Name: _____

ALGEBRA 1

2025 SUMMER WORK

Name: _____

ARTICLE: Why Do I Need To Learn Algebra?

Directions: You will be reading excerpts from an article and answering questions on the importance of Algebra 1 in higher-level math classes and in real-world situations.

WHY DO I NEED TO LEARN ALGEBRA?

Do you love math? Or are numbers the bane of your existence? Whether you're a fan of math or not, it's an important subject to learn. Just think of all the things you couldn't do without basic math! Math helps you buy food at the grocery store. It even helps you cook and divide it among your family members.

Most of us start our mathematical journey learning the basics of addition. From there, we move on to subtraction. After we've mastered the pluses and the minuses, we advance to multiplication and division. Sooner or later, we all reach the point where we make the leap into more advanced math. What are we talking about? Algebra, of course!

Some people refer to algebra as the point at which letters get involved in math. **Algebra is the study of mathematical symbols and the rules for manipulating those symbols.** It forms the basis for advanced studies in many fields, including mathematics, science, engineering, medicine, and economics.

STOP! Answer the following question.

1. What is the definition of algebra, according to the article?

   _____

   _____

   _____

In its simplest form, algebra involves using equations to find the unknown. Real-life problems probably drove the development of algebra. The subject dates back over 4,000 years to the ancient Babylonians.

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Here's an example. A wagon carries a load of hay bales. Suddenly, it hits a rut in the road. Six bales fall off! Luckily, ten bales are left. How many bales of hay did the wagon have before it hit the rut? You can use the algebraic expression "**x - 6 = 10**" to answer this question. In this equation, **x represents the unknown** (how many bales of hay were on the wagon at the start). Six is the number of hay bales that fell off, and ten is the number still on the wagon. By adding six to each side of the equation, you'll find that x equals 16. So, the wagon had 16 hay bales before it hit the rut in the road.

STOP! Answer the following questions.

2. Explain how you would solve the equation "x - 6 = 10".

   _____

   _____

3. What does "x" represent in an equation? _____

Algebra gets much more complicated than that simple equation. This leaves many students wondering when, if ever, they'll use algebra in real life. Does it have any use? If not, why do you have to learn it?

For starters, **algebra is foundational for other classes**. That means you'll apply what you learn in algebra throughout school. Learning algebra helps to develop your critical thinking skills. That includes problem solving, logic, patterns, and reasoning. You need to know algebra for many professions, especially those in science and math. Not planning to go into those fields? You'll probably still use algebra without even realizing it!

Consider these examples: It's time to fill up your car's gas tank. The price of gas per gallon is $3 and you only have $25 to spend. How much gas can you purchase? This can be answered by the algebraic equation, "3x = 25." You must divide each side of the equation by 3 in order to isolate x. In this equation, x is equal to 25 divided by 3, which is 8.33 gallons of gas. If you need 10 gallons of gas, how much money do you need? When you solve that equation, you have algebra to thank!

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STOP! Answer the following questions.

4. Use the following scenario to solve for x: The cost per gallon for gas in Massachusetts is **$3.56**. Let's say you need to stop for gas, but you only have **$40** to spend. How many gallons, ***x***, can you get?

5. Make a list of 3 reasons why Algebra is important to learn in school.

    1.

    2.

    3.

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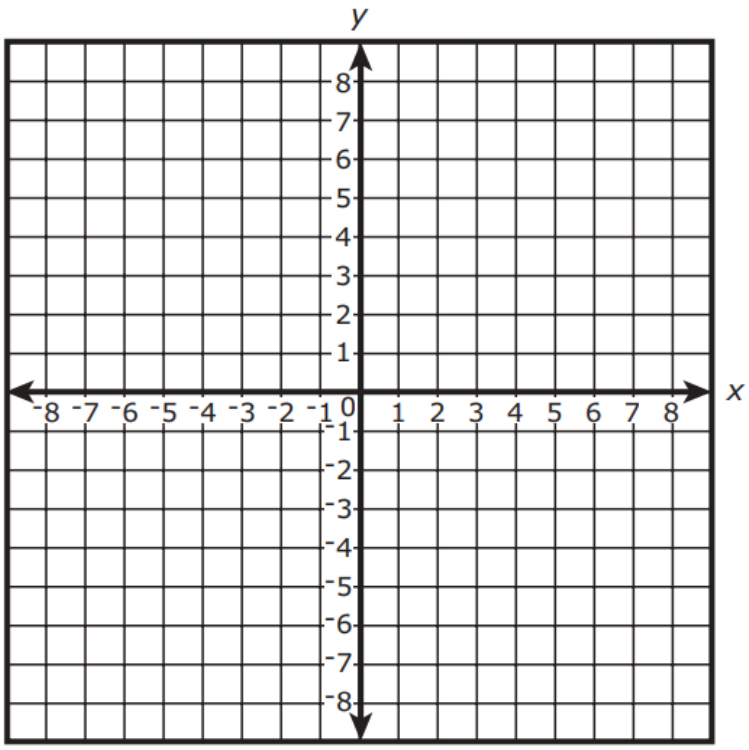
GRAPHING COORDINATE POINTS

Directions: Graph each location on the coordinate plane. Make sure to label each point!

1. The library is at (-6, 7).
2. The park is at (1, 4).
3. The restaurant is at (5, 2).
4. The grocery store is at (-5, -6).
5. The high school is at (8, -5).



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LINEAR RELATIONSHIPS

Callie's Catering Company prepares for an event by setting up tables and chairs. Each **table** is set with **8 chairs**.

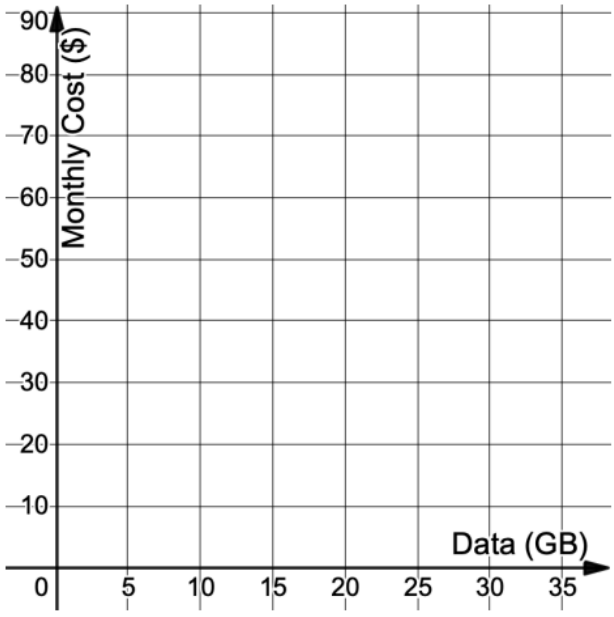
1. Callie needs to make a spreadsheet so that her crew will know what to bring to each event. Help her fill out the missing information.

Tables	Chairs
1	
2	
3	
4	
5	

T-Mobile has a deal on phone plans. Every month, you will receive 5 GB of data for $20. Complete the table and graph to show how much money you will pay for this plan after 4 months.

2. Complete the table and graph below to show how much you will pay after 4 months.

Data (GB)	Total Cost ($)
5	
10	
15	
20	



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3. Cans of soup are stacked for a display at the grocery store. A stack of 3 cans stands 12.75 inches tall. How tall would a stack of 5 cans be?

4. Your grade for your summer work packet begins at a 100. For every day it is late, you will lose 5 points. The equation **y = -5x + 100** represents your grade, ***y***, after ***x*** days.

    a. What is your grade if the packet is turned in on time?

    b. What is your grade if the packet is 1 day late?

    c. What is your grade if the packet is 10 days late?

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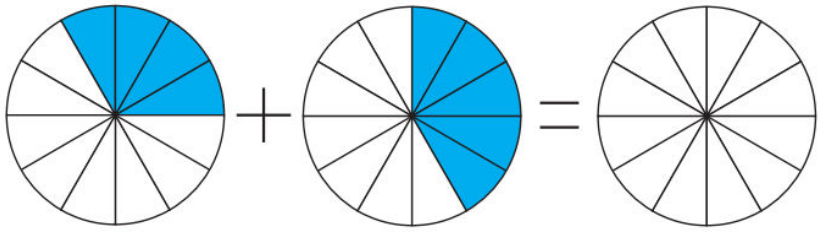
FRACTIONS

1. What fraction is represented by the picture below?

2. What fraction is represented by the picture below?

3. Add the fractions below by completing the image:



$\frac{4}{12}$ + $\frac{5}{12}$ =

4. Add the fractions below by completing the image:

$\frac{1}{5}$ + $\frac{2}{5}$ =