

**21** The data obtained from a random sample of track athletes showed that as the foot size of the athlete decreased, the average running speed decreased. Which statement is best supported by the data?

- (1) Smaller foot sizes cause track athletes to run slower.
- (2) The sample of track athletes shows a causal relationship between foot size and running speed.
- (3) The sample of track athletes shows a correlation between foot size and running speed.
- (4) There is no correlation between foot size and running speed in track athletes.

**22** Which system of equations will yield the same solution as the system below?

$$\begin{aligned}x - y &= 3 \\2x - 3y &= -1\end{aligned}$$

- (1)  $\begin{aligned}-2x - 2y &= -6 \\2x - 3y &= -1\end{aligned}$
- (2)  $\begin{aligned}-2x + 2y &= 3 \\2x - 3y &= -1\end{aligned}$
- (3)  $\begin{aligned}2x - 2y &= 6 \\2x - 3y &= -1\end{aligned}$
- (4)  $\begin{aligned}3x + 3y &= 9 \\2x - 3y &= -1\end{aligned}$

**23** Which of the three situations given below is best modeled by an exponential function?

- I. A bacteria culture doubles in size every day.
- II. A plant grows by 1 inch every 4 days.
- III. The population of a town declines by 5% every 3 years.

- (1) I, only
- (2) II, only
- (3) I and II
- (4) I and III

**24** The length, width, and height of a rectangular box are represented by  $2x$ ,  $3x + 1$ , and  $5x - 6$ , respectively. When the volume is expressed as a polynomial in standard form, what is the coefficient of the 2nd term?

- (1)  $-13$
  - (2)  $13$
  - (3)  $-26$
  - (4)  $26$
-

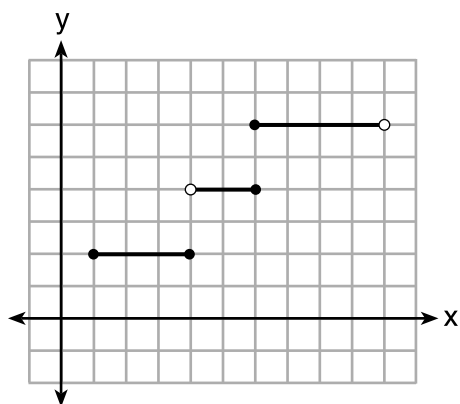
## Part II

Answer all 8 questions in this part. Each correct answer will receive 2 credits. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. Utilize the information provided for each question to determine your answer. Note that diagrams are not necessarily drawn to scale. For all questions in this part, a correct numerical answer with no work shown will receive only 1 credit. All answers should be written in pen, except for graphs and drawings, which should be done in pencil. [16]

**25** Explain how to determine the zeros of  $f(x) = (x + 3)(x - 1)(x - 8)$ .

State the zeros of the function.

26 Four relations are shown below.



I

$\{(1,2), (2,5), (3,8), (2,-5), (1,-2)\}$

II

x	y
-4	1
0	3
4	5
6	6

III

$y = x^2$

IV

State which relation(s) are functions.

Explain why the other relation(s) are *not* functions.