = _____ dm

10. Solve.

$51 = 3k$

Day 3

1. On a map, 400 miles is represented by 5 inches. Write a ratio for the situation. Then find the unit rate.

   Ratio = _____ Unit Rate = _____

2. What is $33\frac{1}{3}\%$ of 54?

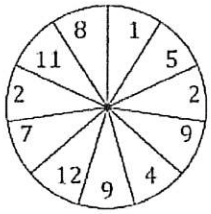
3. $0.6 \cdot 21 =$

4. $\frac{1}{4} \times 16 =$

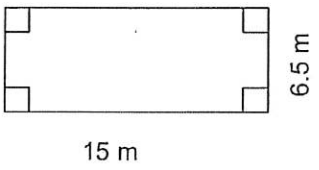
5. $-203 \times 509 =$

6. Use the spinner. What is the theoretical probability of the following event?

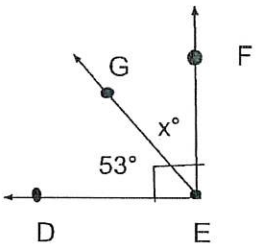
P (1 or 9) _____



7. Find the perimeter.

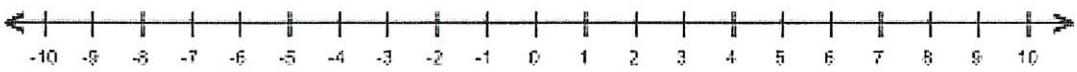


8. Find the value of x. $\angle DEG$ *and* $\angle GEF$ are complementary angles. *NOTE: not drawn to scale.*



9. Graph the solution on a number line. List the first three integer solutions.

$y > -5$ _____, _____, _____



10. List all the factors. Circle the GCF.

36:
60:

List 5 multiples. Circle the LCM.

6:
15:

Day 4

1. Michael has $\frac{3}{4}$ bag of dog food. He sends $\frac{1}{4}$ of the food to doggie daycare with his dog. What part of the bag of dog food is left?

2. A store employee earns a rate of commission of 8%.
   a. What commission does she earn on sales of $2000?

   b. What are her total earnings if she also has a salary of $500?

3. $65.8 \div 0.2 =$

4. A. $\frac{4}{5} \div \frac{2}{5} =$ B. $\frac{2}{3} \div \frac{1}{2} =$

5. $-12,896 \div -416 =$

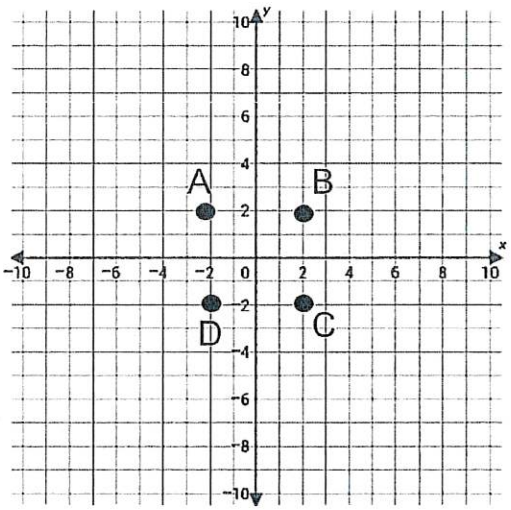
6. Simplify. Show your work.

$(\frac{1}{5})^2 + \frac{1}{5} \div \frac{1}{4} =$ _____

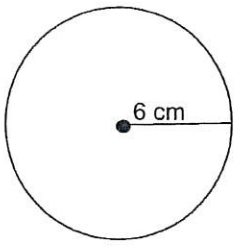
7. Name the point located at the following coordinates:

A. (-2, 2)

B. (2, -2)



8. What is the area of the circle? Use 3.14 for π.



9. 3 pints = _____ cups

10. Solve.

$h + (-5) = -17$

Day 5

1. 64 feet in 2 seconds Unit Rate: _____

2. Find the equivalent fraction, decimal, and percent.

   $\frac{6}{15}$ Fraction (in simplest terms): _____

   Decimal: _____

   Percent: _____

3. Order from least to greatest.

   5.1 4.987929 5.0999 5.010 50.1

   _____, _____, _____, _____, _____

4. Order from least to greatest.

   $2\frac{3}{8}$, $2\frac{1}{4}$, $\frac{21}{8}$

   _____, _____, _____

5. Complete the Table.

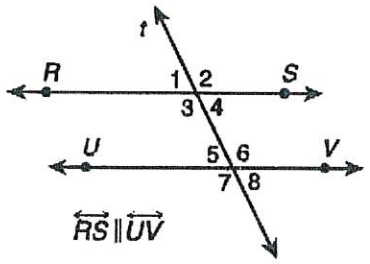
Integer	Absolute Value
-3	
7	
	8

6. Number of people in a restaurant:
   25, 30, 40, 25, 50, 40

   Mean = _____ Median = _____

   Mode(s) = _____ Range = _____

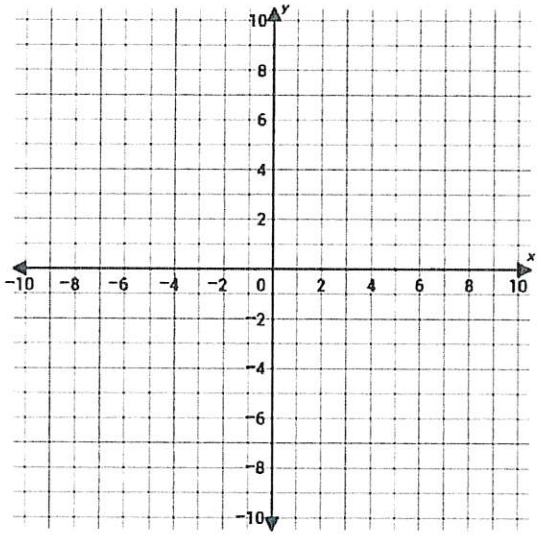
Use the diagram below to answer question 7.



7. If ∠ **8 measures 45°**, what is the measure of ∠ 5? _____

8. Graph the points on the coordinate plane. Then label the polygons formed.

   (-4, -4), (4, -4), (-2, -8), (2, -8)



9. Carlos has 7 boxes. Each box can hold no more than 8 notebooks. What might be the total number of notebooks that are in 2 boxes? Write an inequality and then graph the solution.

   Inequality: _____

10. Solve.

$$\frac{y}{5} = 24$$

Day 6

1. Write each ratio in simplest form.

   24 to 28 = _____ 12 : 30 = _____

2. Find the equivalent fraction, decimal, and percent.

   $\frac{15}{24}$

   Fraction (in simplest terms): _____

   Decimal: _____

   Percent: _____

3. $0.47 + 0.5 + 0.78 + 0.29 =$

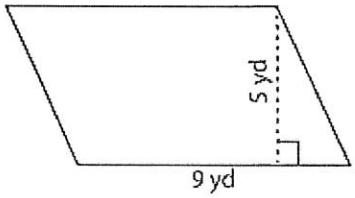
4. $\frac{2}{5} + \frac{5}{6}$

5. Simplify.

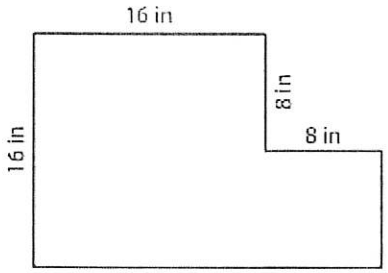
   $\frac{1}{2}(12 + 8) \cdot 5^2 - 17 =$ _____

6. $-56 + 23 =$

7. Find the area.

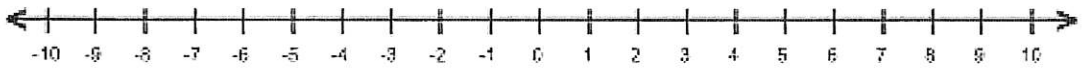


8. Find the perimeter.



9. Graph the solution of the inequality below on a number line and then list the first three integer solutions.

$y \leq 1$ _____, _____, _____



10. Write an equivalent expression using the distributive property.

$\frac{1}{3}(\frac{1}{7} + \frac{2}{7}) =$

Day 7

1. Complete the ratio table.

x	5	10	15	20	25
y		6	9		

2. You pay 7% sales tax on a $124 purchase. How much do you pay in all?

3. $10.43 - 4.921 =$

4. $5\frac{1}{8} - 2\frac{1}{3} =$

5. Solve.

$75 - 25 =$

$75 - (-25) =$

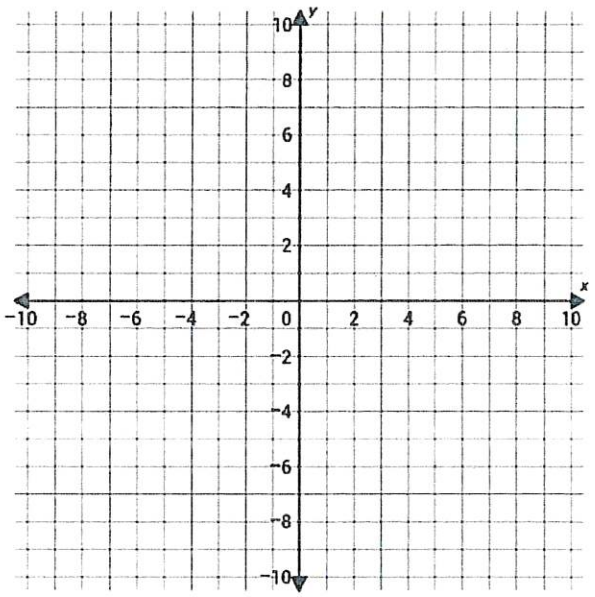
6. Data: 5, 6, 7, 7, 9, 10, 12, 16

Mean = _____ Median = _____

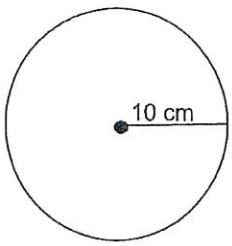
Mode(s) = _____ Range = _____

7. Graph the points on the coordinate plane. Then label the polygon formed.

(-5, 3), (-3, 6), (5, 0), (-1, 0)



8. What is the circumference of the circle? Use 3.14 for π.



9. 11 L = _____ mL

10. Solve.

$\frac{b}{5} = 18$

Day 8

1. 135 miles in 3 hours

   Ratio = _____ Unit Rate = _____

2. What is 30% of 210?

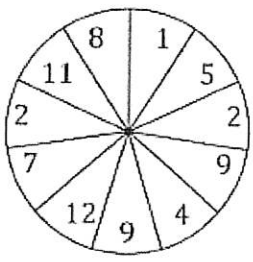
3. $0.2 \cdot 0.4 \cdot 0.6 =$

4. $\frac{2}{9} \times \frac{5}{8} =$

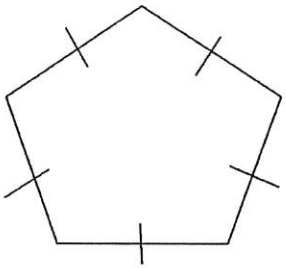
5. $-12 \cdot -5 =$

6. Use the spinner. What is the theoretical probability of the following event?

   P (1 or odd number) _____



7. Find the perimeter.



8. ∠ ABC and ∠CBD form a linear pair. What is the measure of ∠ ABC if ∠CBD measures 40 degrees?

9. Graph the solution on a number line. List the first three integer solutions.

$B \geq -1$ _____, _____, _____

10. Using a factor tree, factor each number. Then write the GCF.

18:
51:

Day 9

1. How many square yards of carpeting are needed to cover the floor of a rectangular room that is 21 ft long and 12 ft wide?

2. You put $300 into a bank account earning a 3.2% simple interest rate. If you leave the money in the bank for 5 years,

   a. how much interest will you earn?

   b. What will be your final balance?

3. $3.36 \div 0.8 =$

4. $2\frac{2}{5} \div 4 =$

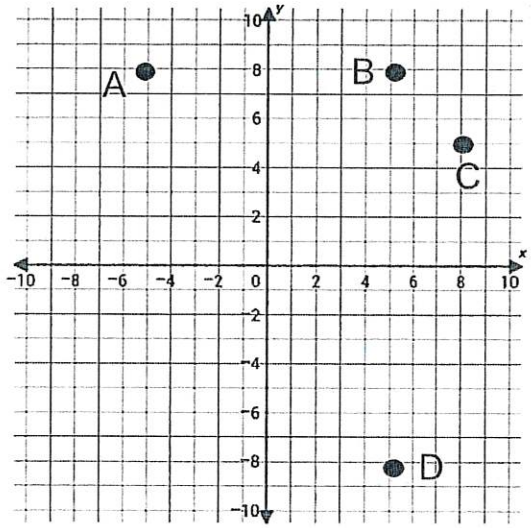
5. $-54 \div 9 =$

6. Simplify. Show your work.

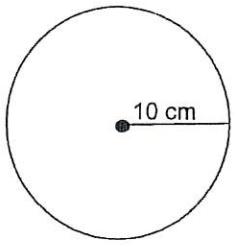
$10 - 2^3 (3) =$

7. Name the point located at the following coordinates:

A. (5, 8)
B. (8, 5)



8. What is the area of the circle? Use 3.14 for π.



9. 50 oz = _____ lb _____ oz

10. Solve.

$m + 384 = 212 + 428$

Day 10

1. A mechanic does 6 oil changes in 2 hours. How many oil changes can the mechanic do in 8 hours? What is the unit rate?

2. Find the equivalent fraction, decimal, and percent.

$\frac{35}{40}$

Fraction (in simplest terms): _____

Decimal: _____

Percent: _____

3. Order from least to greatest.

3.2 3.21 3.0259 3.01 3.30

_____, _____, _____, _____, _____

4. Order from least to greatest.

$\frac{3}{8}$, $\frac{15}{24}$, $\frac{1}{2}$

_____, _____, _____

5. $-|-3| =$

6. Data: 70, 90, 80, 75, 75

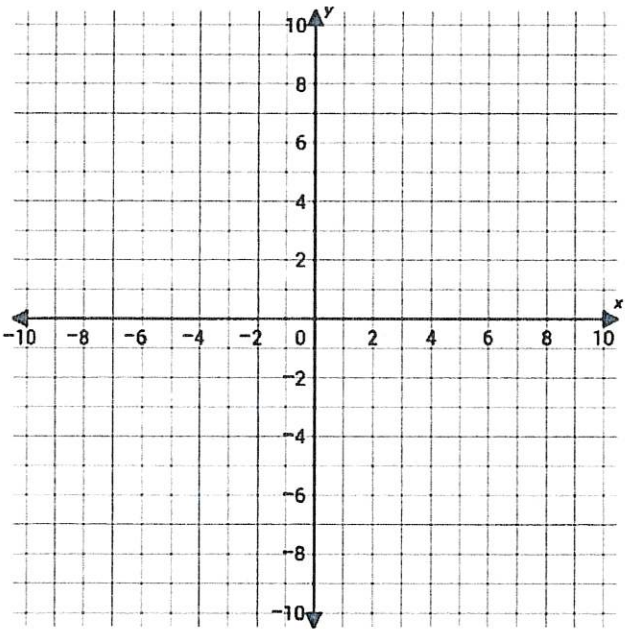
Mean = _____ Median = _____

Mode(s) = _____ Range = _____

7. Two angles are supplementary. If one angle measures 60 degrees, what does the other angle measure?

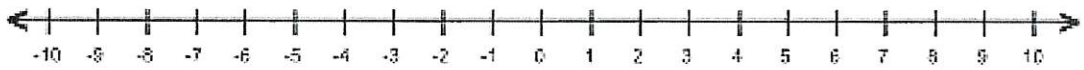
8. Graph the points on the coordinate plane. Then label the polygons formed.

(-5, 1), (7, 3), (2, -4)



9. Graph the following inequality.

$x \leq -3$



10. Solve.

$x + 74.68 = 112.3$

Day 11

1. A recipe calls for 10 oranges, 6 lemons, and 3 limes. Write the following ratios in simplest form.
   a. Oranges to limes _____ : _____

   b. Lemons to oranges _____ : _____

   c. Limes to lemons _____ : _____

2. Find the equivalent fraction, decimal, and percent.

   $\frac{6}{18}$

   Fraction (in simplest terms): _____

   Decimal: _____

   Percent: _____

3. $0.2 + 0.982 + 8 =$

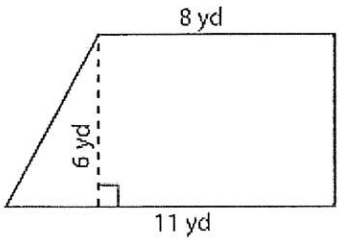
4. $7\frac{3}{8} + 5\frac{2}{3}$

5. $-24 + 16 =$

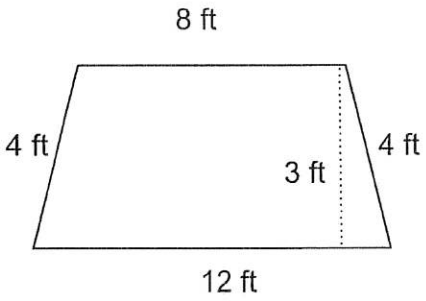
6. Simplify.

$$6^2 + 7 - (3 \cdot 6) = \_\_\_\_\_$$

7. Find the area.



8. Find the perimeter.



9. A window cleaning service charges under $75 to clean all of the windows of a house. Write an inequality to represent the amount charged. Then graph the solution.

Inequality: _____

10. Write an equivalent expression using the distributive property.

$6\ (x - 10)$

Day 12

1. Complete the ratio table.

x			18		30
y	7				35

2. You have a $45 dinner bill. How much tip do you leave if you tip 15%?

3. 65.9 - 45.902=

4. $8 - 2\frac{3}{8}$

5. Solve.

$$-36 - (-20) =$$

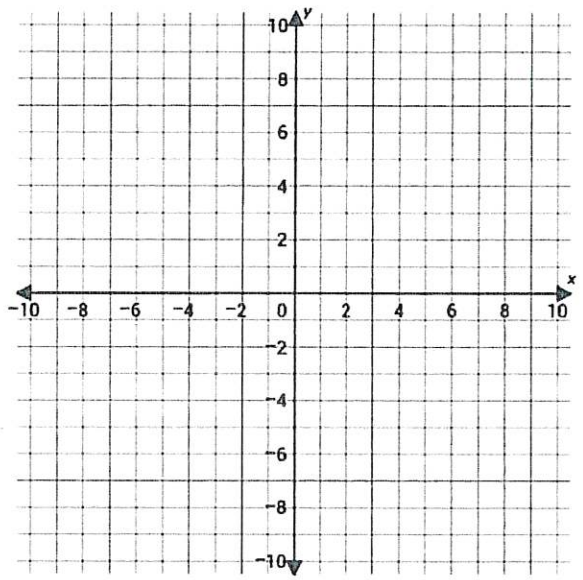
6. Nightly low temperatures (°F):
24, 27, 18, 39, 30, 31, 34

Mean = _____ Median = _____

Mode(s) = _____ Range = _____

7. Graph the points on the coordinate plane. Then label the polygon formed.

(-4, 2), (-8, 2), (-6, 9)



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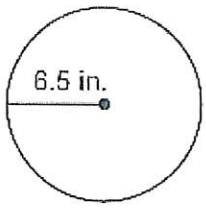


9. Compare. Write <, >, or =.

70 L _____ 7000 mL

10. Solve.

$12.67 + x = 26.3$

Day 13

1. Three comic books cost $12. Mike spends $20 on comic books. How many comic books does he buy?

2. What is 75% of 52?

3. $7.852 \times 4.6 =$

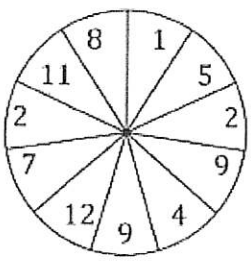
4. $4\frac{1}{6} \times 1\frac{2}{3} =$

5. Solve.

   $3 \bullet (-5) =$

6. Use the spinner. What is the theoretical probability of the following event?

   $P(2)$ _____

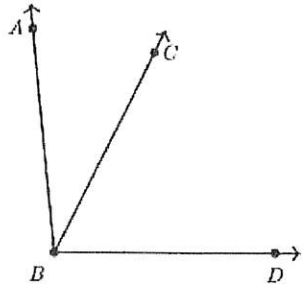


7. Find the width of rectangular shaped field with a length of 24 yards and a perimeter of 78 yards.

8. Find the measure of $\angle ABC$.

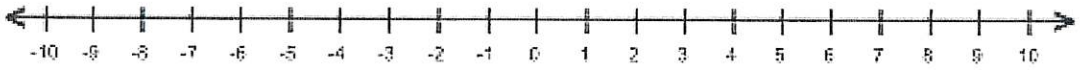
   $m\angle ABD = 96$ degrees

   $m\angle CBD = 63$ degrees



9. Graph the solution on a number line. List the first three integer solutions.

   $x > -10$ _____, _____, _____



10. Using a factor tree, factor each number. List all the factors. Circle the GCF.

18:
27:

List 7 multiples. Circle the LCM.

5:
6:

Day 14

1. A telephone booth that is 8 ft tall casts a shadow that is 4 ft long. Find the height of a lawn ornament next to the telephone booth that casts a 2 ft shadow.

2. You scored a 95% on your last math test. If there were 40 problems, how many did you get correct?

3. $30.6 \div 8.5 =$

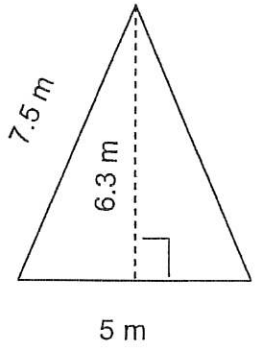
4. $\frac{20}{21} \div \frac{5}{14} =$

5. $-108 \div 9 =$

6. Simplify.

$3 + 4(7 - 4) - 3^2 =$

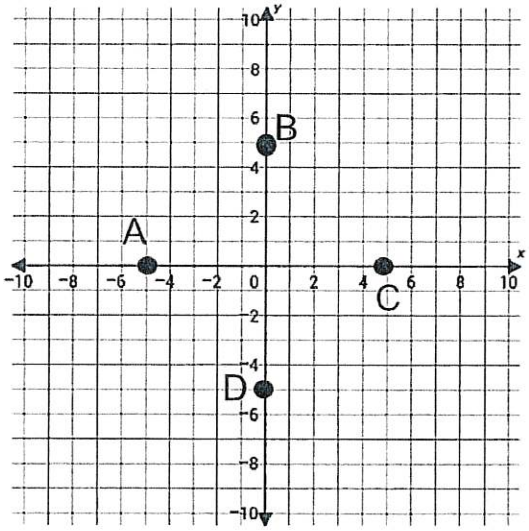
7. Find the area.



8. Name the point located at the following coordinates:

(0, 5)

(5, 0)



9. 1 km = _____ m

10. Solve.

$-5.2 + h = 93.4$

Day 15

1. Find each of the unit rates and circle the better buy.

   2 for \$3.00 = _____ 3 for \$4.47 = _____

2. Find the equivalent fraction, decimal, and percent.

   $\frac{14}{36}$

   Fraction (in simplest terms): _____

   Decimal: _____

   Percent: _____

3. Compare. Write <, >, or =.

   0.56 _____ 0.560

4. Compare. Write <, >, or =.

   $\frac{2}{3}$ _____ $\frac{4}{9}$

5. $|55|$ = _____

6. Data: 52, 59, 73, 59, 62

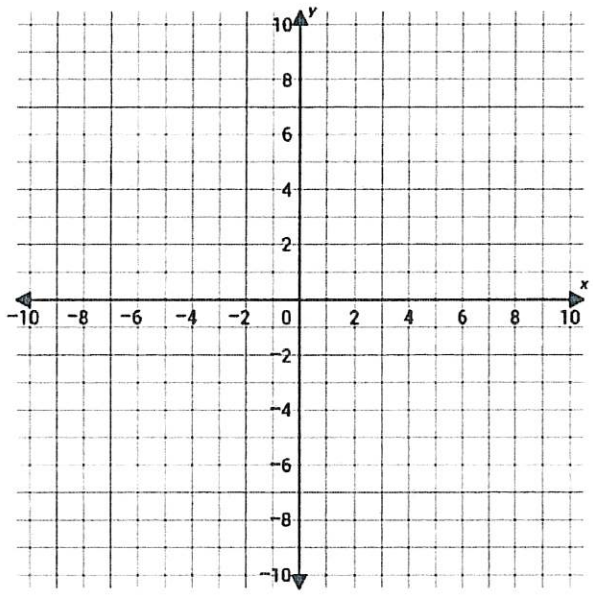
   Mean = _____ Median = _____

   Mode(s) = _____ Range = _____

7. Two angles are complementary. If one angle measures 62 degrees, what is the measure of the second angle?

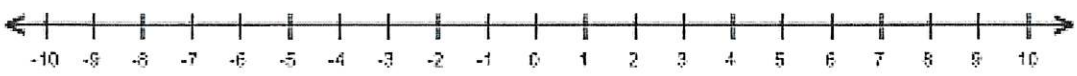
8. Graph the points on the coordinate plane. Then label the polygons formed.

   (5, -2), (8, -6), (5, -10), (2, -6)



9. Graph the solution on a number line. List the first three integer solutions.

   $x < -6$ _____, _____, _____



10. Solve.

    $3.5x = 38.5$

Adding, Subtracting, Multiplying and Dividing Integers (A)

Name: _____ Date: _____ Score: _____

Calculate each sum, difference, product or quotient.

$48 \div (-3) =$	$-11 - (-15) =$
$190 \div (-19) =$	$7 + (-17) =$
$12 - (-19) =$	$12 + (-1) =$
$224 \div 14 =$	$-234 \div (-18) =$
$-3 + 15 =$	$9 \times 18 =$
$2 + (-16) =$	$-20 + (-5) =$
$-17 + (-10) =$	$8 + (-14) =$
$19 \times 5 =$	$-1 - 20 =$
$8 + 17 =$	$-39 \div 3 =$
$12 - 16 =$	$12 \div (-12) =$
$15 + 13 =$	$-19 \times 1 =$
$-144 \div 8 =$	$-17 \times 18 =$
$19 + 15 =$	$3 + 18 =$
$-5 \times 13 =$	$15 - 3 =$
$270 \div (-18) =$	$78 \div 6 =$
$7 \times (-18) =$	$12 \times 17 =$
$-200 \div (-20) =$	$20 - (-2) =$
$13 \times 11 =$	$15 - (-19) =$
$15 \times 17 =$	$-20 + 9 =$
$-96 \div 6 =$	$-20 \times (-16) =$
$-8 \times 18 =$	$12 + 20 =$
$15 + (-15) =$	$-20 + 12 =$
$-14 + 14 =$	$-17 - (-6) =$
$-14 \times (-7) =$	$17 + 17 =$
$17 + 15 =$	$-80 \div 16 =$

Operations with Two Fractions (A)

Name: _____ Date: _____ Score: _____

Calculate each result.

1. $\frac{11}{5} \times \frac{15}{9} =$

2. $\frac{14}{8} \times \frac{28}{19} =$

3. $\frac{8}{3} - \frac{3}{4} =$

4. $\frac{46}{17} - \frac{5}{7} =$

5. $\frac{19}{7} + \frac{32}{13} =$

6. $\frac{82}{20} - \frac{2}{3} =$

7. $\frac{4}{8} \div \frac{49}{19} =$

8. $\frac{4}{6} + \frac{41}{11} =$

9. $\frac{17}{8} \times \frac{22}{8} =$

10. $\frac{21}{12} \div \frac{4}{8} =$

Operations with Two Mixed Fractions (A)

Name: _____ Date: _____ Score: _____

Calculate each result.

1. $5\frac{2}{8} - 1\frac{2}{7} =$

2. $5\frac{1}{2} - 5\frac{2}{5} =$

3. $5\frac{4}{8} \times 1\frac{5}{14} =$

4. $5\frac{3}{4} \div 2\frac{3}{16} =$

5. $1\frac{2}{19} \times 5\frac{2}{3} =$

6. $5\frac{1}{2} + 2\frac{6}{9} =$

7. $5\frac{2}{3} \div 1\frac{14}{20} =$

8. $1\frac{7}{12} \times 5\frac{3}{5} =$

9. $5\frac{3}{4} - 1\frac{2}{9} =$

10. $1\frac{13}{14} \div 5\frac{5}{6} =$

Name _____

Subtracting Mixed Numbers

Subtract Fractions with Unlike Denominators.

1. $3\frac{1}{3} - 1\frac{1}{2} =$ ____
2. $4\frac{3}{5} - 2\frac{1}{3} =$ ____
3. $3\frac{1}{2} - 2\frac{3}{5} =$ ____
4. $2\frac{2}{3} - 1\frac{3}{5} =$ ____
5. $4\frac{1}{6} - 3\frac{3}{5} =$ ____
6. $2\frac{3}{4} - 1\frac{2}{5} =$ ____
7. $3\frac{1}{5} - 2\frac{2}{3} =$ ____
8. $5\frac{1}{3} - 2\frac{2}{5} =$ ____
9. $4\frac{2}{5} - 2\frac{3}{4} =$ ____
10. $3\frac{3}{5} - 1\frac{1}{4} =$ ____
11. $4\frac{4}{5} - 3\frac{2}{7} =$ ____
12. $2\frac{2}{5} - 1\frac{1}{3} =$ ____
13. $3\frac{3}{5} - 2\frac{2}{3} =$ ____
14. $3\frac{4}{5} - 1\frac{2}{3} =$ ____
15. $3\frac{3}{4} - 2\frac{3}{5} =$ ____
16. $2\frac{3}{4} - 1\frac{2}{5} =$ ____

Order of Operations (A)

Name: _____ Date: _____

Simplify each expression using the correct order of operations.

$2^3 \times (8 + 4 - 10)$

$2 \times (3^3 - 5 + 8)$

$(3 \times 2^2) \div (6 - 4)$

$3^3 \times (6 + 2 - 8)$

$(3^2 - 8 + 2) \times 4$

$(9^2 - 8 + 2) \div 5$

$(3 + 5^2 - 8) \times 4$

$(2^3 + 4) \div (9 - 6)$

$(6 - 2^2 + 5) \times 8$

$(2^3 + 8 - 4) \div 3$