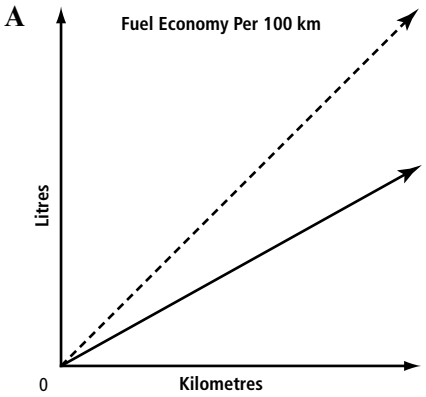
Multiple Choice

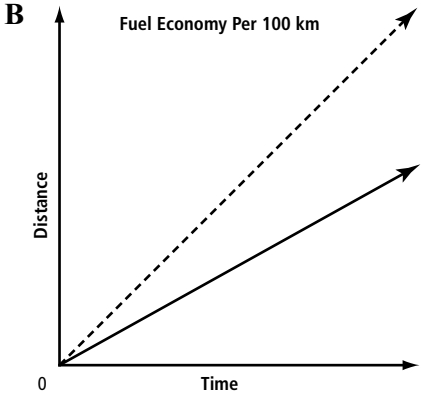
For #1 to 12, choose the best answer.

1. A particular model of hybrid automobile has a fuel economy of 4.6 L/100 km for city driving. Another vehicle in the same size class, but which runs only on gasoline, has a fuel economy of 8.7 L/100 km in the city. Which of the following is a possible graph comparing the rates of fuel consumption for the two vehicles?

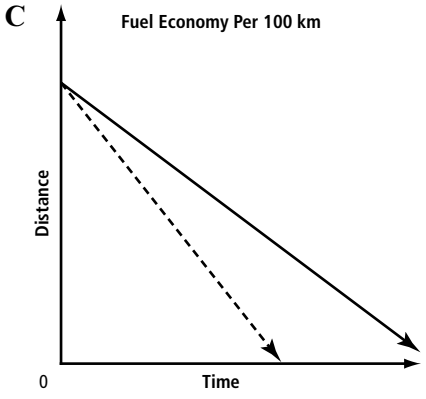
A



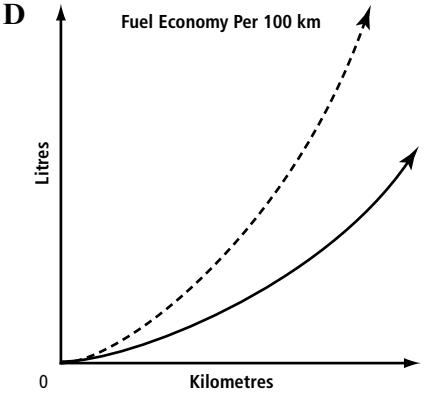
B



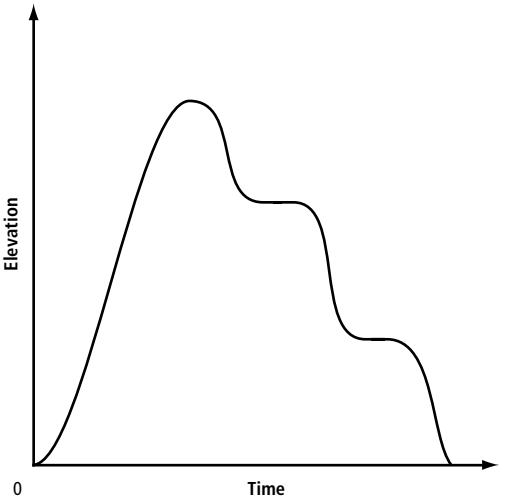
C



D



2. Which of the situations below could be represented by the following graph?



A Steven rolls a ball down the stairs of his home.

B Samantha takes the bus to a shopping mall up on a hill. After spending the entire day at the mall, she takes the bus home. The bus makes two stops before reaching Samantha's stop.

C DeeJay takes a chair lift to the top of a ski hill and rides her snowboard to the bottom, stopping twice to rest for a short period of time.

D An airplane flies from Vancouver to Winnipeg, with short stopovers in Edmonton and Saskatoon.

3. Given the set of ordered pairs {(5, 1), (3, 1), (1, 2), (−1, 2)}, which is a true statement regarding the domain or range?

A domain [5, −1]

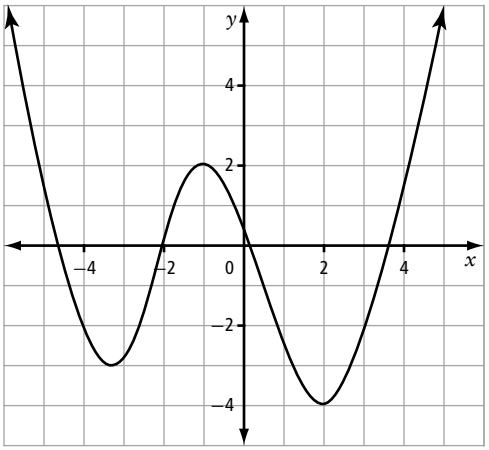
B range [1, 2]

C domain $\{x \mid -1 \leq x \leq 5, x \in \mathrm{R}\}$

D range $\{y \mid y = 1, 2\}$

4. Which of the following relations does not represent a function?

A



B

x	y
−3	−9
−2	−7
−1	−5
0	−3
1	−1
2	1
3	3

C $x = y^2$

D {(−2, 5), (−1, 5), (0, 5), (1, 5), (2, 5)}

5. A line with a positive slope would pass through which pair of points?

A (−5, −2), (3, −6) **B** (−3, 4), (−5, 2)

C (2, 5), (2, 2) **D** (4, 7), (6, 7)

6. Which of the following lines would have a slope that is undefined?

A $y = 3$

B $x = 3$

C $y = 0$

D $x = -y$

7. A line passing through the point (−3, 7) has a slope of $-\frac{3}{5}$. Which of the following ordered pairs represents another point on the line?

A (−5, 12)

B (2, 4)

C (3, −7)

D (7, −3)

8. The slopes of two lines are $-\frac{2}{9}$ and $\frac{k}{6}$. Which of the following values of k would make the two lines perpendicular?

A −27 **B** 1

C 18 **D** 27

9. What is the slope of the line defined by the equation $3x - 4y = 16$?

A 3 **B** $\frac{4}{3}$

C $\frac{3}{4}$ **D** −4

10. Which of the following is true when referring to the domain and range of $y = -2x + 5$?

A The domain refers to all possible values of y, and the range refers to all possible values of x.

B The domain refers to all possible input values, and the range refers to the resulting output values.

C The range refers to all possible independent values, and the domain refers to the possible dependent values.

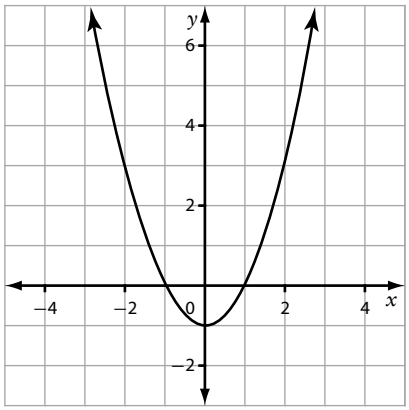
D The range refers to functions, and the domain refers to relations.

11. Which representation of a linear relation matches the following table of values?

x	y
1	−3
2	−1
3	1
4	3

A $y = 2x - 5$

B

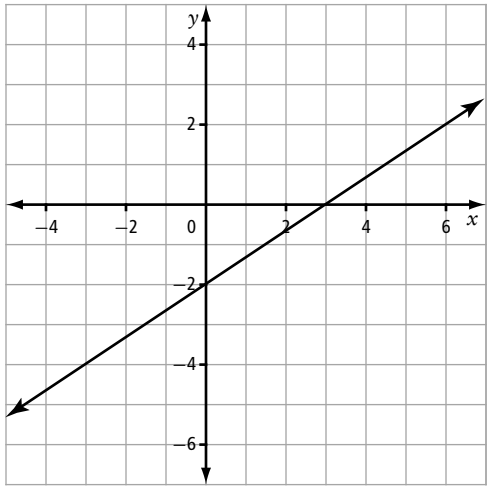


C {(1, −3), (2, 1), (3, −1), (4, 3)}

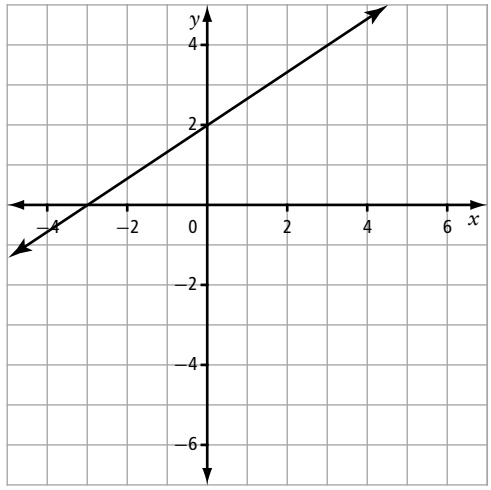
D The x-values go up by 1.

12. Which of the following graphs has a slope of $\frac{2}{3}$ and a y-intercept of −2?

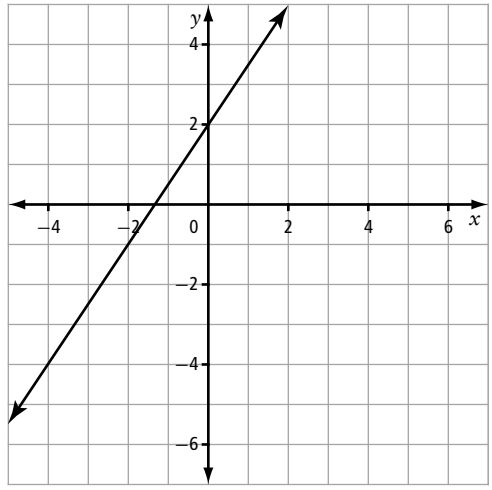
A



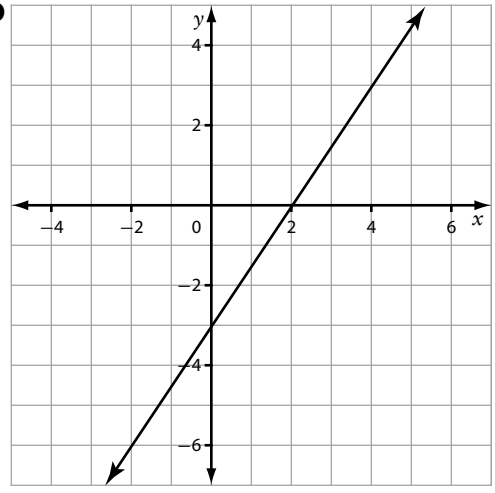
B



C



D



Numerical Response

13. A local band used to charge \$2000 for a concert that sold 200 tickets. The band has become more popular, so it now charges \$5000 for 350 tickets. What is the rate of change in the price per ticket?

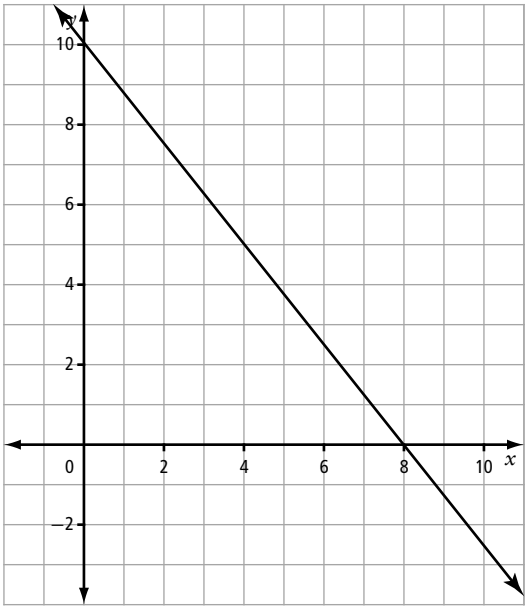
14. What is the slope of the line defined by $y + 2 = 3(x - 4)$?

15. A line passing through the point $(-1, 5)$ has a slope of -3. What is the value of b when the equation is written in the form $y = mx + b$?

16. Given the linear relation $d(t) = \frac{1}{2}t + 5$, what is the value of t when $d(t) = 15$?

17. Given $f(x) = -3x + 15$, determine $f(-2)$.

18. What is the x-intercept of the linear relation in the graph?



Extended Response

19. A line passes through the points $(-3, 5)$ and $(2, -3)$. Write the equation of this line in the form $Ax + By + C = 0$.

20. Students are selling chocolate bars to raise money for their band program. The relationship between the number of bars sold, x, and the profit, y, in dollars, can be represented by the equation $25x - 10y - 1500 = 0$.

a) Rewrite the equation in slope-intercept form.

b) What is the value of the slope? What does it represent?

c) What is the value of the y-intercept? What does it represent?

d) How many chocolate bars must the students sell in order for the fundraiser to pay off expenses?

21. A line passes through the point $(2, -5)$ and is parallel to the line $3x + 2y + 8 = 0$.

a) Express the equation of the line in slope-intercept form.

b) Rewrite the equation in the form $Ax + By + C = 0$.

c) Describe two methods of graphing the line from the general form of the equation, without first rewriting it in slope-intercept form.

22. Michelle is downloading music from an online music store. She pays \$0.49 for every song she downloads.

a) Create a table of values to represent the cost of downloading 5 songs.

b) Is the relation a function or a non-function? Explain your choice.

c) Write an equation that relates the number of songs downloaded to the cost.

d) Is this relation discrete or continuous? Explain your reasoning.