

TEST NAME: Fall SOY Checkpoint Algebra I Content
TEST ID: 62
GRADE: 07 - 12
SUBJECT: Mathematics
TEST CATEGORY: Start of Year Checkpoint

08/10/20, Fall SOY Checkpoint Algebra I Content

Student: _____

Class: _____

Date: _____

Instructions

The Algebra I test has two subparts. Each subpart contains different types of questions. To begin the test, click the "Next" arrow button at the top.

Read the passage - 'VH938032_directions' - and answer the question below:

VH938032_directions

Subpart 1 of this test contains different types of assessment questions in Algebra I. You may make notes on scratch paper or use the Notepad tool within the online test. Make sure you answer all the questions. You MAY NOT use a calculator in Subpart 1 of this test.



1. Jackson paints murals on walls. In order to paint one of his murals, he needs a rectangular area that is at least 4 feet wide and 3 feet high. The width and height have to increase by the same amount of feet, x .

Which equation represents all the possible areas for the rectangular murals?

- A. $A = x^2 + 7x + 12$, where x is any real number
 - B. $A = x^2 + 7x + 12$, where x is any nonnegative real number
 - C. $A = 2x + 7$, where x is any real number
 - D. $A = 2x + 7$, where x is any nonnegative real number
-

2. Larissa is on vacation and wants to rent a bicycle to explore the town. She pays a \$10 flat fee and then \$12 per hour for the rental.

If Larissa has \$45 to spend, what is the greatest number of full hours she can rent the bicycle?

- A. 1
- B. 2
- C. 3
- D. 4

3. Tara sells her paintings for \$328 each. A 6% sales tax is added to the sale price.

Which equation can be used to calculate the total number of paintings sold, x , if the total sales amount, including tax, is \$1390.72?

- A. $328 = 1390.72(1 + 0.06)x$
- B. $1390.72 = (328 + 0.06)x$
- C. $1390.72 = 328(1 + 0.06)x$
- D. $1390.72 = 328(1 + 6)x$

4. Tanika booked a banquet hall for a party. The hall charged \$15 per person, with a required tip of \$60 for the waiters. Tanika knows that the total bill was \$315 without tax, but she lost track of how many people attended. She writes and solves an equation, where p represents the number of people who attended.

Step 1: $315 = 15p + 60$

Step 2:

Step 3: $255 = 15p$

Step 4: $\frac{255}{15} = \frac{15p}{15}$

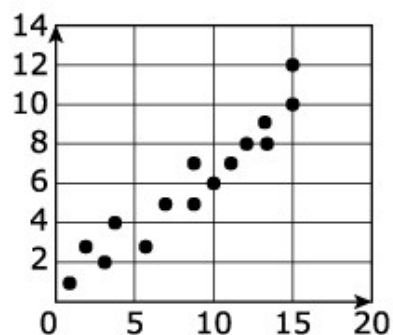
Step 5: $p = 17$

Which operation describes Tanika's missing work in Step 2?

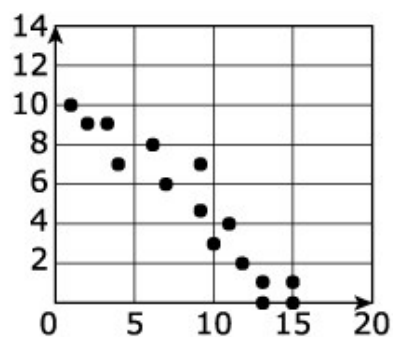
- A. added 60 to both sides
- B. multiplied both sides by 15
- C. divided both sides by 15
- D. subtracted 60 from both sides

5. The three scatter plots show relationships between two variables.

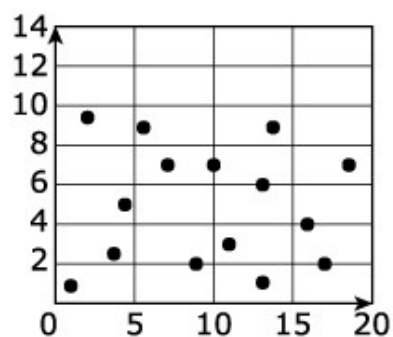
Scatter plot A:



Scatter plot B:



Scatter plot C:



The table shows columns marked with three linear correlation coefficients.

Mark the box showing which scatter plot most closely matches that linear correlation coefficient.

	-0.9	0	0.9
Scatter plot A	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Scatter plot B	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Scatter plot C	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. What are the zeros of the function defined by the expression $x^2 - 7x - 30$?

- A. 3 and -10
- B. 10 and -3
- C. 15 and 2
- D. 15 and -2

Read the passage - 'VH937873_directions' - and answer the question below:

VH937873_directions

Subpart 2 of this test contains different types of assessment questions in Algebra I. You may make notes on scratch paper or use the Notepad tool within the online test. Make sure you answer all the questions. You MAY use a calculator in Subpart 2 of this test.



7. Which expression is equivalent to $(16x^2 - 9)$?

- A. $(4x - 3)^2$
- B. $\left(8x - \frac{9}{2}\right)^2$
- C. $(4x - 3)(4x + 3)$
- D. $(8x - 9)(2x + 1)$

8. Select the expression equivalent to $(-4x + 3) - (-2x + 5)$.

- A. $-2x$
- B. $-2x - 2$
- C. $-6x - 2$
- D. $-6x + 8$

9. Consider the equation $y = -\frac{1}{4}x^2 - x + 3$.

Select **all** ordered pairs that are solutions to the equation.

Pick up to 6 answers.

A. $(-8, -5)$

B. $(-4, -3)$

C. $(-2, 4)$

D. $(2, 2)$

E. $(3, 0)$

F. $(4, -5)$

10. A child throws a penny upward out of a window and watches it fall to the ground. The function $f(t) = -16t^2 + t + 10$ represents the penny's distance in feet above the ground t seconds after the penny is thrown.

Approximately how many seconds does it take the penny to hit the ground?

A. 0.03

B. 0.76

C. 0.82

D. 1.32

11. During a series of storms, a meteorologist recorded data about different outcomes during the storms. He identified the following positive correlations:

- The number of fallen tree limbs is strongly correlated with wind speed.
- The number of car accidents is weakly correlated with wind speed.
- The number of fallen tree limbs is moderately correlated with total rainfall.
- The number of car accidents is strongly correlated with total rainfall.

Which of the following claims are **most likely** true based on this data?

Select the **two best** answers.

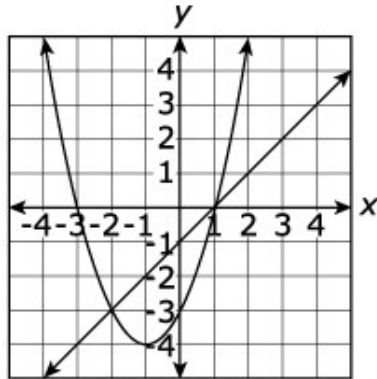
Pick up to 6 answers.

- A. An increase in the number of falling tree limbs causes an increase in wind speed.
- B. An increase in the number of car accidents causes an increase in total rainfall.
- C. High wind speed cannot cause a car accident.
- D. High wind speed causes an increase in the number of fallen tree limbs.
- E. An increase in rainfall causes an increase in the number of fallen tree limbs.
- F. An increase in rainfall causes an increase in the number of car accidents.

12. Which equation has the same solutions as $(x - 5)^2 = 9$?

- A. $x^2 - 25 = 9$
- B. $x^2 - 5x + 16 = 0$
- C. $x^2 - 10x - 16 = 0$
- D. $x^2 - 10x + 16 = 0$

13. The coordinate plane shows the graph of the functions $f(x) = x^2 + 2x - 3$ and $g(x) = x - 1$.



What are the solutions to the system of equations?
Select **all** that apply.

Pick up to 5 answers.

- A. $(-3, 0)$
 - B. $(-2, -3)$
 - C. $(0, -1)$
 - D. $(0, 1)$
 - E. $(1, 0)$
14. Javier has a part-time job and saves \$10 of his hourly pay for the purchase of a new laptop that costs \$648. He has \$80 saved already.
- Which inequality represents the number of hours, x , Javier must work to buy the laptop?
- A. $10x + 80 \geq 648$
 - B. $10x + 80 \leq 648$
 - C. $10 + 80x \geq 648$
 - D. $10 + 80x \leq 648$

15. Ezra bought a new motorcycle three years ago. The value of his motorcycle, v , in dollars, t years after the purchase, can be determined by the following equation.

$$v = 10,400(0.82)^t$$

Gina purchased a motorcycle at the same time. The value of Gina's motorcycle at the end of each year is shown in the table.

Years Since Purchase	Value
0	\$8,000
1	\$6,800
2	\$5,780
3	\$4,913

Which statements comparing the values of the two motorcycles are true?
Select **all** that apply.

Pick up to 5 answers.

- A. The value of both motorcycles decreases by the same percentage each year.
 - B. The value of Gina's motorcycle decreases by a greater percentage each year than Ezra's.
 - C. The value of Ezra's motorcycle decreases by a greater percentage each year than Gina's.
 - D. The purchase price of Gina's motorcycle is greater than the purchase price of Ezra's.
 - E. The purchase price of Ezra's motorcycle is greater than the purchase price of Gina's.
16. Suppose the relationship between high school GPA and college GPA is modeled by the linear equation $y = 0.9 + 0.7x$, where y is college GPA and x is high school GPA.
- Which statement is the **best** interpretation of this relationship?
- A. If high school GPA increases by 1, then college GPA is expected to increase by 0.7.
 - B. If high school GPA increases by 1, then college GPA is expected to increase by 0.9.
 - C. If high school GPA increases by 0.7, then college GPA is expected to increase by 1.
 - D. If high school GPA increases by 0.9, then college GPA is expected to increase by 1.

17. Select **all** expressions equivalent to $16(2)^{n-3}$.

Pick up to 5 answers.

A. $(2)^{4n-12}$

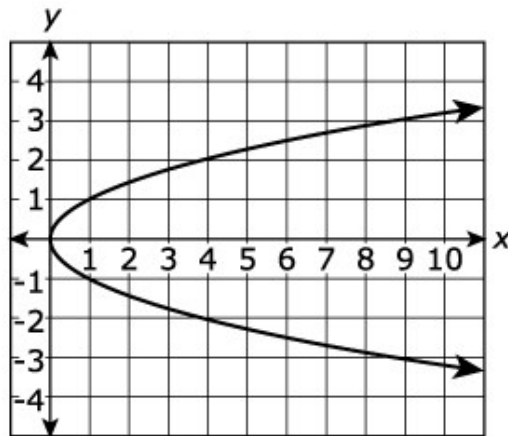
B. $(2)^{4n-3}$

C. $(2)^{n+1}$

D. $8(2)^{n-1}$

E. $8(2)^{n-2}$

18. The graph of f is shown.



Is f a function and why?

- A. Yes, because the graph represents a relation between an input and an output.
- B. Yes, because each output corresponds to one input.
- C. No, because the function has negative values.
- D. No, because each input does not correspond to only one output.

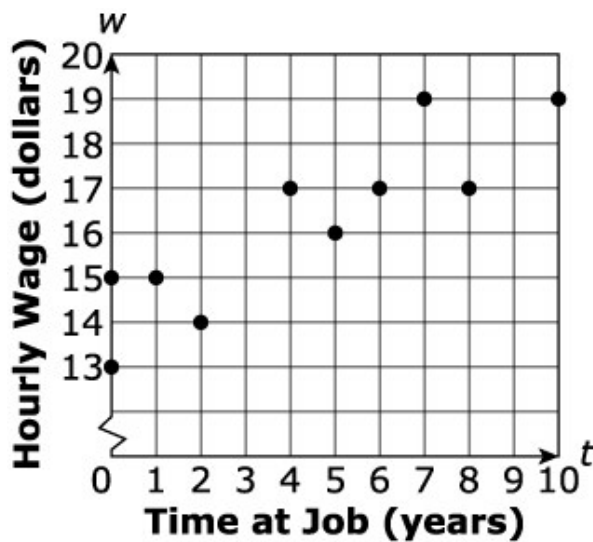
19. Which values are solutions to the equation $0 = (x - 3)^2 - 1$?

Select **all** that apply.

Pick up to 6 answers.

- A. -4
- B. -3
- C. -2
- D. 2
- E. 3
- F. 4

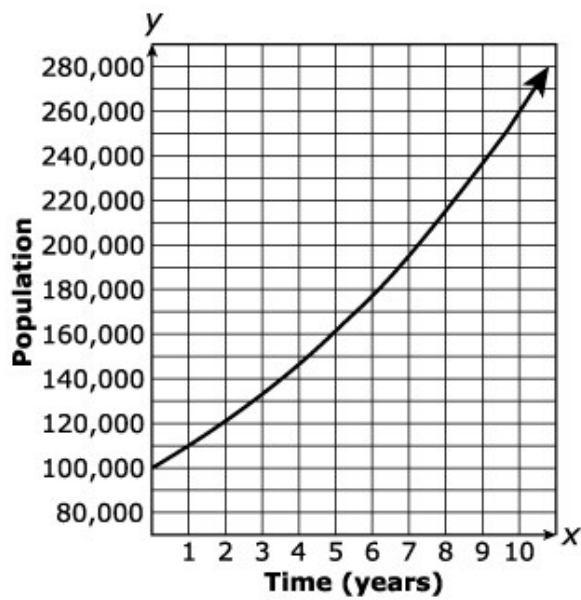
20. A small business has 10 employees. The time, t , in years they have worked for the company and w , their hourly wages, are shown as pairs of values in the scatter plot below.



Which equation **best** models the data?

- A. $w = \frac{1}{4}t + 15$
- B. $w = \frac{1}{2}t + 14$
- C. $w = t + 13$
- D. $w = t + 14$

21. The graph shows the predicted population of a town, x number of years after 2020.



According to the graph, which statement is true?

- A. The population will increase by 10,000 people each year.
- B. The population will increase more each year than the previous year.
- C. The population for the year 2025 is predicted to be less than 160,000.
- D. From 2020 to 2030, the population will increase by approximately 260,000.