

①

Francine creates a bar graph showing the distance between her city and each state capital city in the United States.

Which unit of measure would be an appropriate unit for Francine to use to label her graph?

- Ⓐ centimeters
- Ⓑ inches
- Ⓒ meters
- Ⓓ miles

②

Which situation describes a quantity that increases by a constant percent rate?

- Ⓐ The size of one photo is 15% larger than the size of another photo.
- Ⓑ The number of plants in a pond is 85% of the number from the previous year.
- Ⓒ The population of one city is 85% greater than the population of another city.
- Ⓓ The number of magazine subscribers each year is 15% greater than the previous year.

③

An equation is given.

$$5y - 2x = 5$$

Create an ordered pair that represents one point on the graph of the equation.

(,)

4

An incomplete table of values for an exponential function is shown. The exponential function is of the form $y = a \cdot b^x$, where a is a real number such that $a \neq 0$ and b is a positive real number not equal to 1.

Complete the table with possible values for the exponential function.

x	0	1	2	3
y	96			

5

What is the solution to the equation $12(x + 5) = 4x$?

$x =$

6

The values of several terms in a sequence are shown in the table.

Term	Value
Second	5
Fourth	12
Seventh	22.5

Find the first term, $f(1)$.

$f(1) =$

7

The population of a town has grown by an average of 2,000 people per year over the last 10 years.

Which equation could represent an appropriate linear model of the population?

- (A) $y = 25,000x + 2,000$
- (B) $y = 2,000x + 25,000$
- (C) $y = -25,000x + 2,000$
- (D) $y = -2,000x + 25,000$

8

A fitness club charges members an initial fee and a separate monthly membership fee. The equation of the function given models the total fee, $f(x)$, in dollars, that a person pays for x months of membership.

$$f(x) = 30x + 25$$

What does the number 30 represent in this situation?

- (A) the initial membership fee
- (B) the monthly membership fee
- (C) the number of months that a person is a member
- (D) the total amount that a member pays in monthly fees

9

An expression is given.

$$(2x + 8)(5x - 7)$$

Which expression is equivalent to the given expression?

- (A) $36x - 56$
- (B) $10x^2 - 56$
- (C) $10x^2 + 26x - 56$
- (D) $10x^2 + 54x + 56$

10

Alton studies the growth patterns of sassafras trees and yellow birch trees in the 88 counties in Ohio. He finds that

- approximately 27% of the counties have both species of trees,
- yellow birch only grows in 24 counties, and
- 1 out of 11 counties grows neither species.

	Sassafras Only	Both Species	Total
Yellow Birch Only	<input type="text"/>	<input type="text"/>	<input type="text"/>
Yellow Birch Both Species	<input type="text"/>	<input type="text"/>	<input type="text"/>
TOTAL	<input type="text"/>	<input type="text"/>	88

Complete the table to show the relationship between the number of counties where sassafras trees and yellow birch trees grow.

11

The first four terms of an arithmetic sequence are given.

27, 32, 37, 42, ...

What is the 60th term of the sequence?

12

Tim is sorting his book collection into groups. He places each group onto bookshelves that can each hold a maximum of 25 pounds. His collection includes hardcover books that weigh 3 pounds each and softcover books that weigh 2 pounds each.

Select all of the possible numbers of hardcover books that could be on one bookshelf.

- 3
- 4
- 8
- 9
- 12

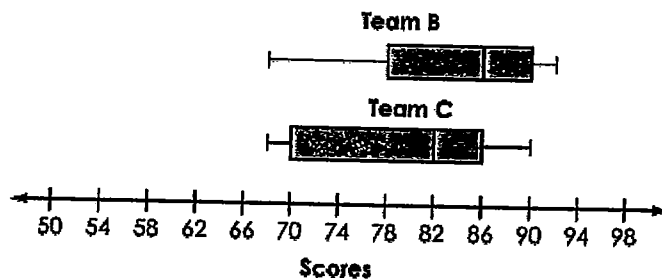
13

A gym teacher compares the points scored by three basketball teams in their last 11 games. The points scored by Team A are shown.

Team A

62	72	74	74	76	78	82	85	88	88	92
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The scores of Team B and Team C are shown by the following box plots:



Select a box in each row of the table to compare the median scores and the interquartile range of scores for the three teams.

	Team A	Team B	Team C
Lowest Median Score	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Highest Median Score	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Smallest Interquartile Range of Scores	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Largest Interquartile Range of Scores	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

14

A sequence is shown.

3, 6, 12, 24, 48, ...

Which function, $f(n)$, represents the n th term of the sequence, where $f(1) = 3$?

(A) $f(n) = 2 \cdot 3^{n-1}$

(B) $f(n) = 3 \cdot 2^{n-1}$

(C) $f(n) = 3 \cdot 2^n$

(D) $f(n) = 6^n$

15

A total of 330 children and adults attended a school play. There were 21 times as many children in attendance as there were adults.

This situation is modeled by the given system of equations, where a represents the number of adults and c represents the number of children.

$$c = 21a$$

$$a + c = 330$$

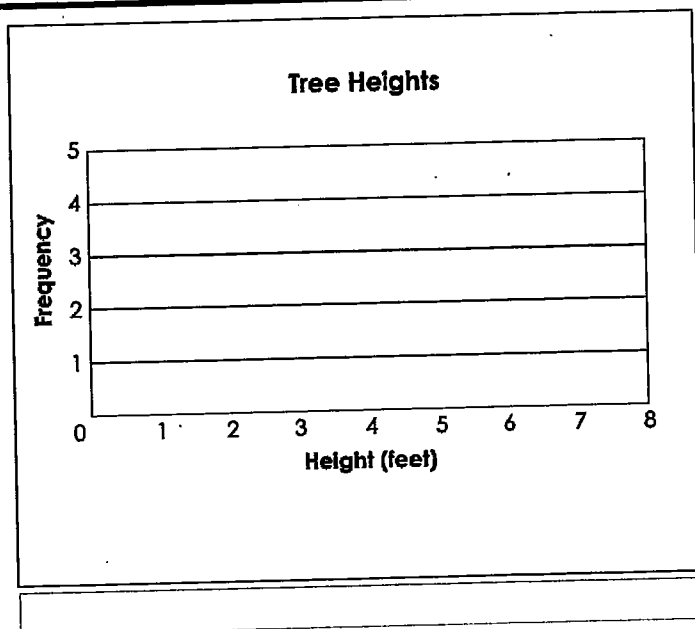
How many children attended the play?

16

A landscaper records the heights, in feet, of 15 newly planted trees in a community garden, as shown.

3.2, 4.3, 3.5, 5.4, 3.7,
5.5, 6.2, 3.1, 6.8, 7.1,
4.8, 6.5, 4.9, 5.3, 5.9

Complete the histogram by selecting frequencies for the heights of the newly planted trees in the community garden.



17

Samantha sells two types of wristbands, rope or beaded. She charges more for beaded wristbands than for rope wristbands. The amount of money, in dollars, that she collects from selling x wristbands of one type and y wristbands of the other type can be modeled by the expression $5x + 8y$.

What does the variable y represent in this situation?

- (A) the number of rope wristbands sold
- (B) the number of beaded wristbands sold
- (C) the selling price of one rope wristband
- (D) the selling price of one beaded wristband

18

A factory has two assembly lines, M and N, that make the same toy. On Monday, only assembly line M was functioning, and it made 900 toys.

On Tuesday, both assembly lines were functioning for the same amount of time. Line M made 300 toys per hour and line N made 480 toys per hour. Line N made as many toys on Tuesday as line M did over both days.

Write an equation that can be used to find the number of hours, t , that the assembly lines were functioning on Tuesday.

19

Select the most appropriate unit for each situation.

	<u>feet</u> <u>minute</u>	<u>square feet</u> <u>minute</u>	<u>cubic feet</u> <u>minute</u>
Rate of walking to school	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rate of painting a bedroom wall	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rate of filling a bucket with water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rate of mopping the kitchen floor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

20

Emerson has \$120. Each week, he saves an additional \$15.

Write a function $f(x)$ that models the total amount of money Emerson has after x weeks.

$f(x) =$