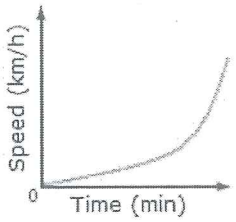
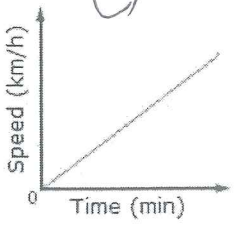
Chapter 6: Relations Review

1 Alexis got on her stationary bicycle and pedalled as hard as she could for 10 min. Which graph best shows her speed versus time?

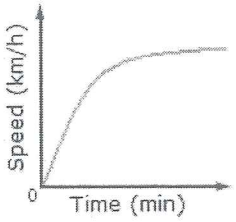
A.



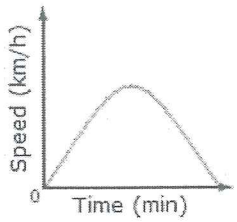
B.



C.



D.



2 Which of the relations shown is linear?

A.

x	y
0	0
1	2
2	4
3	6
4	8

B.

x	y
0	0
1	2
2	5
3	9
4	14

C.

x	y
0	−4
1	−1
2	0
3	1
4	4

D.

x	y
0	0
1	5
2	9
3	12
4	14

3 Which data set would represent discrete data?

Choose one answer.

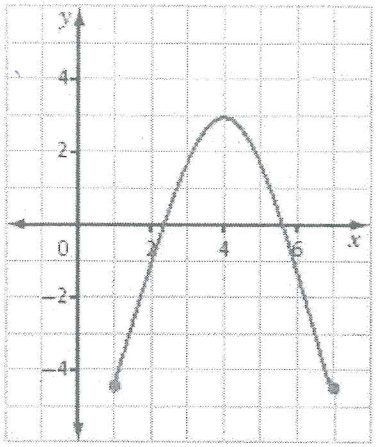
- a. Heights of students in your class.
- b. Shoe sizes for students in your class.
- c. The times required for students in your class to travel from home to your school.
- ✓ d. All of these.

4 For a bicycle moving at 10 km/h, the distance travelled, d, in kilometres per hour, is given by $d = 10t$, where t is the time, in hours. Which statement is true?

Choose one answer.

- ✓ a. t is the independent variable.
- b. d is the independent variable.
- c. t is the dependent variable.
- d. None of these are true.

5 Consider the graph. Determine the domain and range.



a.	Domain: $\{x \mid x \in R, 0 \le x \le 7\}$	Range: $\{y \mid y \in R, 0 \le y \le 3\}$
b.	Domain: $\{x \mid x \in R, 1 \le x \le 4\}$	Range: $\{y \mid y \in R, -4.5 \le y \le 0\}$
✓ c.	Domain: $\{x \mid x \in R, 1 \le x \le 7\}$	Range: $\{y \mid y \in R, -4.5 \le y \le 3\}$
d.	Domain: $\{x \mid x \in R, 0 \le x \le 7\}$	Range: $\{y \mid y \in R, -4.5 \le y \le 3\}$

6 Select all of the functions from the list of relations.

A. (1, 1), (2, 4), (3, 9), (4, 16)
B. (-1, 0), (0, 1), (1, 2), (2, 3)
C. (-5, 1), (0, 2), (10, 3), (15, 4)

7 The volume, V, in cubic feet, of air that can be compressed into a scuba tank is given by the relation $V = 0.64P$, where P is the pressure, in atmospheres (atm). A tank is compressed to 30 atm. What volume of air does it hold, to the nearest cubic foot?

Choose one answer.

a.	47 ft^3
b.	31 ft^3
c.	29 ft^3
✓ d.	19 ft^3

$V = (0.64)(30) = 19.2$

8 The cost, C, in dollars, of a catered social event is given by the relation $C(n) = 250 + 40n$, where n represents the number of guests. If you have $1250 to spend, how many guests can you invite?

a.	37
b.	31
✓ c.	25
d.	20

$1250 = 250 + 40n$

$1000 = 40n$

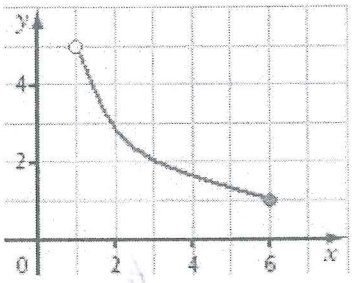
$n = 25$

9 The amount of fuel, F, in gallons, remaining in the tanks of a small aircraft versus the flying time, t, in hours, is shown in the table. Which function correctly relates amount of fuel to time?

Time (h)	Fuel (gal)
0	48
1	40
2	32
3	24
4	16

- a. $F = 48 \div t$
- b. $F = 48 - t$
- c. $F = 48 + 8t$
- ✓ d. $F = 48 - 8t$

10 Consider the graph. Which statement is true?



A. The relation is not a function.
B. The domain is $\{x \mid x \in \mathbb{R}, 1 \leq x \leq 6\}$.
C. The range is $\{y \mid y \in \mathbb{R}, 1 \leq y < 5\}$.
D. All of these are true.

11 Ron flies his airplane a distance of 20 km over the ground. He gains 800 m in altitude over the flight. What is the slope of the line segment representing the flight?

Choose one answer.

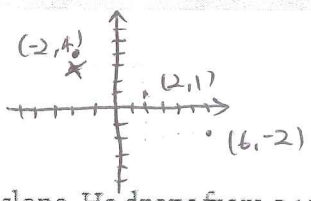
- a. 40
- b. 4
- ✓ c. $\frac{1}{25}$ or 0.04
- d. $\frac{1}{40}$

$$\frac{800\,m}{20\,Km} = \frac{800}{20000} = \frac{1}{25}$$

12 A line passes through the point P(2, 1) and has a slope of $-\frac{3}{4}$. What is another point on the same line?

Choose one answer.

- ✓ a. A(6, -2)
- b. B(6, 4)
- c. C(5, -1)
- d. D(5, 5)



13 Mac drives his truck down a hill with a constant slope. He drops from 2400 m above sea level to 1800 m above sea level. During this time he moves 12 km horizontally closer to his destination. Express the descent as a rate of change in metres per kilometre.

- a. 200 m/km
- b. 150 m/km
- ✓ c. 50 m/km
- d. $\frac{1}{50}$ m/km

$\frac{2400 - 1800}{12} = \frac{600}{12} = 50\,m/km$