

Spring 2025

GRADE 8
MATHEMATICS

PTM0822_3,1

1. Solve the equation $4x^2 = 256$. What are the possible values of x ?

Select **all** the correct answers.

A. -8

B. 0

C. 8

D. 4

E. 16

PTM0824_P

2. The table represents a function.

x	y
1	2
2	3
3	4
	5

What values of x can be added to the table to remain a function?

Select **all** the correct answers.

A. $x = 0$

B. $x = 1$

C. $x = 2$

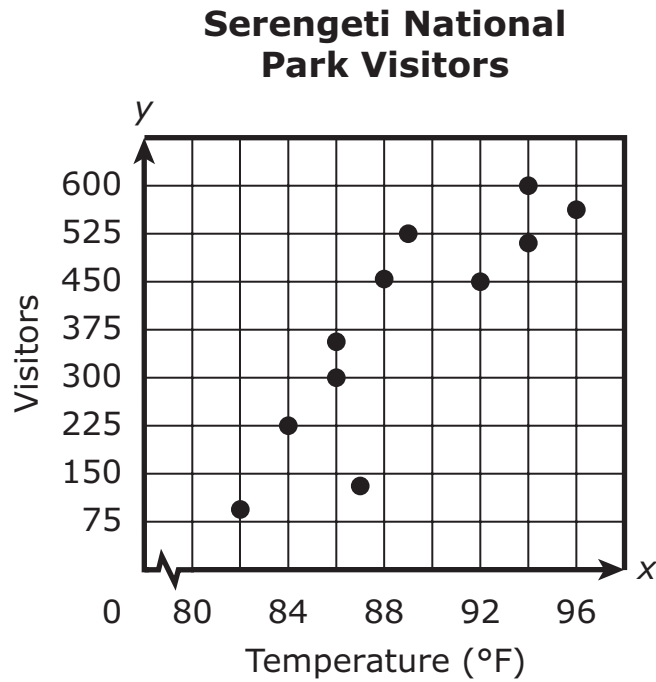
D. $x = 3$

E. $x = 4$

F. $x = 5$

PTM0819_1

3. The scatter plot shows the relationship between the temperature, in degrees Fahrenheit, and the number of visitors to Serengeti National Park in Tanzania.



Which of these is the best description of the type of relationship between the temperature and the number of visitors to Serengeti National Park?

- A. Positive linear association
- B. Negative linear association
- C. Nonlinear association
- D. No association

PTM0802_8

4. In 2021, Washington, D.C., had the highest population density in the United States, with approximately 11×10^3 people per square mile. New Jersey had the second highest population density, with approximately 13×10^2 people per square mile.

To the nearest whole number, how many times the population density of New Jersey was the population density of Washington, D.C.?

Enter your answer in the space.

PTM0825_P

5. Which sets of ordered pairs represent a function?

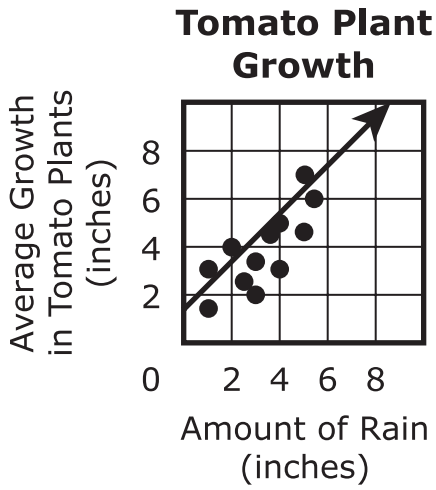
Select **all** the correct answers.

- A. Set A: (2, 3), (4, 5), (6, 7), (8, 9)
- B. Set B: (2, 3), (2, 4), (3, 5), (4, 6)
- C. Set C: (1, 2), (2, 4), (3, 6), (4, 8)
- D. Set D: (2, 2), (2, 3), (2, 4), (2, 5)
- E. Set E: (1, 2), (2, 2), (3, 2), (4, 2)

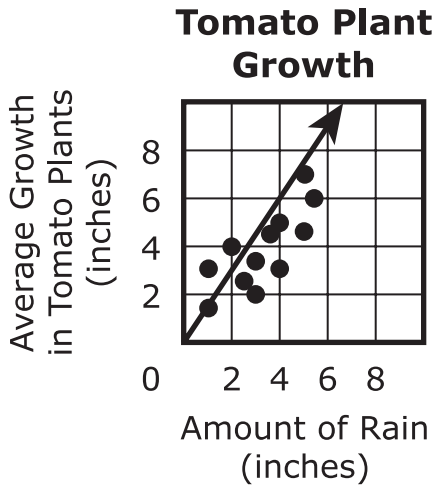
PTM0820_4

6. Which graph shows the line of best fit for the scatter plot?

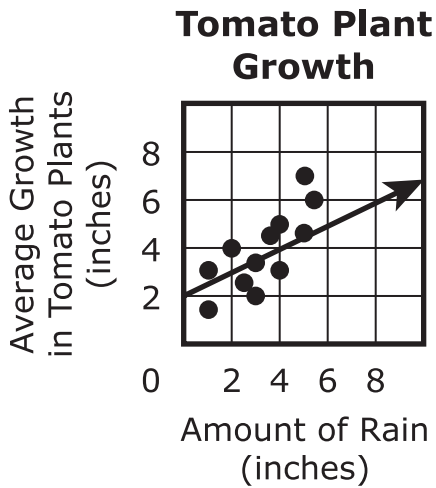
A.



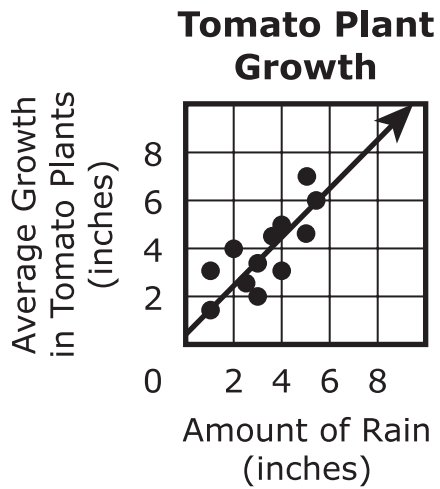
B.



C.



D.



PTM0808_6

7. Solve for x .

$$7x - 4 = 2(15 - x) + 20$$

Enter your answer in the space.

M18_D925_2

8. Which expression represents the solution to the equation shown?

$$x^3 = 2$$

A. $\sqrt[2]{3}$

B. $\sqrt[3]{2}$

C. $2\sqrt{3}$

D. $3\sqrt{2}$

PTM0809_3

9. A system of linear equations is shown.

$$y = 2x - 1$$

$$y = -3x + 4$$

Which statement describes the solution to the system of equations?

- A. The solution is a point that is on the line $y = 2x - 1$ but not on the line $y = -3x + 4$.
- B. The solution is a point that is on the line $y = -3x + 4$ but not on the line $y = 2x - 1$.
- C. The solution is the point where the two lines intersect.
- D. The solution is a point that is not on either line.

M18_B765_3

10. Which expression has a value between 11 and 12?

- A. $\sqrt{115}$
- B. $\sqrt{120}$
- C. $\sqrt{130}$
- D. $\sqrt{145}$

PTM0801_4,1

11. Which expressions are equivalent to the expression $\left(\frac{4^3}{4^{-2}}\right)^2$?
Select **all** the correct answers.

- A. $\frac{4^6}{4^{-4}}$
- B. $\frac{4^5}{4^0}$
- C. $\frac{4^1}{4^{-4}}$
- D. $(4^5)^2$
- E. $(4^1)^2$

8M20_002_2

12. What value of x makes the equation $(17^{-8})(17^{15}) = \frac{1}{17^x}$ true?
- A. -23
 - B. -7
 - C. 7
 - D. 23

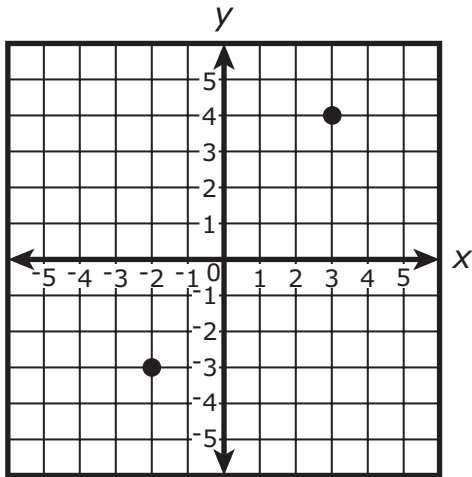
PTM0805

- 13.** Lydia is riding her bike at a constant rate of speed. She travels 3 miles in 18 minutes. Bryce is riding his bike at a constant rate of speed. The equation $y = 5x$ represents the number of minutes, y , that it takes Bryce to ride x miles.
- Show or explain how to determine Lydia's rate of speed in minutes per mile.
 - Show or explain how to determine Bryce's rate of speed in minutes per mile.
 - Who is traveling faster? How much faster?

Enter your answer in the space provided. Show all your work to support your answer.

PTM0816

14. Two points are shown on the coordinate plane.



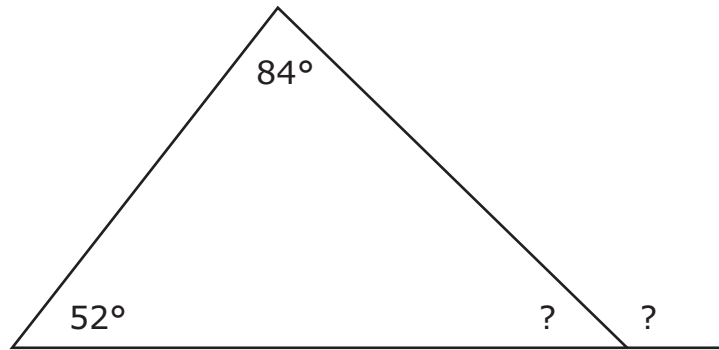
Use the points on the coordinate plane.

- Why can the Pythagorean theorem be used to find the distance between the two points in the coordinate plane?
- Write an equation that can be used to find the distance between the two points in the coordinate plane.
- What is the distance between the two points in the coordinate plane?

Enter your answer in the space provided. Show all your work to support your answer.

PTM0814

- 15.** A diagram of a triangle is shown. The measure of an interior angle and the measure of an exterior angle are missing.



Use the diagram.

- How can you use the two given interior angle measures to find the missing exterior angle measure?
- How can you use the missing interior angle measure to find the missing exterior angle measure?
- What is the missing exterior angle measure?

Enter your answer in the space provided. Show all your work to support your answer.

PTM0811_4

16. Function K is represented by $y = 2x - 7$.

Function L is represented by the table.

x	y
-2	11
-1	8
0	5
1	2
2	-1

Which function has the greater rate of change?

- A.** Function K , because the y -intercept of function K is greater than the y -intercept of function L
- B.** Function L , because the slope of function L is greater than the slope of function K
- C.** Function L , because the y -intercept of function L is greater than the y -intercept of function K
- D.** Function K , because the slope of function K is greater than the slope of function L

PTM0806

- 25.** There is a proportional relationship between the number of nights, x , visitors stay at a hotel and the cost in dollars, y . The equation $y = 175x$ represents the cost in dollars, y , to stay at the Atlas Hotel for x nights. The table shows how much it costs in dollars, y , to stay at the Emerald Hotel for x nights.

Emerald Hotel Costs

Number of Nights, x	Cost (dollars), y
3	540
5	900

- Show or explain how to determine the rate in dollars per night at the Atlas Hotel.
- Show or explain how to determine the rate in dollars per night at the Emerald Hotel.
- Which hotel charges less per night? How much less?

Enter your answer in the space provided. Show all your work to support your answer.

8M23_026_4

- 26.** Which equation has infinitely many solutions?

A. $-x = x$

B. $2x + 1 = 2x - 1$

C. $x + 6 = 5x + 30$

D. $3(x + 2) = 3x + 6$



Please let your teacher know that you have completed your test.



