

# 2019 EQAO Grade 9 Sample Test

Linear Relationships Questions

4. Information from linear relationships are shown in three of the tables below.

One table shows information from a non-linear relationship.

Use first differences to determine which option shows information from a non-linear relationship.

a.

$q$	$V$
1	5
2	7
3	9
4	11

c.

$q$	$V$
1	-3
2	-3
3	-3
4	-3

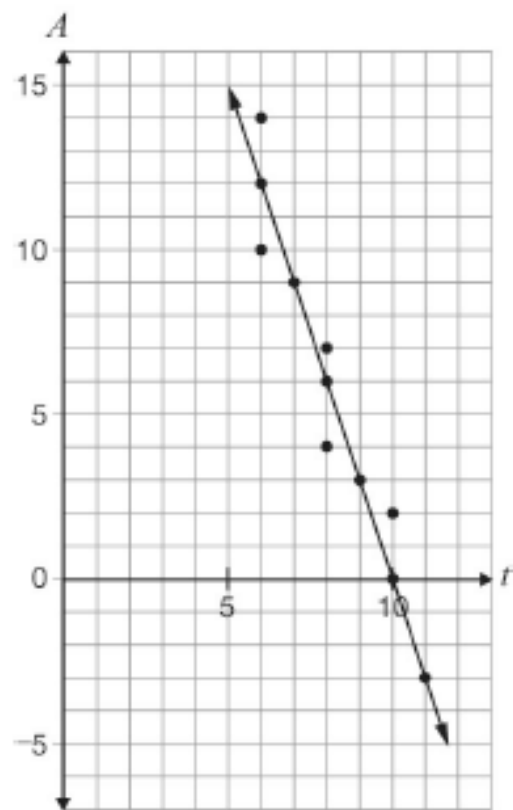
b.

$q$	$V$
1	9
2	5
3	1
4	-3

d.

$q$	$V$
1	-1
2	2
3	6
4	11

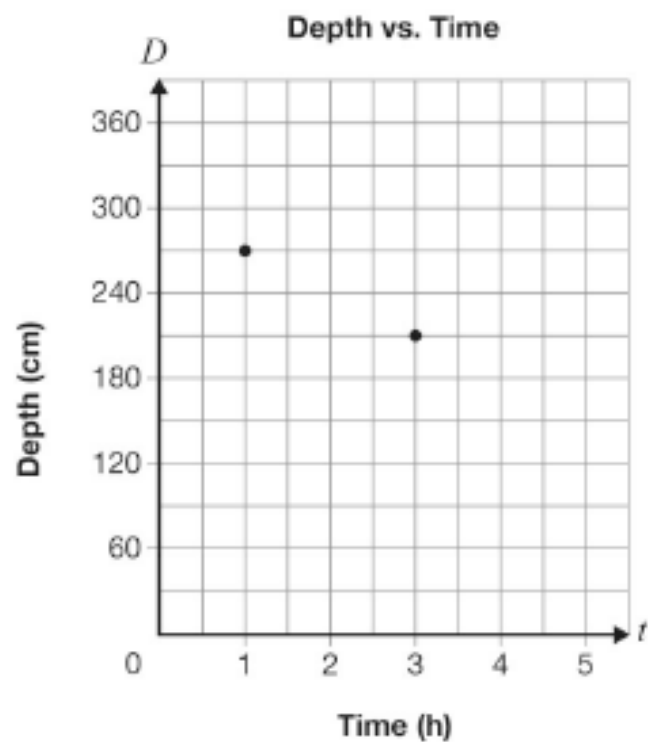
5. A scatter plot with a line of best fit is shown below.



What is the equation of the line of best fit?

- a.  $A = 10 - 3t$
- b.  $A = 30 - 3t$
- c.  $A = 10 + 3t$
- d.  $A = 30 + 3t$

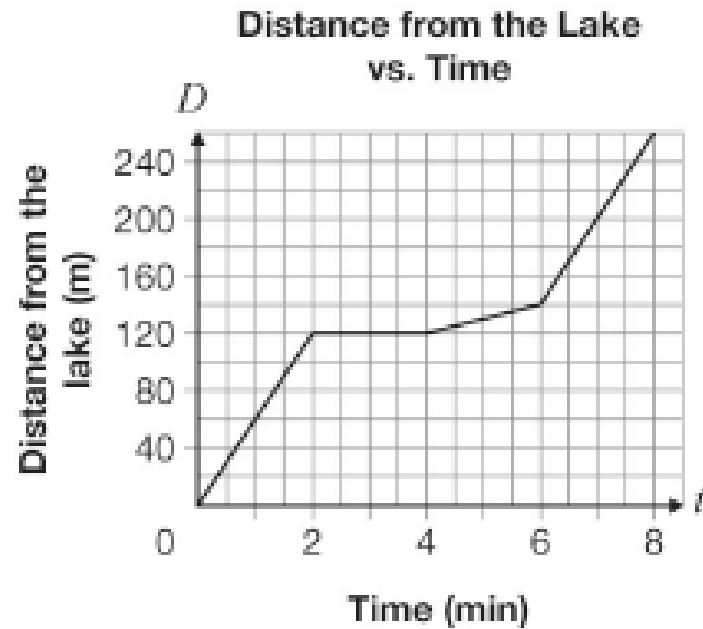
6. Water in a swimming pool is draining at a constant rate. The graph below shows information about the depth of the water at certain times since the draining began.



How long since the draining began will it take for the water to get to a depth of 90 cm?

- a. 5 hours
- b. 6 hours
- c. 7 hours
- d. 9 hours

7. The graph shown represents the four segments of Chen's trip home from a lake.



Which statement about his trip is true?

- a. He stopped for a total of 3 minutes.
- b. He travelled 120 m in the first minute.
- c. He travelled the fastest between minute 4 and minute 6.
- d. He travelled the same speed in the first and fourth segments of his trip.

## 9. Accommodations

Information about the linear relationship between the total cost to rent an apartment while on holiday and the number of nights it is rented is given for two companies.

### Holiday Apartments

\$360 for 3 nights  
or  
\$720 for 6 nights

### Vacation Apartments

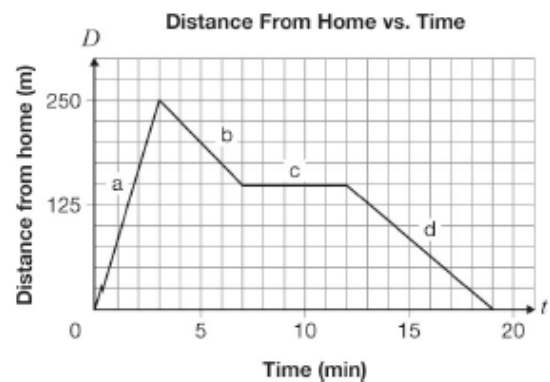
Number of nights	Cost (\$)
3	\$390
5	\$550
7	\$710

Complete the table by determining the initial value and selecting the type of variation for each company. Justify your choice of variation for each company.

Company	Initial value	Type of variation and justification
Holiday Apartments	\$ _____	Circle one:      Direct variation      Partial variation  Justification:
Vacation Apartments	\$ _____	Circle one:      Direct variation      Partial variation  Justification:

## 10. Morning Walk

Melanie goes on a morning walk with her dog. This graph shows the relationship between Melanie's distance from her home and time.



Describe the four segments of Melanie's walk by completing the missing parts of this table.

Three parts have been completed for you.

Segment	Distance travelled (m)	Time (min)	Speed (m/min)	Direction
a	250	3		Away from home
b				
c				
d				

## 11. Line W

Line W has

- the same slope as the line represented by  $7x - 5y + 15 = 0$  and
- the same  $y$ -intercept as the line represented by  $3x + 4y = -18$ .

Determine the slope,  $y$ -intercept and equation of Line W.

Show your work.

Line W

Slope: \_\_\_\_\_  $y$ -intercept: \_\_\_\_\_

Equation:  $y =$  \_\_\_\_\_



14. Which of the following is not an equation of a line?

a.  $y = -4$

b.  $y = 9x^2$

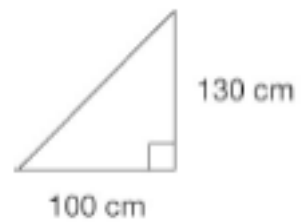
c.  $y = 3x + 6$

d.  $7x - 2y + 28 = 0$

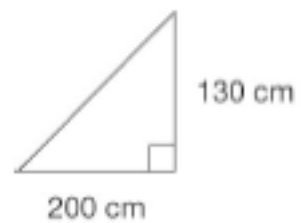
15. The rise to run ratio of a ramp must be less than 0.13.

Which of these ramps meets this requirement?

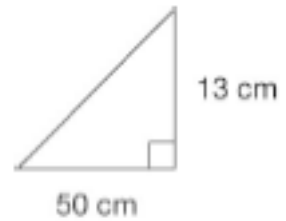
a.



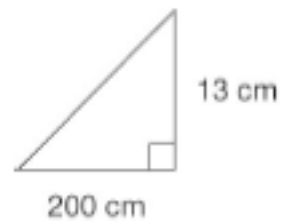
b.



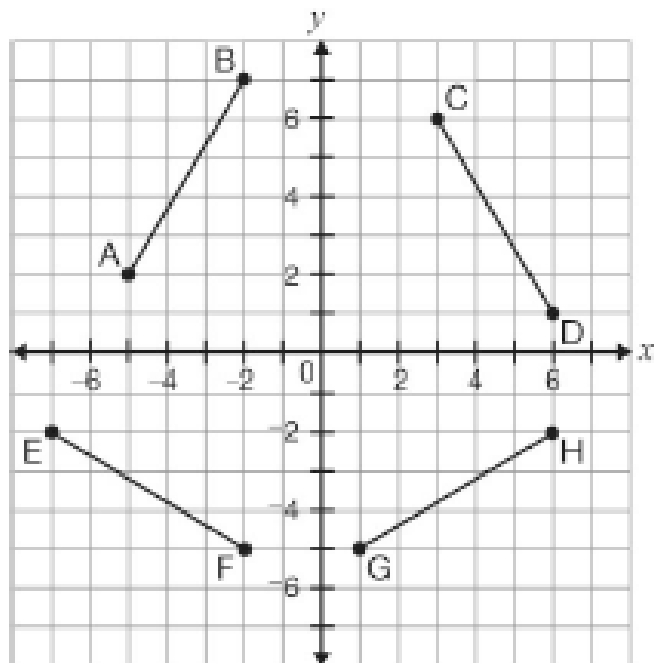
c.



d.



16. Four line segments are shown on this grid.



Which statement about the line represented by  $y = \frac{3}{5}x - 2$  is true?

- a. It is parallel to line segment AB.
- b. It is parallel to line segment EF.
- c. It is perpendicular to line segment CD.
- d. It is perpendicular to line segment GH.

17. A line on a graph has a rise of  $-3$  for each run of  $2$ , and a  $y$ -intercept of  $-5$ .

Which of the following is the equation of the line?

a.  $y = \frac{3}{2}x + 5$

b.  $y = \frac{2}{3}x + 5$

c.  $y = -\frac{3}{2}x - 5$

d.  $y = -\frac{2}{3}x - 5$

18. The total cost of purchasing T-shirts for the math club,  $C$ , in dollars, is represented by the equation  $C = 20 + 8n$ , where  $n$  is the number of T-shirts purchased.

The club will order a minimum of 5 T-shirts and a maximum of 10.

What is the range of possible values for the total cost of the T-shirts?

- a. \$40 to \$80
- b. \$40 to \$100
- c. \$60 to \$80
- d. \$60 to \$100