

1

What is 10% of 470?

- A) 37
 B) 47
 C) 423
 D) 460

$$10\% \times 470$$

$$0.10 \times 470$$

$$= 47$$

2

$$4x + 6 = 18 \quad -6$$

Which equation has the same solution as the given equation?

- A) $4x = 108$
 B) $4x = 24$
 C) $4x = 12$
 D) $4x = 3$

$$4x = 12$$

shift
Solve

$$x = 3$$

$$4x = 4(3)$$

$$= 12$$

3

The total cost, in dollars, to rent a surfboard consists of a \$25 service fee and a \$10 per hour rental fee. A person rents a surfboard for t hours and intends to spend a maximum of \$75 to rent the surfboard. Which inequality represents this situation?

- A) $10t \leq 75$
 B) $10 + 25t \leq 75$
 C) $25t \leq 75$
 D) $25 + 10t \leq 75$

$$25 + 10t$$

4

The function g is defined by $g(x) = x^2 + 9$. For which value of x is $g(x) = 25$?

- A) 4
 B) 5
 C) 9
 D) 13

$$x^2 + 9 = 25 \quad -9$$

$$x^2 = 16$$

$$x = \pm 4$$

shift
Solve

$$x^2 + 9 = 25$$

5

Each face of a fair 14-sided die is labeled with a number from 1 through 14, with a different number appearing on each face. If the die is rolled one time, what is the probability of rolling a 2?

- A) $\frac{1}{14}$
 B) $\frac{2}{14}$
 C) $\frac{12}{14}$
 D) $\frac{13}{14}$

$$P = \frac{1}{14}$$

$$\frac{42 \times 60}{1} = 2520$$

6

A printer produces posters at a constant rate of 42 posters per minute. At what rate, in posters per hour, does the printer produce the posters?

$$42 \times 60$$

$$2520 \text{ pbs}$$

Calc
+
Desmos

$$42 \times 60$$

$$2520 \text{ pbs}$$



7

The function f is defined by the equation $f(x) = 7x + 2$. What is the value of $f(x)$ when $x = 4$?

$$7(4) + 2$$

$$30$$

8

A teacher is creating an assignment worth 70 points. The assignment will consist of questions worth 1 point and questions worth 3 points. Which equation represents this situation, where x represents the number of 1-point questions and y represents the number of 3-point questions?

- A) $4xy = 70$
 B) $4(x + y) = 70$
 C) $3x + y = 70$
 D) $x + 3y = 70$

$$1x + 3y$$

$$y = mx + b$$

slope m y-int b

+ve
-ve
zero
undefined

9

Right triangles LMN and PQR are similar, where L and M correspond to P and Q , respectively. Angle M has a measure of 53° . What is the measure of angle Q ?

- 4 A) 37°
 20 B) 53°
 C) 127°
 D) 143°

10

$$y = -3x$$

$$4x + y = 15$$

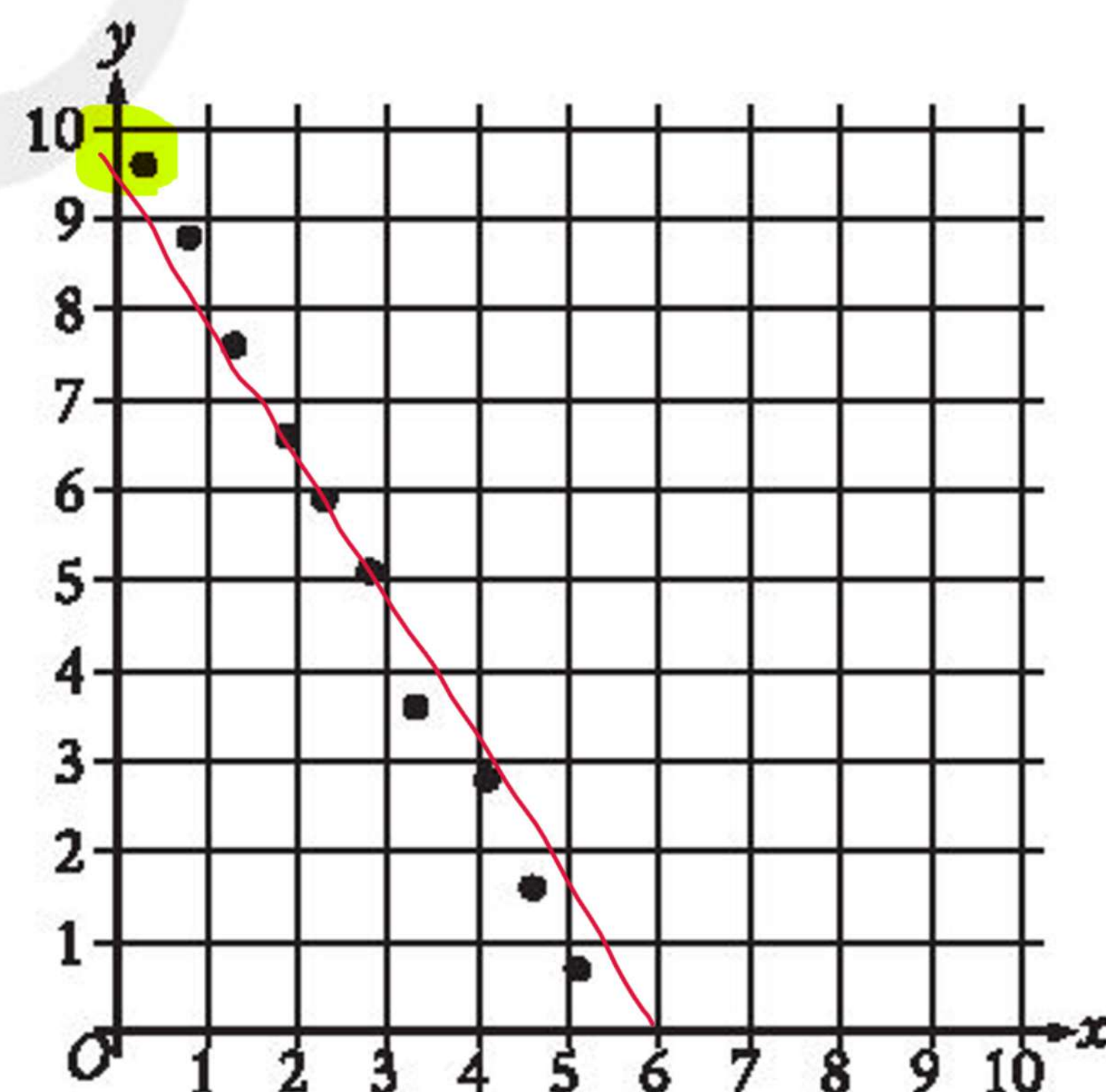
The solution to the given system of equations is (x, y) . What is the value of x ?

- A) 1
 B) 5
 C) 15
 D) 45

$$4x - 3x = 15$$

$$x = 15$$

11

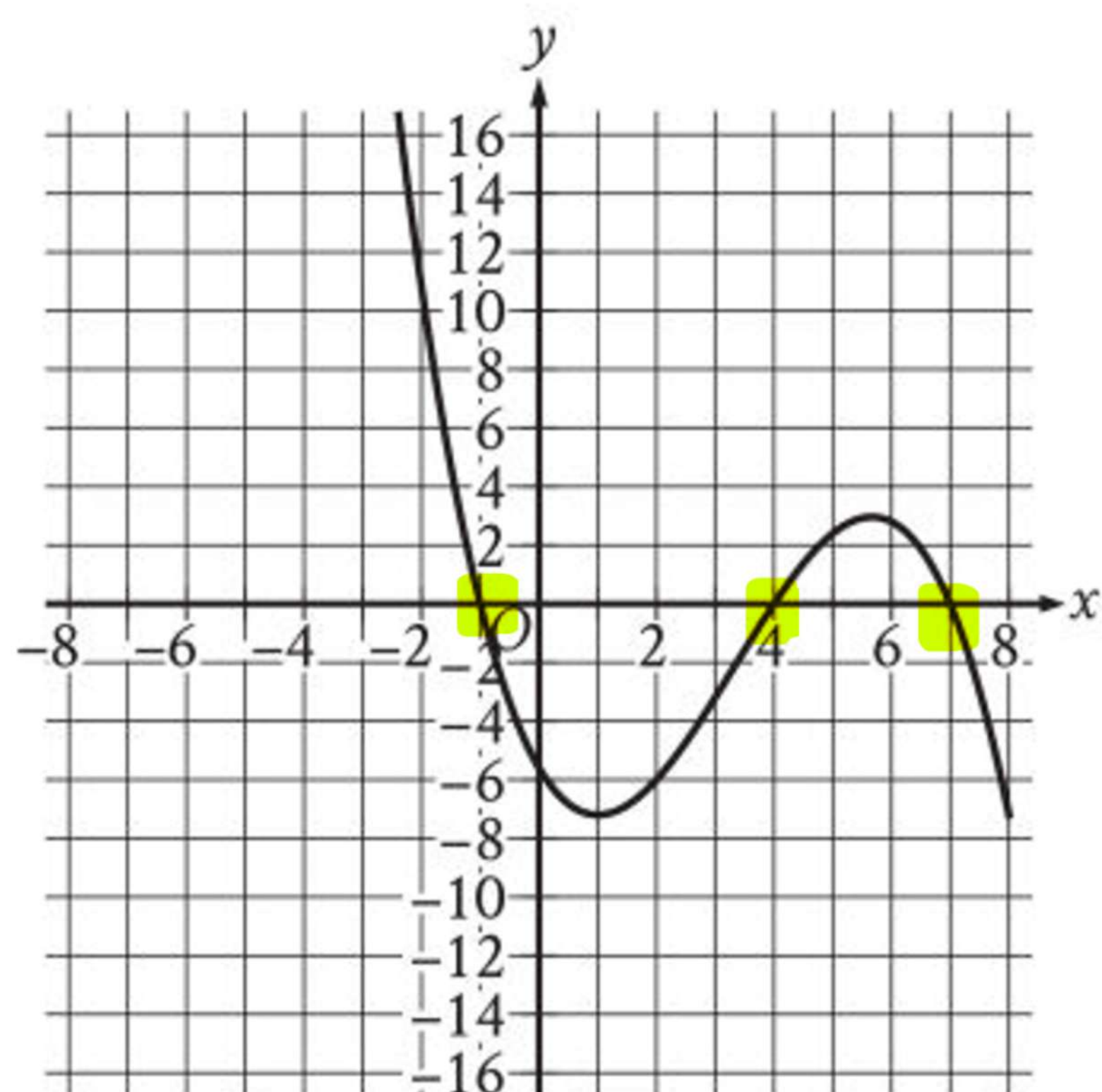


Which of the following equations is the most appropriate linear model for the data shown in the scatterplot?

- A) $y = -1.9x - 10.1$
 B) $y = -1.9x + 10.1$
 C) $y = 1.9x - 10.1$
 D) $y = 1.9x + 10.1$



12



The graph of $y = f(x)$ is shown, where the function f is defined by $f(x) = ax^3 + bx^2 + cx + d$ and a , b , c , and d are constants. For how many values of x does $f(x) = 0$?

- A) One
B) Two
C) Three
D) Four

$y = 0$

$x = 0, 2, 4, 6$

13

Vivian bought party hats and cupcakes for \$71. Each package of party hats cost \$3, and each cupcake cost \$1. If Vivian bought 10 packages of party hats, how many cupcakes did she buy?

$$3(10) + 1c = 71$$

Shift Solve

41

14

$$1z^2 + 10z - 24 = 0$$

What is one of the solutions to the given equation?

Mode
5
3

2
-12

1

15

Bacteria are growing in a liquid growth medium. There were 300,000 cells per milliliter during an initial observation. The number of cells per milliliter doubles every 3 hours. How many cells per milliliter will there be 15 hours after the initial observation?

$\frac{15}{3} = 5$

- A) 1,500,000
B) 2,400,000
C) 4,500,000
D) 9,600,000

$$300,000 \times 2 \times 2 \times 2 \times 2 \times 2$$

$$300,000 \times 2^5 = 9,600,000$$

16

Which expression is equivalent to $6x^8y^2 + 12x^2y^2$?

~~A) $6x^2y^2(2x^6)$~~

~~B) $6x^2y^2(x^4)$~~

C) $6x^2y^2(x^6 + 2)$

D) $6x^2y^2(x^4 + 2)$

$$6x^8y^2 + 12x^2y^2$$

$$\begin{array}{l} x=2 \\ y=5 \end{array} \quad \frac{6(2)^8(5)^2 + 12(2)^2(5)^2}{=}$$

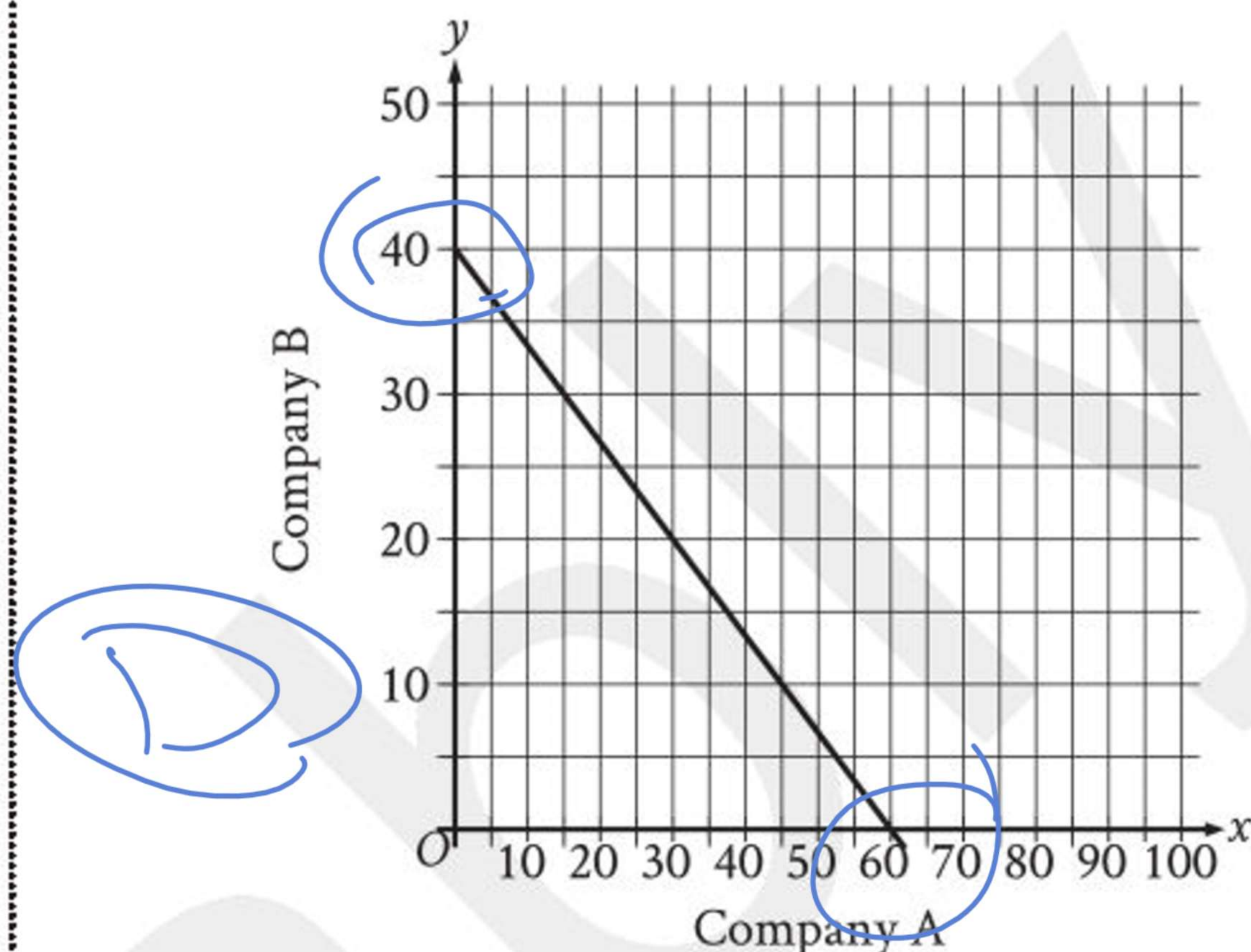


17

A neighborhood consists of a 2-hectare park and a 35-hectare residential area. The total number of trees in the neighborhood is 3,934. The equation $2x + 35y = 3,934$ represents this situation. Which of the following is the best interpretation of x in this context?

- A) The average number of trees per hectare in the park
- B) The average number of trees per hectare in the residential area
- C) The total number of trees in the park
- D) The total number of trees in the residential area

18



The graph shows the relationship between the number of shares of stock from Company A, x , and the number of shares of stock from Company B, y , that Simone can purchase. Which equation could represent this relationship?

- ☒ A) $y = 8x + 12$
- ☐ B) $8x + 12y = 480$
- ☐ C) $y = 12x + 8$
- ☐ D) $12x + 8y = 480$

19

Circle A has a radius of $3n$ and circle B has a radius of $129n$, where n is a positive constant. The area of circle B is how many times the area of circle A?

- A) 43
- B) 86
- C) 129
- D) 1,849

$$\frac{\text{Area B}}{\text{Area A}} = \frac{\pi (129n)^2}{\pi (3n)^2} = 1849$$

$$\left(\frac{129}{3}\right)^2 = 1849$$

