

Name _____

***Welcome to pre-Algebra! Some things you need to understand...

- You need to show your work on notebook paper, using the lines and not the margins for the most part. While 'scratch work' is a thing, keep it separated from your problem solving, but keep it near so you can find it, if necessary.
- Get used to being organized with your work and always demonstrating how you arrived at your answer.
- Conversations are critical for you to learn to explain your thought process. When learning Algebra, you are like an attorney in a court of law defending a client. You must provide evidence to prove your point.
- Don't stress yourself out! This packet is for exploration, not perfection. For some, that is easier said than done.
- It's important you enjoy what you are learning. Embrace getting to know math at a higher level, with higher expectations and rigor.
- A grade is a grade. Don't allow a grade to be your focus but the content you are learning. You are learning new material so how can you be perfect at it?
- If there is something with which you are unfamiliar, do some research. Don't settle for the 'I don't know how to do this' attitude.
- Remember, my job is to get you ready for the next level. While I know you are sixth graders, you are also 'going to be 7th grade Algebra students'.
- Happy solving!!

Some books to consider...

Evil Genius by Catherine Jinks

Forever Changes by Brendan Halpin

Geek Abroad by Piper Banks

All of the Above by Shelley Pearsall

Hannah, Divided by Adele Griffin

A Higher Geometry by Sharelle Byars Moranville

Guinness Book of Records by Time Inc

Mathematicians are People Too by Luetta Reimer & Wilbert Reimer

- 3.) Calculate how to find 8 % of 40.
- 4.) What percent of 60 is 20?
- 5.) 15 is 20 % of what number?
- 6.) Create a factor tree for the following numbers. Write their prime factorization using exponents. *Watch a video to learn how

108

72

- 7.) David wrote down his favorite numbers in a list:
1, 2, 9, 13, 17, 20, 24, 27, 29, 30, 33, 36, 39, 43, 45, 47, 49, 51
 - a. What are the prime numbers in the list?
 - b. What are the composite numbers in the list?
 - c. What are the odd numbers in the list?
 - d. What are the perfect squares?
- 8.) There are 43 girls and 25 boys in the Cardinal Newman Choir.
 - a. Write the ratio of boys to girls.
 - b. Is the ratio a part-to-part or part-to-whole relationship? Why?
 - c. Write the ratio to girls to the total number of students.
 - d. Which is greater, the ratio of girls to the total or boys to the total? Explain

9.)

Is the number to the left of each row divisible by the number at the top of each column? Check the boxes.

| | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---------|---|---|---|---|---|---|---|---|----|
| 995,568 | | | | | | | | | |
| 477 | | | | | | | | | |
| 2,583 | | | | | | | | | |
| 70,688 | | | | | | | | | |
| 305,841 | | | | | | | | | |
| 735 | | | | | | | | | |
| 6,696 | | | | | | | | | |
| 831,170 | | | | | | | | | |

10.)

| Jobs | # of Students |
|-----------------------|---------------|
| Online Game Designer | 84 |
| Movie Director | 92 |
| Professional Musician | 124 |
| Professional Athlete | 100 |

TOTAL

The sixth-grade class was asked the question, "What job would you like the best?" The results are shown in the table. What percent of the sixth-grade class, to the nearest whole percent, said that they would like to be a movie director?

11.) Trader Joe's sells three different size bags of pistachios. The big bag is 20 ounces and costs \$8.00. The medium bag is 16 ounces and costs \$7.20. The small bag is 12 ounces and costs \$6.00.

- What is the cost per ounce for each bag?
- What size is the best buy? Explain your reasoning.

12.) Courtney burns 180 calories per 30 minutes of hiking. Complete the table to chart her calorie expenditure for different amounts of time.

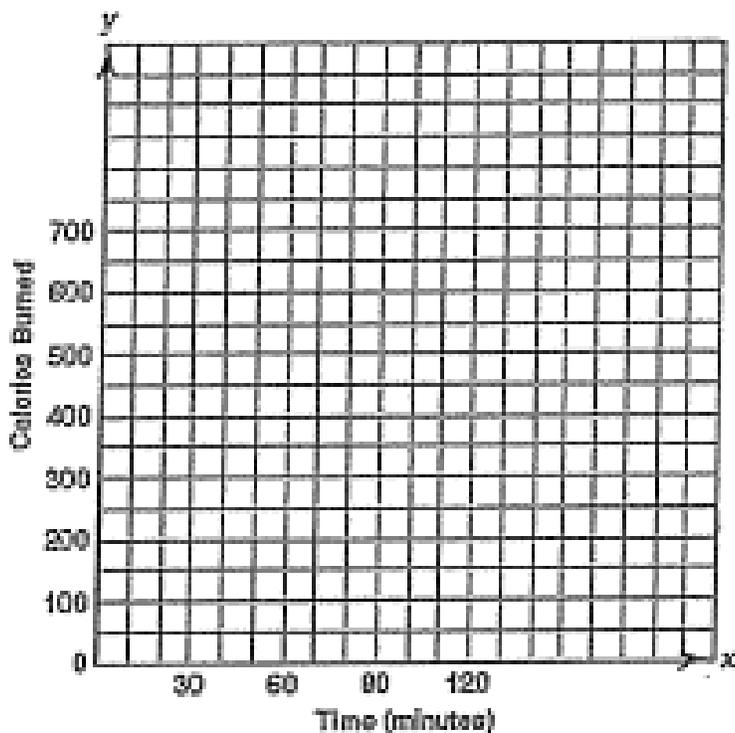
| | | | | | | |
|-----------------|-----|----|---|----|----|----|
| Time (min) | 30 | 10 | 5 | 20 | 75 | 45 |
| Calories burned | 180 | | | | | |

How many calories will Courtney burn if she hikes for 1 hour?

How many minutes would she have to hike to burn 240 calories?

How many calories can she burn if she hikes for 105 minutes?

Plot the table of values on the graph.



13.) Write the next three terms of the sequences.

53, 46, 39, _____, _____, _____

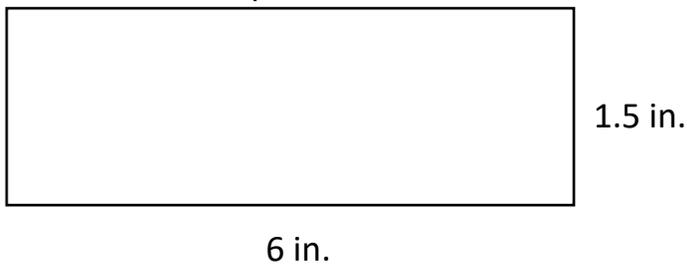
-1, 2, 8, 11, _____, _____, _____

14.) Determine the least common multiple for each pair of numbers.

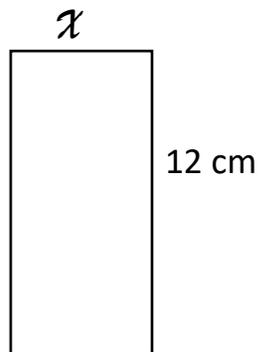
54 and 72

60 and 9

15.) Calculate the area and perimeter.



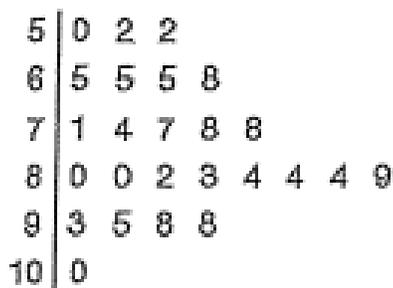
16.) Given the area of 96 cm^2 , calculate the missing side and the perimeter of the rectangle.



17.) Place an inequality ($<$, $>$, $=$) in the spaces to make the statements true.

$\frac{4}{5}$ _____ $\frac{7}{15}$ -8.9 _____ $|-9|$

18.) The stem-leaf plot shows the test scores students received on the mid-term exam for Mr. Bailey's sixth grade science class.



- Create a key
- Write 2 statements of facts about the data represented.

19.) Scale up or scale down to find the missing measurement.

a. $\frac{42 \text{ miles}}{1 \text{ gallon}} = \frac{? \text{ miles}}{8 \text{ gallon}}$ $\frac{\$127.50}{15 \text{ hours of work}} = \frac{?}{1 \text{ hour of work}}$

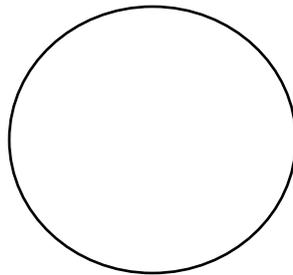
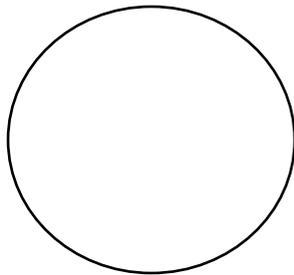
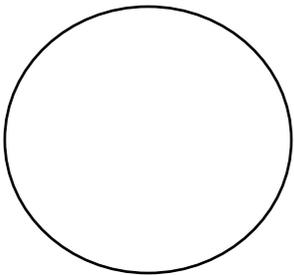
20.) Sort the following numbers into the appropriate set.

- 17, 1.7, 7, $\frac{1}{2}$, - 200, 9.9, $5\frac{5}{6}$, - 1, 41

Not Integers

Negative Integers

Positive Integers



21.) The frequency table shows the ages of the people who attended the Clark Family Reunion. Use the data to create a histogram, including all labels.

| Age | Frequency |
|--------|-----------|
| 0-14 | 9 |
| 15-29 | 17 |
| 30-44 | 14 |
| 45-59 | 14 |
| 60-74 | 12 |
| 75-89 | 3 |
| 90-104 | 1 |

22.) Solve using the Order of Operations HINT: Underline and rewrite

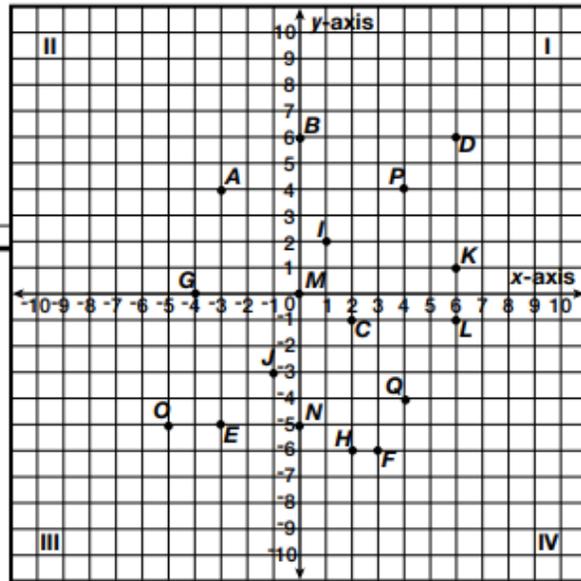
$$6 + 4 \cdot 7 - (10 - 9)$$

$$3 + 5^3 \cdot 8$$

$$10 + 8 \cdot (3 + 4)^3$$

Ask Yourself

- Did I count along the x -axis to find the first coordinate?
- Did I count along the y -axis to find the second coordinate?



Use the graph at right. Write the coordinates for each point.

1. K

2. F

3. B

4. E

5. A

6. L

7. M

8. I

9. J

10. P

Use the graph above. Name the letter of the point at each ordered pair.

11. $(2, -1)$

12. $(-5, -5)$

13. $(6, 6)$

14. $(-4, 0)$

15. $(0, -5)$

16. $(4, -4)$

23.)

24.) Convert each mixed number to an improper fraction or vice versa.

$$7\frac{4}{5} = \underline{\hspace{2cm}} \quad \frac{95}{5} = \underline{\hspace{2cm}} \quad 11\frac{6}{7} = \underline{\hspace{2cm}} \quad \frac{43}{3} = \underline{\hspace{2cm}}$$

25.) List 4 equivalent fractions. $\frac{4}{12}$, _____, _____, _____, _____

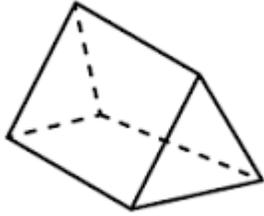
26.) Determine the greatest common factor for each pair of numbers.

- a. 18 and 24 b. 75 and 180 c. 24 and 120

27.) Solve for the unknown variable.

$$y = 29.3 + 46.92 \qquad \frac{28}{x} = 8.75 \qquad 16w = 60.8$$

28.) Name the solid. List how many edges, vertices and faces are in the prism.



29.) Complete the table by writing yes or no if the number belongs to the given set of numbers.

| | Natural Numbers | Whole Numbers | Integers | Rational Numbers |
|----------------|-----------------|---------------|----------|------------------|
| 29 | | | | |
| 16.09 | | | | |
| 0 | | | | |
| $\frac{12}{3}$ | | | | |

30.)

Translate each verbal phrase into an algebraic expression or equation.

1) Seven less than a number is 15

2) The total of 5 and c

3) 7 less than m

4) The sum of a number and 16 is 23

5) the score increased by 8 points

6) The quotient of w and 10 is equal to 7

7) 17 more than some number is 57

8) \$12 less than the original price is \$48

Translate each algebraic expression or equation into a verbal phrase.

9) $9y$ _____

10) $x - 8 = 14$ _____

11) $\frac{y}{12} = 24$ _____

12) $k + 12$ _____

31.)

Joanne is campaigning for class president and plans to distribute some campaign materials: 20 flyers and 16 buttons. She wants each classroom to receive an identical set of campaign materials, without having any materials left over. What is the greatest number of classrooms Joanne can distribute materials to?

32.)

Jackson Stationery sells cards in packs of 11 and envelopes in packs of 13. If Kina wants the same number of each, what is the minimum number of cards that she will have to buy?

33.) Calculate the quotient.

$$674 \div 0.82 = \underline{\hspace{2cm}}$$

$$876 \div 70 = \underline{\hspace{2cm}}$$

$$508 \div 31 = \underline{\hspace{2cm}}$$

34.) Calculate the product.

$$46.7 \times .02 = \underline{\hspace{2cm}}$$

$$135.24 \times 0.9 = \underline{\hspace{2cm}}$$

$$1,395 \times 0.031 = \underline{\hspace{2cm}}$$

35.)

Use the list of numbers to answer the question below.

22, 25, 14, 11, 23, 27, 46

What is the mode?

- A. 23
- B. 24
- C. 35
- D. No mode

36.) Calculate the mean with the data given in question 35.

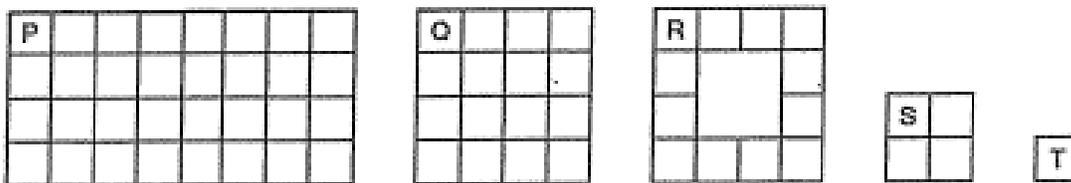
37.)

Mary lives $1\frac{3}{4}$ miles from school. She rode her bicycle to school and back each day for 5 days.

Which expression shows how to estimate the number of miles she rode?

- A. $(5 + 2) \times 2$
- B. $5 \times (2 + 2)$
- C. $(7 + 2) \times 2$
- D. $7 \times (2 + 2)$

38.) Use the figures to answer find the value of each.



- a. If $P = 1$, then $Q = \underline{\quad}$, $R = \underline{\quad}$, $S = \underline{\quad}$, and $T = \underline{\quad}$.
- b. If $Q = 1$, then $P = \underline{\quad}$, $R = \underline{\quad}$, $S = \underline{\quad}$, and $T = \underline{\quad}$.
- c. If $R = 1$, then $P = \underline{\quad}$, $Q = \underline{\quad}$, $S = \underline{\quad}$, and $T = \underline{\quad}$.
- d. If $S = 1$, then $P = \underline{\quad}$, $Q = \underline{\quad}$, $R = \underline{\quad}$, and $T = \underline{\quad}$.

39.) Order the following numbers from greatest to least.

0.75 , 40% , $\frac{1}{5}$, 1.0 , $\frac{2}{3}$, 90% , 0.05

40.) Plot a point and label with a letter where each decimal should be placed.

a. 0.75

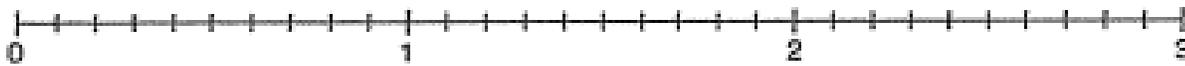
b. 1.4

c. 0.6

d. 2.2

e. 0.29

f. 1.55



41.)

What is the value of $4x + 9$, when $x = 4$?

A. 13

B. 17

C. 25

D. 52

42.)

Elizabeth has some stickers. She divides her stickers equally among herself and two friends. Each person gets 4 stickers. Which equation represents the total number, s , of stickers?

A. $s + 3 = 4$

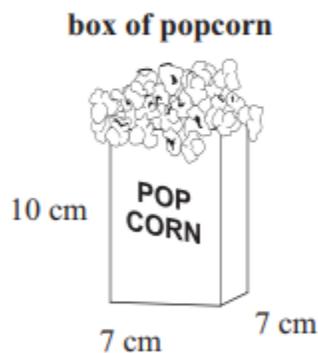
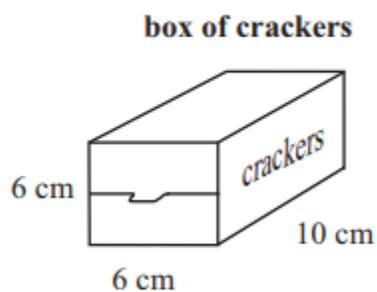
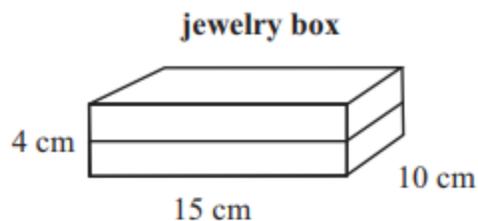
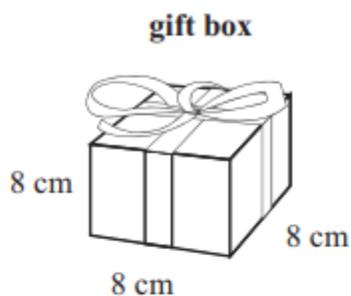
B. $s - 3 = 4$

C. $\frac{s}{3} = 4$

D. $3s = 4$

43.)

Use the pictures below to answer the question.



Which box has the greatest volume?

- A. gift box
- B. jewelry box
- C. box of popcorn
- D. box of crackers

44.)

Which list of numbers is ordered from least to greatest?

- A. 167,213, 161,455, 17,400, 11,633
- B. 10,354, 10,600, 104,321, 106,213
- C. 160,233, 171,141, 11,645, 16,703
- D. 12,209, 12,902, 125,466, 125,464

45.)

Use estimation to answer the question. Which sum is greater than 1?

A. $\frac{17}{24} + \frac{13}{21}$

B. $\frac{9}{24} + \frac{10}{21}$

C. $\frac{12}{24} + \frac{9}{21}$

D. $\frac{11}{24} + \frac{8}{21}$

46.)

Use the diagram to answer the question below.



When folded along the dotted lines, which geometric solid is formed?

- A. cylinder
- B. pyramid
- C. rectangular prism
- D. triangular prism

47.)

Use the chart below to answer the question.

Frequency Chart

| outcome | red | blue | white | green |
|-----------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| frequency |  |  |  |  |

Nan randomly takes a marble from a bag, records the color in the chart, and then returns the marble to the bag. She does this 30 times and records her results in the chart each time. The chart shows her results. What is the experimental probability of drawing a white marble?

- A. $\frac{3}{30}$
- B. $\frac{7}{30}$
- C. $\frac{9}{30}$
- D. $\frac{11}{30}$

48.)

Match each expression with one of the properties shown.

- 1. _____ $11 + 0 = 11$
- 2. _____ $x \times (y \times z) = (x \times y) \times z$
- 3. _____ $8 + (-8) = 0$
- 4. _____ $14 + 20 = 20 + 14$
- 5. _____ $2 \times \frac{1}{2} = 1$
- 6. _____ $22 \times 1 = 22$
- 7. _____ $(19 + 12) + 8 = 19 + (12 + 8)$
- 8. _____ $a \times 9 = 9 \times a$
- 9. _____ $7(4 + 11) = 7(4) + 7(11)$

- a. commutative property of addition
- b. commutative property of multiplication
- c. associative property of addition
- d. associative property of multiplication
- e. additive identity
- f. multiplicative identity
- g. distributive property
- h. additive inverse
- i. multiplicative inverse

49.) Combine like terms to simplify the expression. HINT: c^3 is not the same as c

$$c^3 + 4c - 4c^3$$

$$11q + 5p - 9q + 7p$$

$$11d + 5f - 21d + 5 - 8$$

$$2 - 5t + 8 + 5t - 8$$

50.) Convert the given measurement to the new measurement.

0.000061 m to mm

0.0000003 km to cm

0.0752 m to mm

25,600,000 mm to km

37,200 cm to m

3,370,000 m to km

670 cm to km

82,000 cm to m

4.31 cm to m

0.0013 km to cm