

8 Algebra CC

Unit 7 Review (Applications with Linear Functions)

Important Terminology

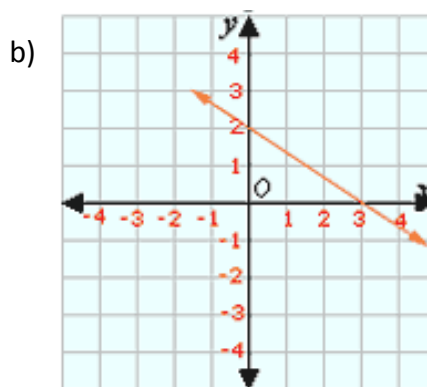
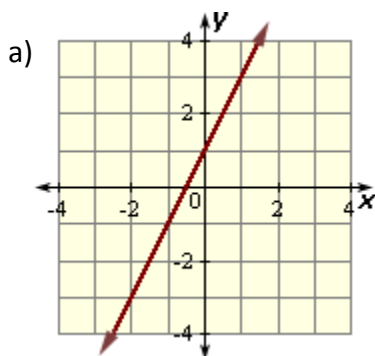
slope rate of change *constant* rate of change *average* rate of change interval
y-intercept x-intercept

What should I be able to do?

1. Calculate the rate of change (slope) of a line and explain its meaning in the context of a situation.
2. Calculate the average rate of change over a specified interval.
3. Identify x and y-intercepts and explain their meaning in the context of a situation.
4. Write the equation of a line from a graph.
5. Write the equation of a line given a set of points or a table of values.
6. Write the equation of a line from a descriptive situation.
7. Identify the rate of change and y-intercept in an equation and explain their meaning in the context of a situation.

Practice Problem Set

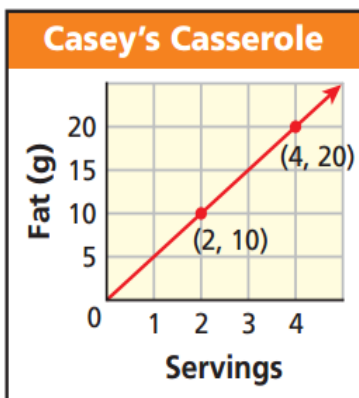
1. Write the equation of the line pictured in each graph below.



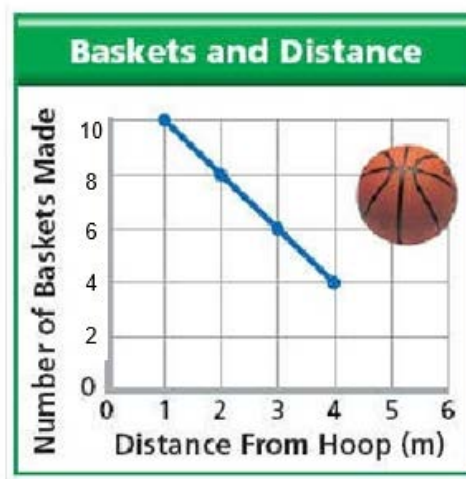
2. Write the equation of a line that passes through the points $(-4, -20)$ and $(12, 36)$.
3. Write the equation of a line with an x-intercept of 3 and a y-intercept of 2.

4. Consider the graphs pictured below. Calculate the rate of change. Explain its meaning in the context of the situation.

a)



b)

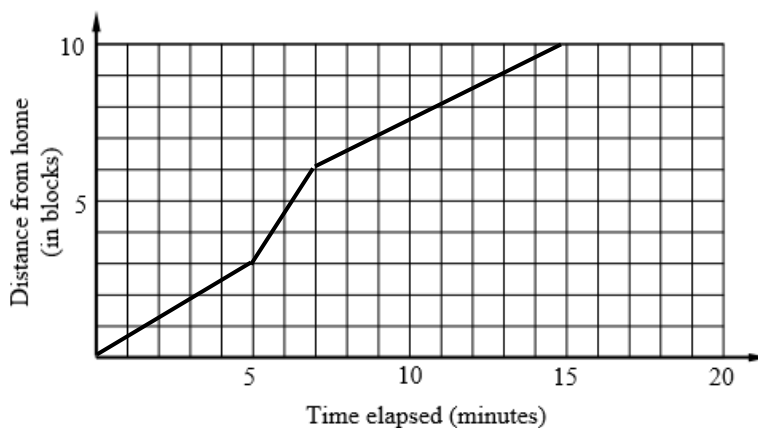


5. Michael is walking from home to a subway stop that is 10 blocks away. Calculate Michael's average rate of change, in blocks per minute, for each of the following intervals.

0 to 5 minutes:

5 to 7 minutes:

7 to 15 minutes:



During which interval is Michael moving the slowest?

During which interval is Michael moving the fastest?

6. Before leaving math class, students were instructed to pick a card out of a bag that described a linear relationship. Each student was then asked to write an equation that represented the relationship. Two student's answers are shown below. Which student wrote an incorrect equation? Explain your reasoning.

STUDENT 1

John went trick or treating and received 50 pieces of candy. He decided to eat 3 pieces per day. Represent the relationship between the number of pieces John has remaining (y) after x days.

$$y = 3x + 50$$

STUDENT 2

Mary received 60 dollars from her grandmother for her birthday. She decided to start a savings account with the money and deposit \$10 each week for the next year. Represent the relationship between the amount of money in the savings account (y) after x weeks.

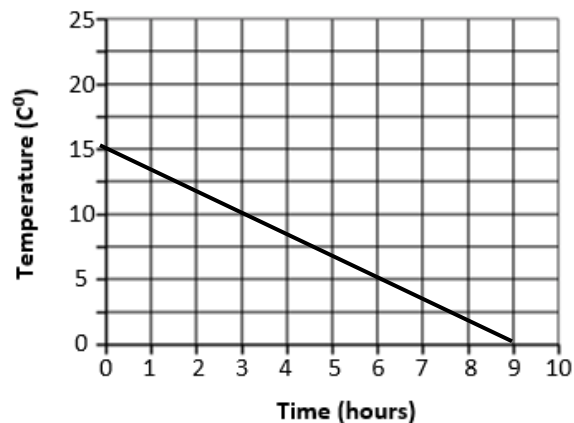
$$y = 60 + 10x$$

7. Betty is making a blanket. She goes to the store to buy a sewing kit and some fabric. Let f stand for the number of yards of fabric and c for the total cost in dollars that Betty spends at the store. The table below represents the relationship between the number of yards of fabric and total cost.

f	c
0	8
1	10.50
2	13
3	15.50
4	18

- Calculate the rate of change. What does it represent in the context of the situation?
- Identify the y-intercept. What does it represent in the context of the situation?
- Write an equation that represents the relationship.

8. The temperature in an experiment is reduced at a constant rate over a period of time until the temperature reaches 0°C .



- Identify the y-intercept. Explain its meaning in the context of the situation.
- Identify the x-intercept. Explain its meaning in the context of the situation.
- Calculate the rate of change. Explain its meaning in the context of the situation.
- Write an equation that represents the relationship between time and temperature.
Define each variable in your equation.
- On the 7th hour of the experiment, what temperature was being used?

9. Nicholas is going to the arcade to play video games. The linear function $y = 50 - 2.25x$ models how much money Nicholas has left (y) after playing x video games.

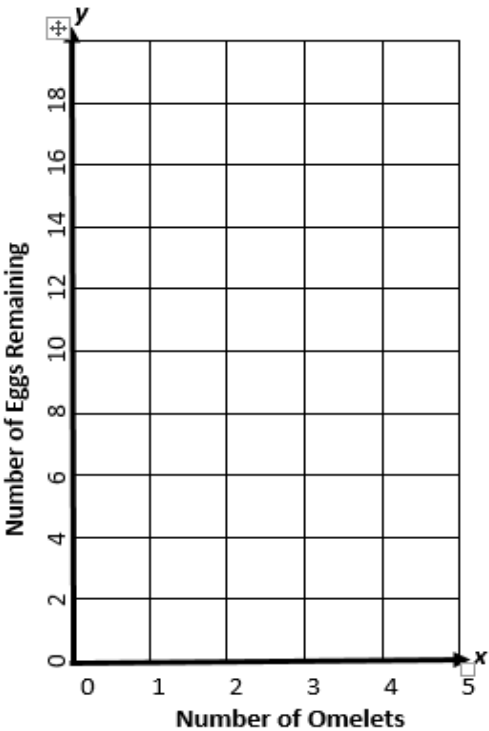
- a) Identify the y-intercept. Explain its meaning in the context of the situation.
- b) Identify the rate of change. Explain its meaning in the context of the situation.
- c) After a couple of hours of playing video games, Nicholas leaves the arcade with \$11.75 in his pocket. How many video games did he play?

10. The function rule $y = 18 - 2x$ represents the number of eggs (y) left in a carton after cooking x omelets.

- a. Graph the function using a domain of 0, 1, 2, 3 and 4.

Domain (x) Omelets					
Range (y) Eggs					

- b. Does it make sense to connect the points on the graph? Explain.



- c. Consider the table and graph you created in part (a) to answer the questions that follow.
 - How many eggs were in the carton before any omelets were made?
 - How many omelets can be made with the amount of eggs in the carton?