

**TEST NAME: Williams 7th Unit 3 R&P (COPY)**  
**TEST ID: 3017215**  
**GRADE: 07 - Seventh Grade**  
**SUBJECT: Mathematics**  
**TEST CATEGORY: School Assessment**

Student: \_\_\_\_\_

Class: \_\_\_\_\_

Date: \_\_\_\_\_

Read the passage - 'Ice Cream' - and answer the question below:

### Ice Cream

#### Ice Cream

Sage's uncle owns an ice cream shop, where Sage sometimes helps him after school or during the weekend. Her uncle has taught Sage about how to make ice cream and also about the history of the frozen dessert.

Ice cream has been made in the United States for many years. Records indicate that Thomas Jefferson served it to his guests in the late 1700s. Dolly Madison, the wife of President James Madison, served ice cream for her husband's inaugural ball in 1813. Since then, ice cream has become one of the most popular desserts in America, and more than 1.5 billion gallons are produced in this country each year.

In other parts of the world, ice cream has been consumed since long before the United States was founded. More than 1,000 years ago, ice cream was made in Arab cities, such as Cairo and Baghdad. It was sweetened with dried fruits and rose water and often contained yogurt as well as milk and cream. Catherine de Medici, an Italian woman who became queen of France in 1533, is said to have brought a recipe for ice cream from Italy to France. Shortly thereafter, French chefs began making ice cream, and it became a popular treat in France.

In recent times, ice cream is often served on a cone, a pastry made from wafer that often has a texture similar to that of a waffle. There is some dispute over who invented the ice cream cone. Some claim that the first ice cream cone was produced in 1896 by Italo Marchiony. The ice cream cone soon became very popular, and by 1924 there were 245 million cones produced. Some people still make cones by hand, but most are made by machines, which can produce cones very quickly. Some machines can make 150,000 cones every 24 hours.

Sage is helping her uncle make some ice cream. She wants to start with a batch of strawberry ice cream. The recipe calls for  $9\frac{1}{2}$  pounds of

strawberries,  $1\frac{3}{4}$  gallons of cream, and  $1\frac{1}{3}$  gallons of milk. This recipe will

make  $5\frac{1}{2}$  gallons of ice cream. Sage is going to serve some of the ice cream

to her friends, and she is hoping that they are delighted with the frozen treat she has made for them.

1. Read "Ice Cream" and answer the question.

How many pounds of strawberries per gallon of cream does Sage's recipe call for?

- A.  $5\frac{3}{7}$  pounds of strawberries per gallon
- B.  $7\frac{1}{8}$  pounds of strawberries per gallon
- C.  $7\frac{3}{5}$  pounds of strawberries per gallon
- D.  $16\frac{5}{8}$  pounds of strawberries per gallon
- 

2. Peyton recorded her height twice a year. She grew  $5\frac{1}{4}$  inches in  $3\frac{1}{2}$  years. What was Peyton's average growth rate per year?

- A.  $1\frac{1}{4}$  inches per year
- B.  $1\frac{1}{2}$  inches per year
- C.  $1\frac{3}{4}$  inches per year
- D.  $2\frac{1}{4}$  inches per year

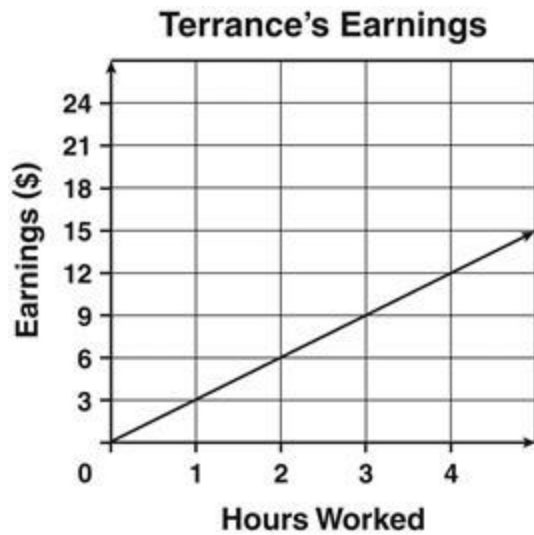
3. Susan walked  $1\frac{2}{3}$  miles in  $1\frac{1}{4}$  hours. How many miles can Susan walk in 1 hour?
- A.  $\frac{2}{5}$
- B. 1
- C.  $1\frac{1}{3}$
- D. 2
4. It took Melanie  $\frac{1}{3}$  of an hour to ride her bike  $2\frac{3}{4}$  of a mile. How many miles per hour can Melanie ride her bike?
- A.  $3\frac{1}{12}$
- B.  $6\frac{3}{4}$
- C.  $8\frac{1}{4}$
- D.  $16\frac{1}{2}$
5. Jane put a 12-in. tall bucket under a leak in her sink. The bucket fills at a constant rate of  $\frac{1}{2}$  in. every  $\frac{1}{6}$  of an hour. How many hours will it take to fill the bucket?
- A.  $\frac{1}{12}$
- B.  $\frac{2}{3}$
- C. 3
- D. 4
6. **The table below shows how much Terrance will earn for working different numbers of hours.**

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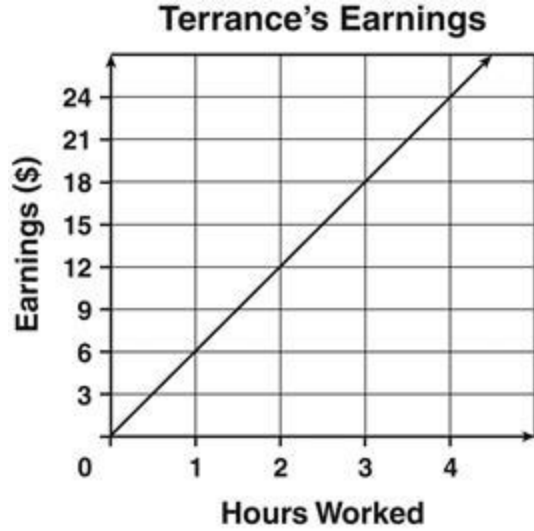
Terrance's Earnings	
Number of Hours Worked	Earnings
1	\$6.00
2	\$12.00
3	\$18.00
4	\$24.00

Which graph BEST represents the relationship in the table?

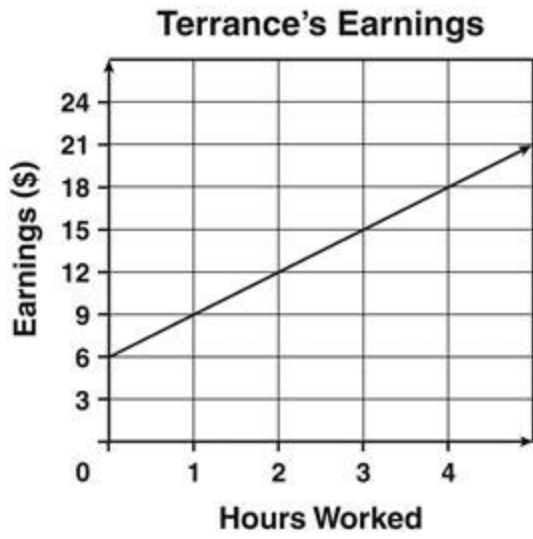
A.



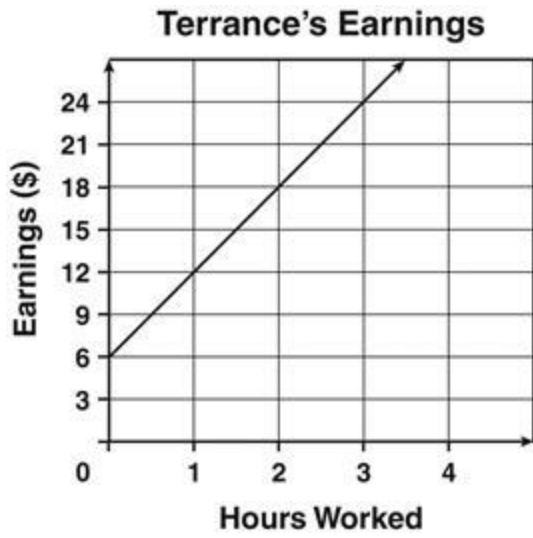
B.



C.

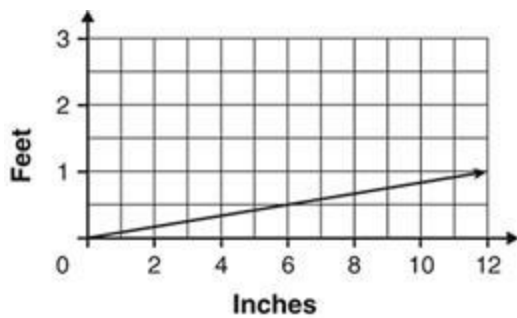


D.

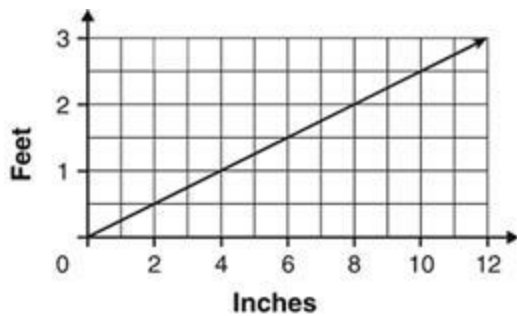


7. Which graph represents the number of inches in a foot?

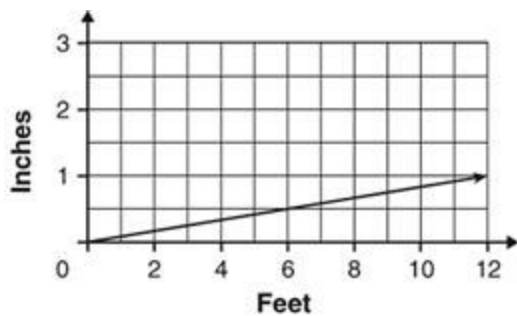
A.



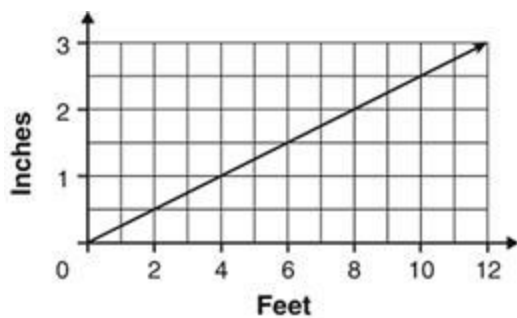
B.



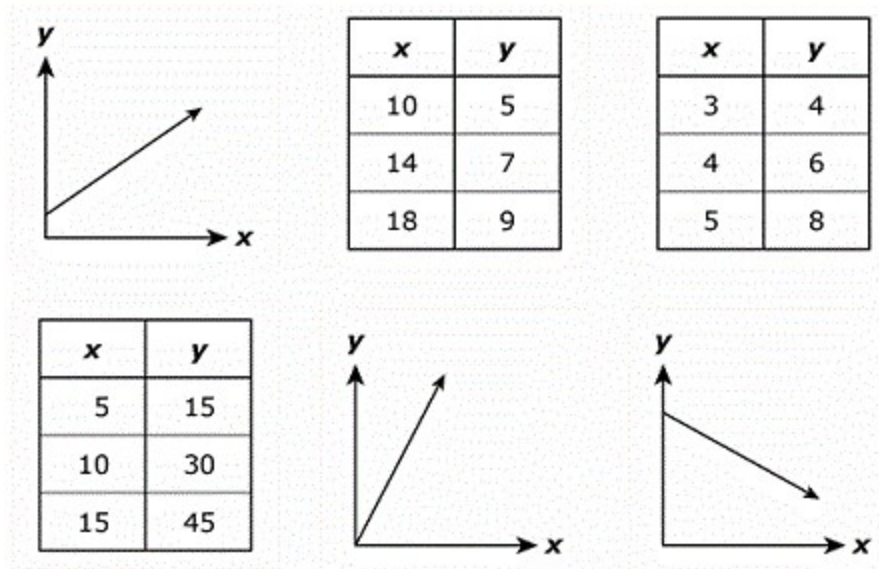
C.



D.



8. Which tables and graphs show a proportional relationship? Click on each table or graph that you select.



9. A farmer wants to determine how many pounds of fruit he can pick per minute. He finds that he can pick 6 pounds of fruit in 4 minutes, so he plots the point  $(4, 6)$  on a graph. If the farmer uses this point to make a line showing the relationship between the number of minutes he spends picking fruit and the number of pounds of fruit he picks, which of these points will also be on that line?

- A.  $(3, 2)$
- B.  $(5, 10)$
- C.  $(6, 9)$
- D.  $(7, 9)$



10. The aspect ratio, the ratio of the width to the height, of various computer monitors is listed in the table below.

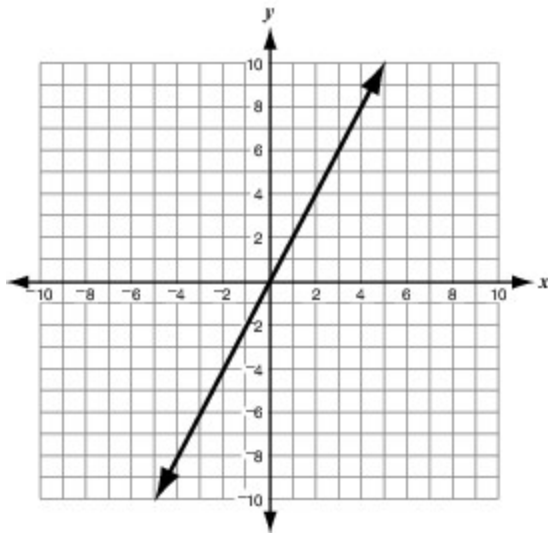
**Computer Monitor Aspect Ratios**

Monitor	Width	Height
A	1152	864
B	800	600
C	1920	1080
D	1600	1200

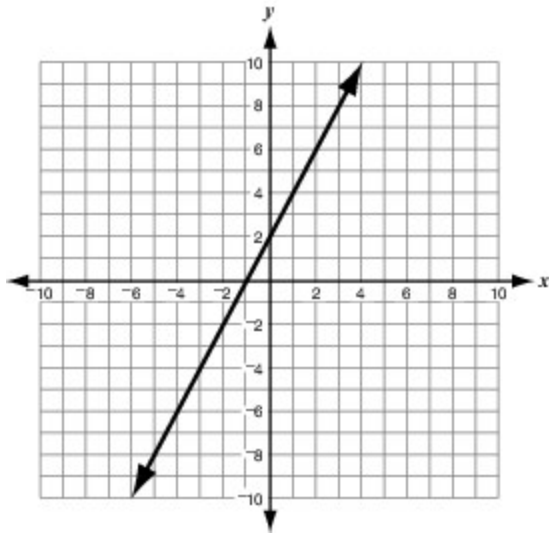
Which monitor has an aspect ratio different from the other three?

- A. Monitor A
  - B. Monitor B
  - C. Monitor C
  - D. Monitor D
11. Which graph shows a proportional relationship between  $x$  and  $y$ ?

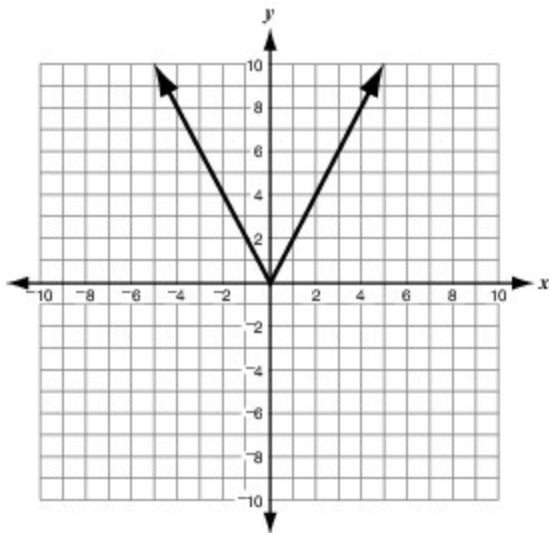
A.



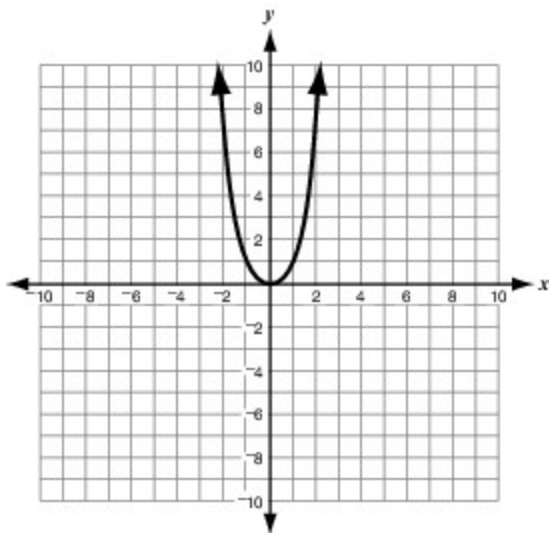
B.



C.



D.



12. The table of values below represents a proportional relationship.

$x$	$y$
2	7
4	14
—	35

What is the value of the missing number?

- A. 8
- B. 10
- C. 14
- D. 122.5

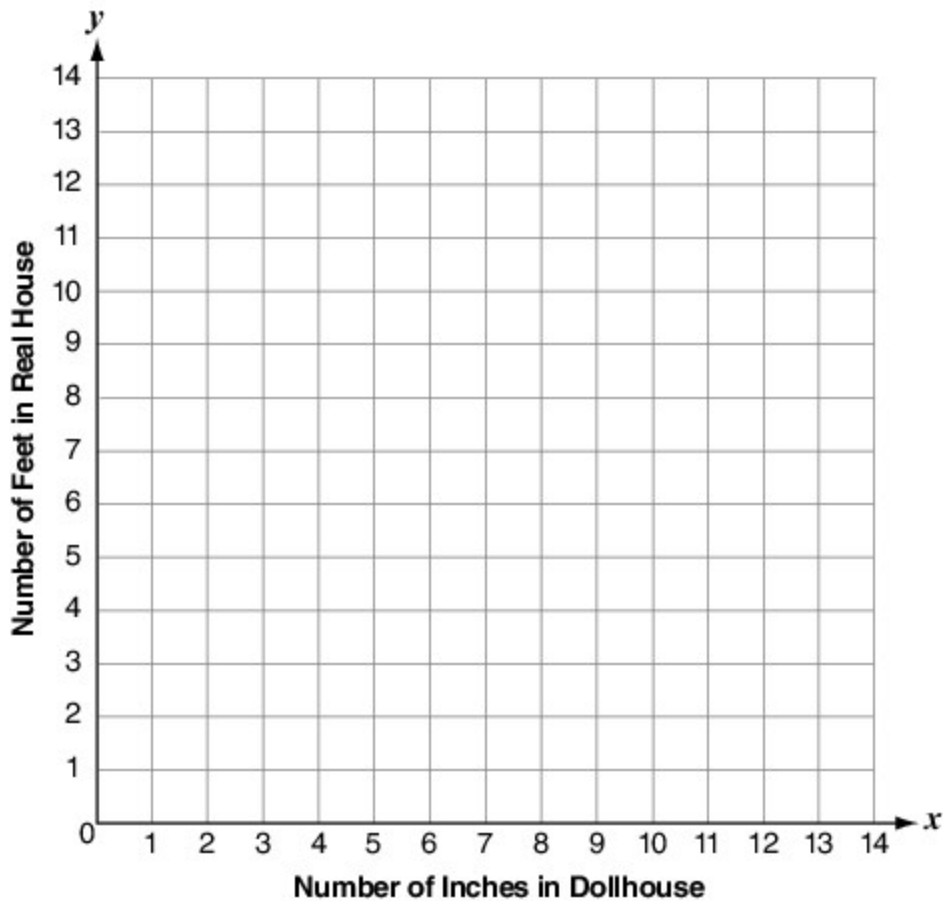
13. **Scale It**

Carly's grandfather makes dollhouses, complete with little pieces of furniture for each room. The dollhouse and furniture are created to scale; the dollhouse is a miniature version of a real house, and each piece of furniture is a tiny version of a real piece of furniture.

Part A. For one dollhouse, Carly's grandfather uses the scale 2 inches to 3 feet. In other words, a length of 2 inches in the dollhouse represents 3 feet in the real house. Fill in the table to show what lengths in the real house are represented by different lengths in the dollhouse.

Length in Dollhouse (in inches)	Length in Real House (in feet)
1	
2	3.0
3	
4	
5	
6	

Part B. Plot the points from the table on the grid below. Describe the graph that is formed.



Part C. Now find the ratio between the number of inches in the dollhouse and the corresponding number of feet in the real house. Divide each number in the first column by the corresponding number in the second column to find the ratio. (Round all ratios to the nearest hundredth.) What do you observe?

Length in Dollhouse (in inches)	Length in Real House (in feet)	Ratio (inches to feet)
1		
2	3.0	
3		
4		
5		
6		

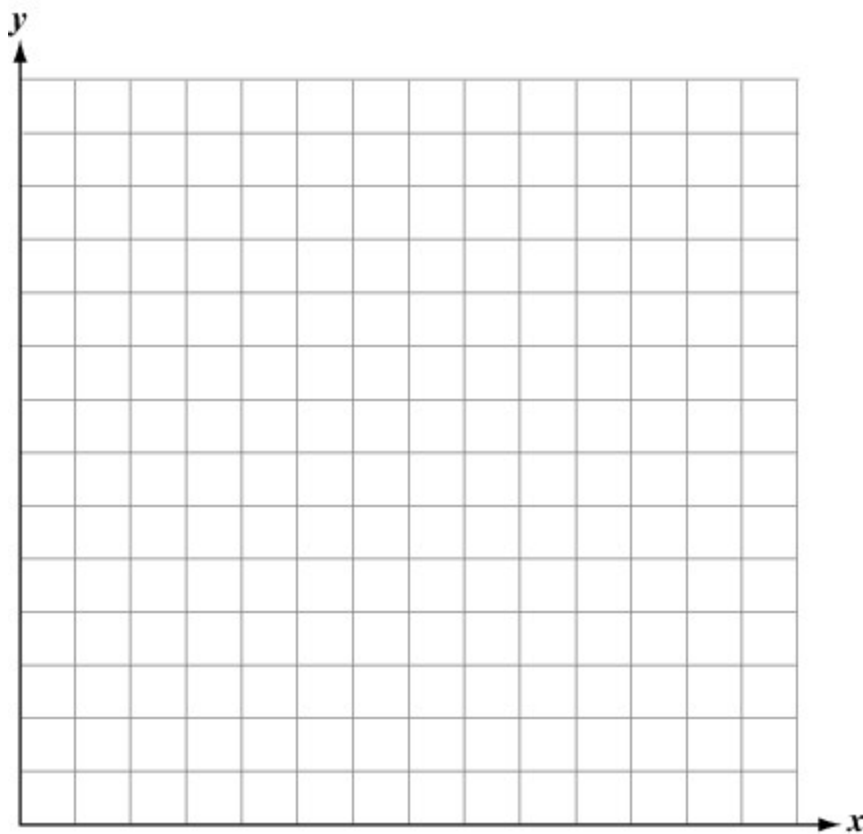
Part D. A ratio can be expressed in different ways: as a decimal, as a fraction, or in the form  $a$  to  $b$  or  $a:b$ . What is the ratio between the number of feet in the dollhouse and the number of feet in the real house?

The ratio between the number of feet in the dollhouse and the number of feet in the real house is 1 to \_\_\_\_\_.

If the ratio between two quantities is always the same, then the quantities are proportional.

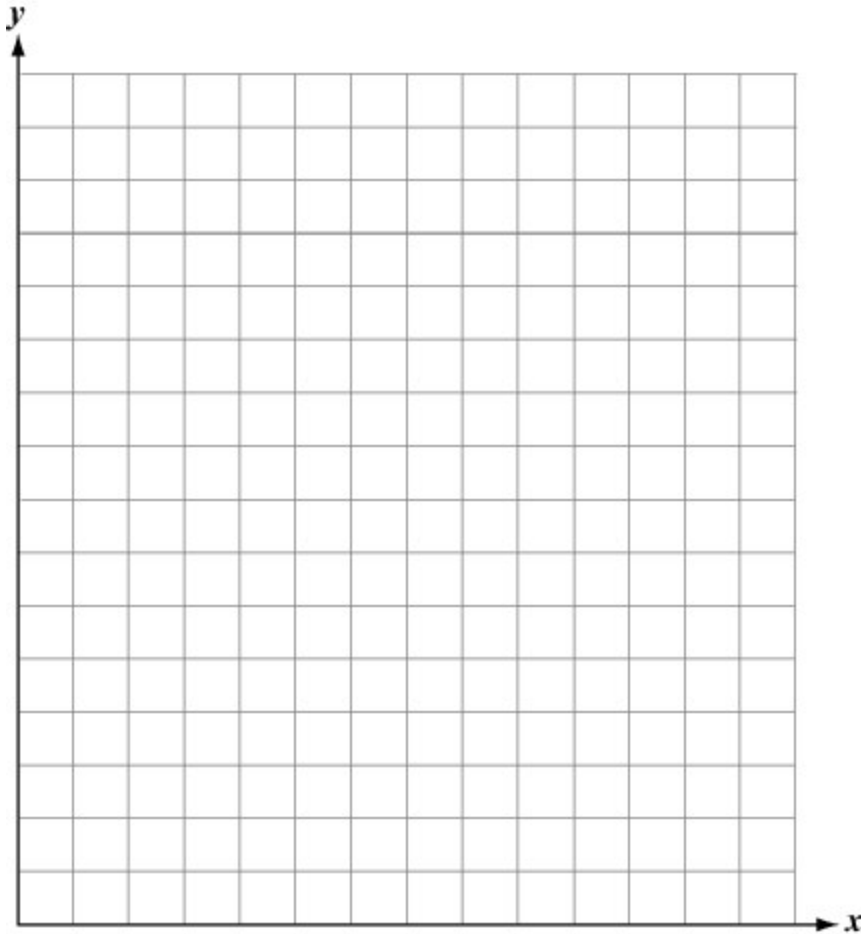
Part E. Now graph the quantities in this table and find the ratio between each number in the first column and the corresponding number in the second column. How does the graph differ from the graph in Part B? Are these quantities proportional? How can you tell?

$x$	$y$	Ratio
1	1	
2	3	
3	5	
4	7	
5	9	



Part F. Now make a graph of these quantities and find the ratios between  $x$  and  $y$ . How does the graph differ from the graph in Part B? Are these quantities proportional? How can you tell?

$x$	$y$	Ratio
1	1	
2	4	
3	9	
4	16	

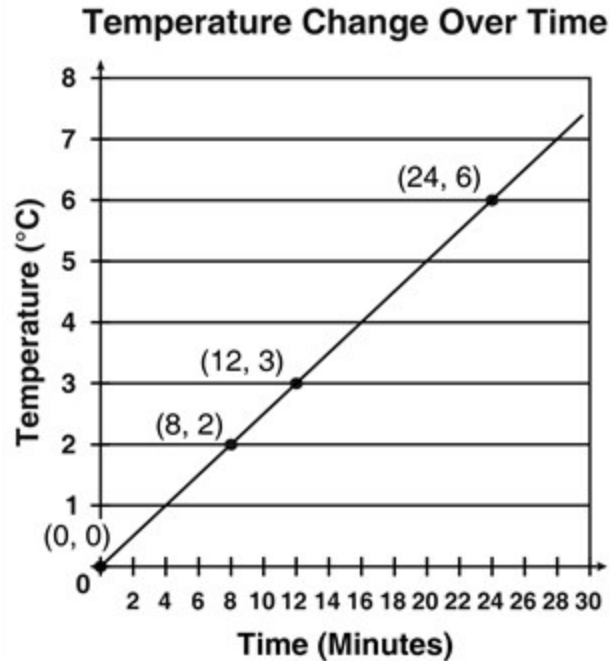


Part G. Suppose a dollhouse has a scale of 1 inch = 1 foot. What is the ratio of inches in the dollhouse to inches in the real house?

The ratio of inches in the dollhouse to inches in the real house is 1 to \_\_\_\_\_.

If you made a graph of inches in the dollhouse on the  $x$ -axis and inches in the real house on the  $y$ -axis, what would the graph look like?

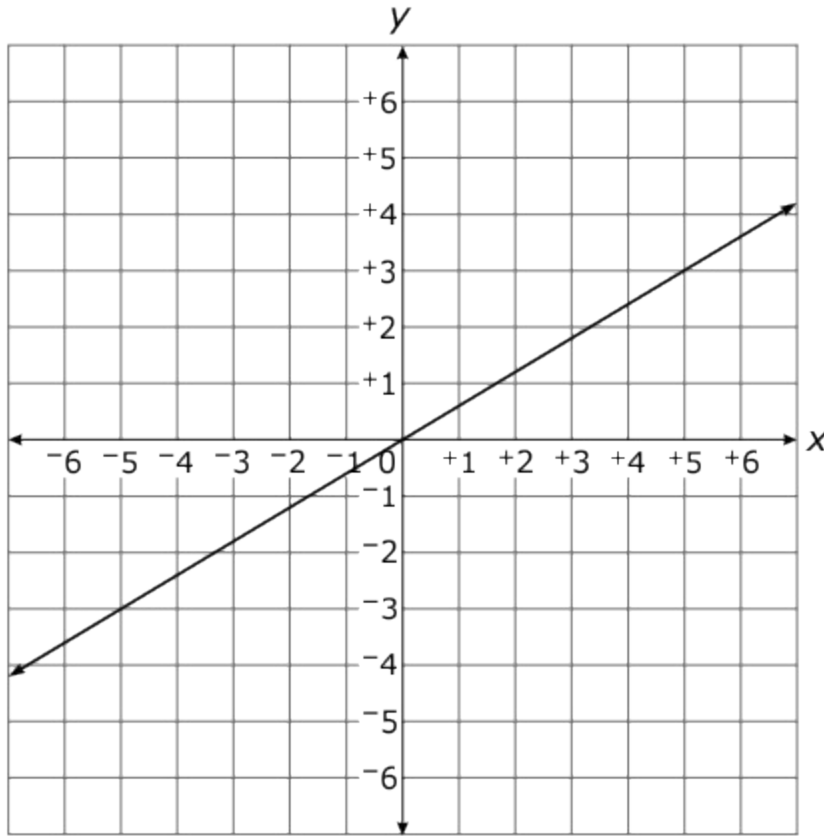
14. The graph shows data from a science experiment in which the temperature of a substance was measured over time.



What is the constant of proportionality for degrees per minute?

- A. 4  
B. 2  
C.  $\frac{1}{2}$   
D.  $\frac{1}{4}$
15. Mike bought 4.5 pounds of bananas for \$5.40. What is the price per pound for the bananas?
- A. \$0.83  
B. \$0.90  
C. \$1.20  
D. \$1.44

16. What is the constant of proportionality for the line on the graph below?



- A.  $\frac{5}{3}$
- B.  $\frac{3}{5}$
- C.  $-\frac{3}{5}$
- D.  $-\frac{5}{3}$

17. Write about a real-world situation that could be modeled with the table below and describe the constant of proportionality.

$x$	$y$
2	28
4	56
6	84
8	112



18. The level of water in a bathtub rises 5 inches in 2 hours. Which of the following represents the rate of change of the water level with respect to the time?

- A.
- B.
- C.
- D.

19. Using the data from the table, which equation represents the relationship between  $x$  and  $y$  values?

$x$	$y$
-3	36
-1	12
2	-24
6	-72

- A.  $y = 33 + x$
- B.  $y = 24 + x$
- C.  $y = 12x$
- D.  $y = -12x$
20. The equation defines the proportion that exists between  $x$  and  $y$ .

$$y = 1.95x$$

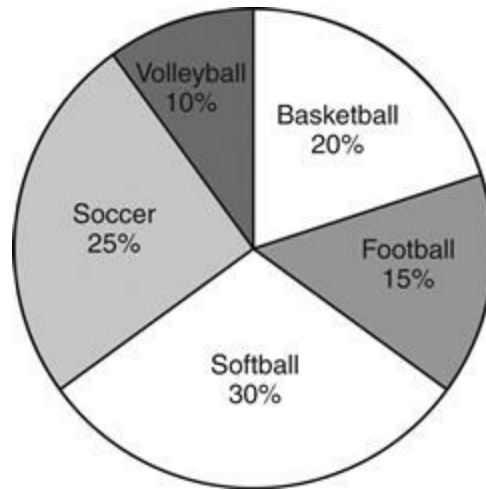
**Describe a real-world situation defined by the equation. Explain the meaning of the constant in the equation. Define what each of the variables represents.**

21. A baseball bat cost \$30 each from a manufacturer. If a store purchases more than 10 bats, the store receives a 15% discount on the total order. A store ordered 24 bats. What was the total amount of the order before sales tax?
- A. \$612
  - B. \$657
  - C. \$705
  - D. \$720
22. **Tickets for a concert are sold at a rate of 370 tickets per hour. At this rate, how long will it take to sell all the tickets for a 2100-seat auditorium?**
- A. 1.8 hours
  - B. 5.25 hours
  - C. 5.7 hours
  - D. 7.0 hours
23. **A cheetah can run at speeds up to 70 miles per hour. Running at top speed, approximately how long would it take a cheetah to run a length of 100 yards?**
- A. 1.43 seconds
  - B. 2.92 seconds
  - C. 3.40 seconds
  - D. 3.98 seconds

24. Darla conducted a survey among her classmates to determine which of five school sports is the most popular. She organized and recorded responses by female and male students in the table below.

### Sports Survey

Sport	Females	Males
Basketball	8	8
Football	3	13
Softball	9	11
Soccer	12	8
Volleyball	7	1



Which sport shows an incorrect percentage share on the circle graph?

- A. Basketball
  - B. Football
  - C. Soccer
  - D. Volleyball
25. The ratio of boys to girls at a summer camp is 7 to 5. A total of 360 campers have signed up for camp. If each cabin at the camp holds a maximum of 12 campers, how many cabins are needed for the girls?
- A. 12 cabins
  - B. 13 cabins
  - C. 17 cabins
  - D. 18 cabins

