

ALGEBRA 1 FINAL EXAM REVIEW 2016



You are walking down from your apartment, which is 40 feet above the street. You are walking downstairs at a rate of 2 feet per second. This can be represented by the equation:

$$H = 40 - 2s$$

- Use the equation to calculate your height after 1 second, 10 seconds, and 25 seconds.
- What would your height be after 30 seconds? Does this make sense? Explain.
- Create an equation that would represent some starting on a lower floor and walking faster downstairs. Explain your equation.
- Explain what an equation of $H = 40 + 2s$ would mean is happening.



Solve

$$-6(6m + 2) = -8m - 40$$

Solve

$$5(x + 1) = 8(x - 2)$$



Bob's Car Rental is offering a special of \$45 a day for a convertible as long as you purchase the car damage protection insurance for \$30.

What are the **independent and dependent variables** in the above scenario?

You are in charge of buying the hamburger and chicken for a party. You have \$60 to spend. The hamburger costs \$2 per pound and chicken is \$3 per pound.

What are the **variable amounts** in the above scenario?



Bob's Car Rental is offering a special of \$45 a day for a convertible as long as you purchase the car damage protection insurance for \$30.

- Write an **equation** that represents the cost of the rental car.
- How much will it cost to rent the car for 2 weeks? Support your answer.

You received \$200 for your birthday and plan to use it to buy video games. You can buy a new game for \$60 and used games cost \$25. Write an inequality that represents the different amounts of games you can buy.

- Write an **inequality** that represents the number of new/used games you can buy and still stay within your budget of \$200.
- Could you afford 3 new games and 1 used game? Support your answer.
- Give a combination of games that you can afford. Prove that it works.



The cost of a long distance telephone call is a function of the time spent talking, in minutes. The rule $C(m) = 0.09m$ describes the charge for one company.

- Find how much it would cost him to make calls of the following lengths: 10 min, 45 min, 1 hour, 18 min. Show your calculations.
- What are the domain values? What do these number means?
- What are the range values? What do these numbers mean?

You buy orange juice for \$4.50 a bottle. The cost can be found using the function $C(b) = 4.5b$ where b is the number of bottles purchased.

- Evaluate the function for the domain $\{1,2,3,4,5\}$
- Name a domain value that would not make sense to evaluate this function for. Explain your answer.
- Would it be reasonable to have a range value of -10? Explain why or why not.



Zane and his cousin are playing a game where they pick up colored sticks. Zane currently has 30 points and likes to pick up the indigo sticks, earning 5 points every turn. His cousin just lost all his points on the previous turn, and has a strategy to catch up by getting all the blue ones, earning 8 points per turn. In a certain number of turns, the score will be tied. How many points will they each have?

Solve using a table.

Austin wants to join a new gym, but needs to start by selecting a membership plan. With the first membership plan, Austin can pay \$200 to join and then \$15 a month. Alternately, he can get the second membership plan and pay \$40 per month with no cost to join.

For how many months would the cost be the same? Use a table to solve.

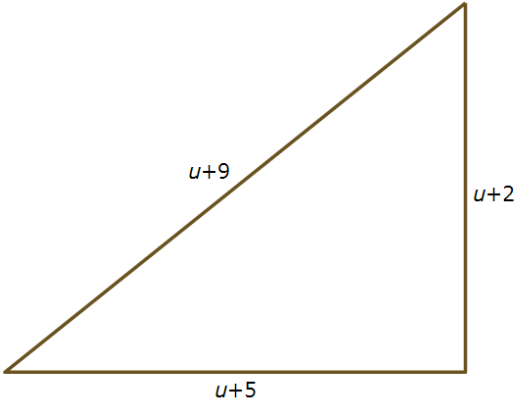
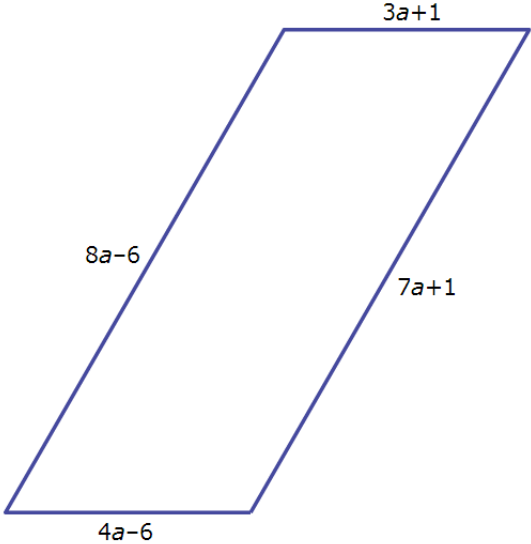
Your allowance is \$30 a month and will increase by \$5 each year.

- Is this arithmetic or geometric?
- Write a rule for this and find how much you will be making after 3 years.



You start a new job where you are paid \$1 the first day and each day your pay will be twice as much as the day before.

- Is this arithmetic or geometric?
- Write a rule for this and find how much you will make on the 10th day.

□

$(q^3 + 2q + 5) + (q^3 + 6q^2 + q + 5)$	$(9z^2 + 8z + 8) - (6z^2 - 7)$
<p>Find the perimeter. Simplify your answer.</p> 	<p>Find the perimeter. Simplify your answer.</p> 

□

<p>Find the product. Simplify your answer.</p> $-4d^2(2d^2 + 4)$	<p>Find the product. Simplify your answer.</p> $3t(-2t^2 + 3t)$
<p>Find the product. Simplify your answer.</p> $-4z(3z^2 - 2)$  <p>A student answered $12z^3 + 8$ to the problem above. Is this correct? Explain.</p>	<p>Find the area. Simplify your answer.</p> 

□

<p>Solve each equation by factoring.</p> $p^2 - 10p + 24 = 0$	<p>Solve each equation by factoring.</p> $4x^2 - 5 = -19x$
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Solve each equation with the quadratic formula.

$$5n^2 + 4n - 2 = n$$

Solve each equation with the quadratic formula.

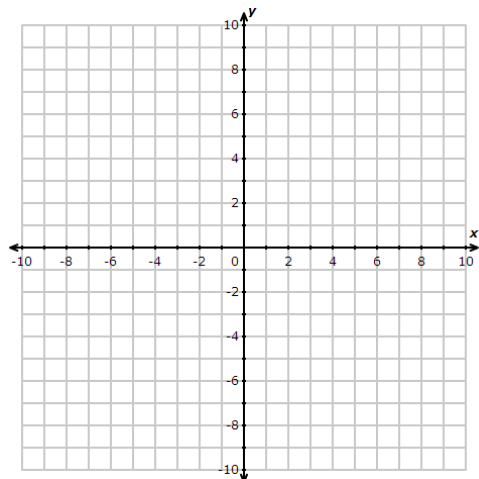
$$12x^2 + 2x + 12 = 10$$

Create a scatter plot for the following data. Determine from your graph whether there is a correlation between the number of hours spent in the mall and the number of dollars spent. Be sure to include all necessary labels on your graph.

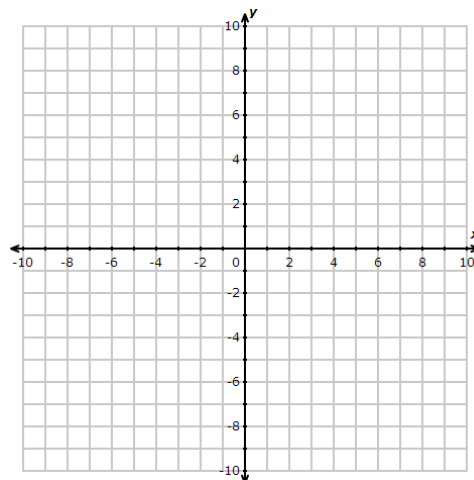
Hours in Mall	10	8	9	3	1	2	5	6	7	8	2	3
Dollars spent	40	15	24	20	10	35	50	70	18	25	100	60

What can you conclude from your graph?

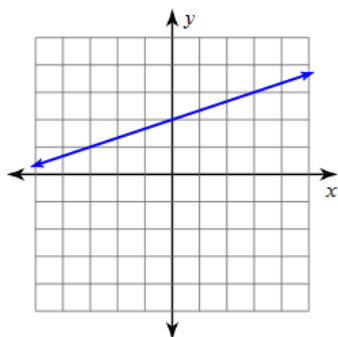
Graph the following line: $y = 2x + 3$



Graph the following line: $y = \frac{1}{2}x - 4$



Find the slope of the line shown:



Find the slope of the line shown:

