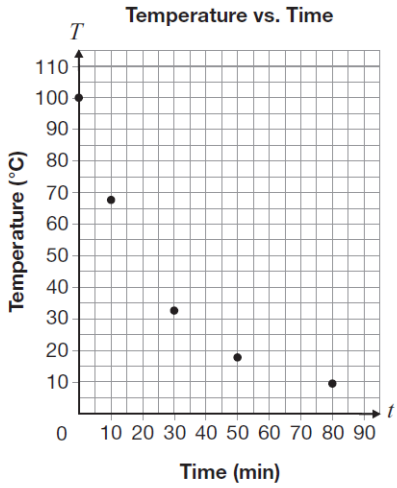
Review and EQAO Practice for Chapter 5 Part 2 - Applications

2017

5 A pot of hot soup is placed in a refrigerator to cool. Information about the temperature of the soup at five different times is shown.



Which statement below is true based on the overall trend in the data?

a At 90 minutes, the temperature of the soup will be 0 °C.

b The temperature of the soup decreases at a constant rate.

c It takes approximately 18 minutes for the soup to cool to half its original temperature.

d There is a greater decrease in temperature between 50 and 80 minutes than between 10 and 30 minutes.

7 One of the following tables shows information about a linear relationship.

Using first differences, select this table.

a

x	y
−3	9
−2	6
−1	4
0	3

c

x	y
2	0
3	−2
4	−4
5	−6

b

x	y
0	−5
1	−3
2	0
3	3

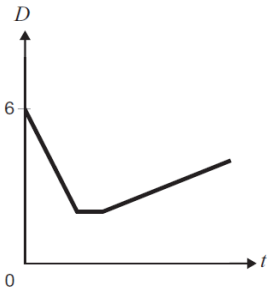
d

x	y
−1	10
0	15
1	25
2	40

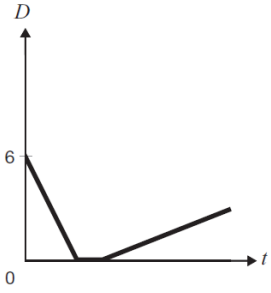
8 Raven starts 6 m away from a motion detector. She walks quickly toward it, stops 2 m from the detector for a moment and then backs away from it slowly.

Which of the following graphs could represent the relationship between her distance from the detector, D, and time t, in seconds?

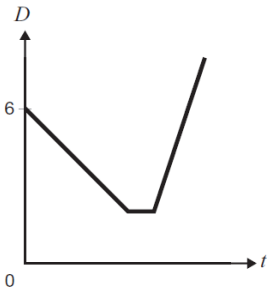
a



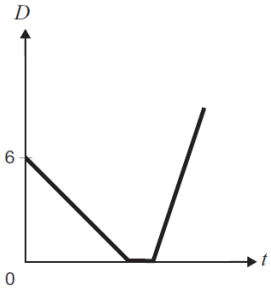
c



b



d



17 The relationship between the total cost, C, of holding a dance and the number of guests, n, is represented by the equation $C = 25 + 15n$.

Due to fire codes, the number of guests cannot exceed 150.

What are all the possible values of the total cost for this situation?

The total cost can range from

a $25 to $2275.

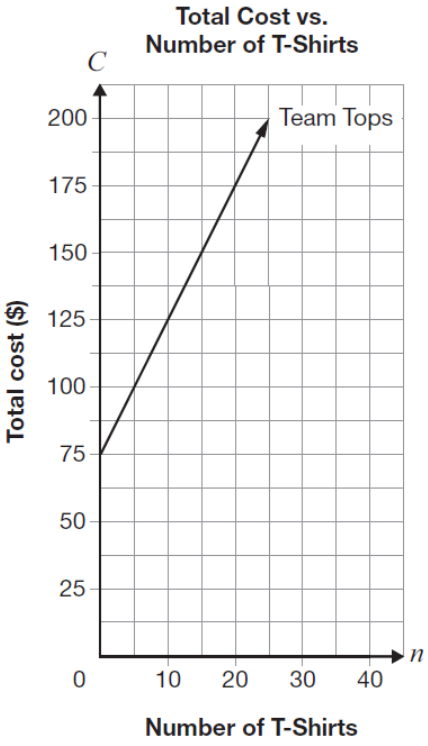
b $25 to $3765.

c $15 to $2275.

d $15 to $3765.

2016

18 The total cost for T-shirts at Team Tops is made up of a set-up fee and a charge for each T-shirt as represented by the graph.



Super Shirts has no set-up fee but charges twice as much for each T-shirt as Team Tops.

Which of the following statements is true?

a It is always cheaper to order from Super Shirts.

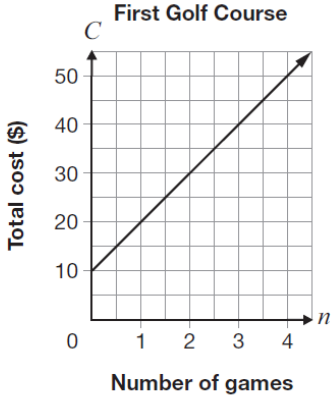
b It is the same price to order 150 T-shirts from either company.

c It is cheaper to order 10 T-shirts from Team Tops than from Super Shirts.

d It is more expensive to order 20 T-shirts from Super Shirts than from Team Tops.

6 Two golf courses offer student memberships. Information about the linear relationships between the total cost, C, in dollars, and the number of games played, n, at these two golf courses is given below.

First Golf Course



Second Golf Course

Number of games, n	Total cost, C ($)
3	51
5	85
9	153
12	204

Which of the following statements correctly describes the two relationships?

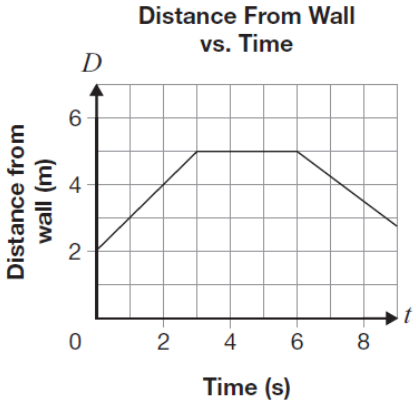
a They are both direct variations.

b The first is a direct variation, and the second is a partial variation with an initial value of $17.

c The first is a partial variation with an initial value of $10, and the second is a direct variation.

d The first is a partial variation with an initial value of $10, and the second is a partial variation with an initial value of $17.

7 The graph below represents Joe's distance from a wall as he walks.



Which statement could describe Joe's walk?

a Joe walks toward the wall, stands still and then walks away from the wall.

b Joe walks away from the wall, stands still and then walks toward the wall.

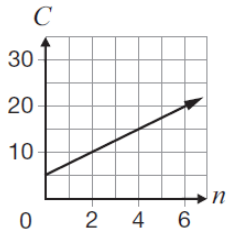
c Joe walks toward the wall, stands still and then continues to walk toward the wall.

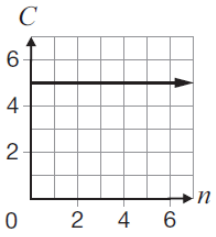
d Joe walks away from the wall, stands still and then continues to walk away from the wall.

15 Information about four different linear relationships between C and n is shown below.

n	C
0	50
8	90
16	130

n	C
10	30
12	35
14	40





How many of the linear relationships have a rate of change of 5?

a 4

b 3

c 2

d 1

18 The total cost to repair a fridge, C, in dollars, can be represented by the equation $C = 60t + 30$, where t is the repair time in hours.

Which of the following statements is true about this relationship?

a The hourly rate is \$90.

b The fixed fee is \$90.

c The hourly rate is \$60, and the fixed fee is \$30.

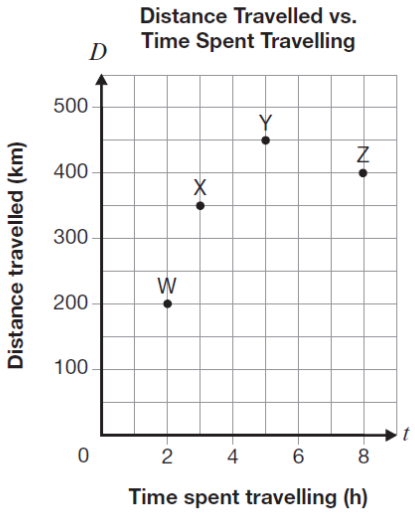
d The hourly rate is \$30, and the fixed fee is \$60.

2015

6 Joanne drives for 2.5 hours at a constant speed and travels 250 km.

François drives at a constant speed exactly 10 km/h less than Joanne's speed.

Which point on the graph below could represent the distance travelled and time spent travelling for François?



a Z

b Y

c X

d W

7 Which of the following shows information from a linear relation between C and n?

a

n	C
0	0
1	1
2	3

c

n	C
0	−9
4	−6
16	−3

b

n	C
0	−7
2	−5
4	−3

d

n	C
0	2
5	4
20	6

8 The total cost of yearbooks for a school is made up of a \$375 set-up fee and \$25 for each yearbook purchased.

There is a linear relationship between the total cost and the number of yearbooks purchased.

What type of variation is this relationship, and what is its initial value?

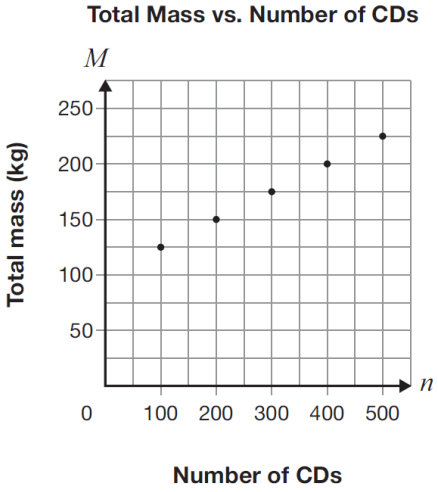
a direct variation, \$375

b direct variation, \$25

c partial variation, \$375

d partial variation, \$25

9 A company ships CDs in crates of equal size. The graph below shows the relationship between the total mass of a crate and the number of CDs it contains.



Which of the following equations represents the relationship between the total mass of a crate, M, and the number of CDs it contains, n?

a $M = 0.25n + 100$

b $M = 4n + 100$

c $M = 0.25n + 125$

d $M = 4n + 125$

11 A local band pays \$5000 to record its first album and \$0.15 for each CD made.

The band pays \$7000 to record its second album and \$0.10 for each CD made.

How will the graph of the relationship between the total cost and the number of CDs made for the second album differ from the graph for the first album?

The graph of the line for the second album will start

a lower on the vertical axis and be steeper.

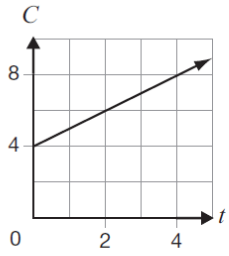
b higher on the vertical axis and be steeper.

c lower on the vertical axis and be less steep.

d higher on the vertical axis and be less steep.

22 Information about three different relationships between C, in dollars, and t, in hours, is shown below.

t (h)	C ($)
0	10
2	14
4	18



$C = 4 + 0.5t$

How many of the three relationships between C and t have a rate of change of \$4 per hour?

a 0

b 1

c 2

d 3

24 The maximum number of tickets that can be sold for a school play is 350.

The total profit earned, P, can be determined using the equation $P = 4.50n - 1080$, where n is the total number of tickets sold.

Which of the following statements is true?

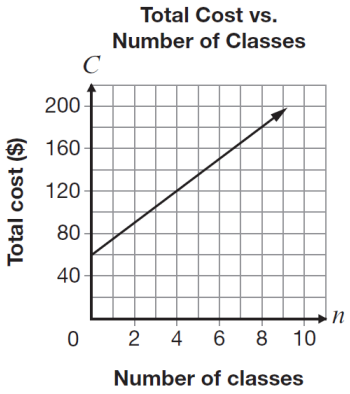
a The maximum profit is \$1080.

b The maximum profit is \$1575.

c The total profit is \$0 when 240 tickets are sold.

d The total profit is \$0 when 350 tickets are sold.

25 Two gyms offer fitness classes. The graph below shows the total cost for the first gym.



For 4 classes, both gyms have the same total cost.

Which of the following could represent the total cost for the second gym?

a $C = 60 + 4n$

b $C = 40 + 15n$

c The total cost is made up of a membership fee of \$60 and \$10 per class.

d The total cost is made up of a membership fee of \$40 and \$20 per class.

2017

10 Fabric Purchase

Two companies sell fabric online. The total cost, C, in dollars, for n metres of fabric for each company is given below.

- Fabric Fun: $C = 4.25n + 3.00$
- Sew-a-Lot: $C = 6.50n$

Complete the chart below by determining the initial value, rate of change and type of variation for the relationship for each company.

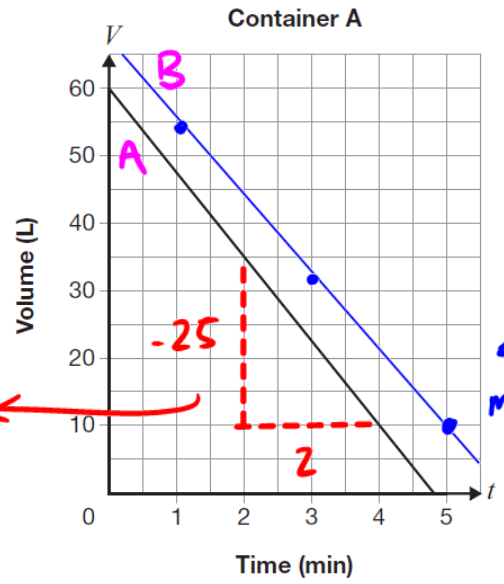
Justify the type of variation you have selected.

Fabric Fun	Sew-a-Lot
Initial value: 3.00 **Rate of change:** 4.25	**Initial value:** 0 **Rate of change:** 6.50
Type of variation Circle one: (Partial) Direct Justification Fabric Fun is a partial variation because there is a fixed cost and the fixed cost is 3.00. $y = mx + b$ → partial variation	Type of variation Circle one: Partial (Direct) Justification Sew-a-lot is a direct variation because there is no fixed cost. $y = mx$ → direct variation

2017

12 Draining Away

Water drains out of two different containers at constant rates. Information about the volume of water in the containers over time is given below.



Container B

Time (min)	Volume (L)
1	54
3	32
5	10

x y

2 2 -22 -22

slope = rise / run

= -25 / 2

= -12.5

method #2: plot

slope = $m = \frac{y_2 - y_1}{x_2 - x_1}$

$m = \frac{10 - 32}{5 - 3}$

$m = -11$

Out of which container is the water draining at a faster rate?

Circle one: (Container A) Container B

Justify your answer.

∴ container A is draining faster because it has a larger slope value (m-value)

∴ The line is less steep for container A compared to container B. Container A is draining faster

2016

11 Theatre Programs

A company charges schools to print programs for school plays. Information about the linear relationship between the total cost and number of programs printed is shown below.

Number of programs, n	Total cost, C ($)
350	220
500	250
750	300

Determine an equation to represent this relationship.

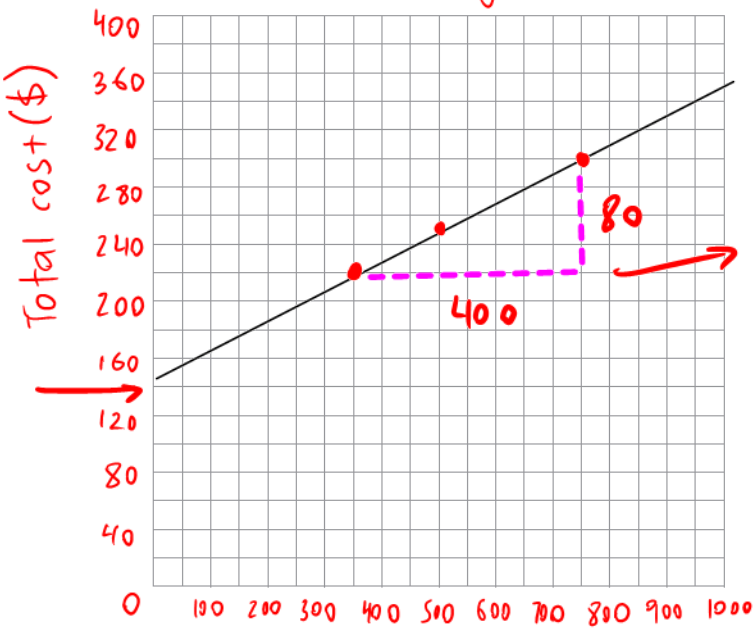
$y = \frac{1}{5}x + 150$

Show your work.

You have the option of using the grid if you wish.

method 1: graph

Number of Programs vs. Total cost



y-intercept = 150

slope = rise / run = 80/400 = 1/5

method 2: solve

(350, 220) (500, 250)

x_1 y_1 x_2 y_2

$m = \frac{y_2 - y_1}{x_2 - x_1}$

$m = \frac{250-220}{500-350}$

$m = \frac{30}{150}$

$m = \frac{1}{5}$

$y = mx + b$

$y = \frac{1}{5}x + b$

choose one point (350, 220)

x y

$220 = \frac{1}{5}(350) + b$

$220 = 70 + b$

$220 - 70 = b$

$150 = b$

$y = \frac{1}{5}x + 150$

13 Terrific Ts 2016

A school orders T-shirts from Terrific Ts. The total cost is made up of a set-up fee of $115 and a cost of $3 per T-shirt.

Terrific Ts requires a minimum order of 25 T-shirts. The school can spend a maximum of $800.

Determine all the possible values of the total cost, C, and the number of T-shirts, n, for this situation.

Show your work.

$C = 3n + 115$

↑ cost ↑ # of t-shirts

The possible values of n in this situation are minimum t-shirts = 25 ; maximum t-shirts = 228.

$C = 3n + 115$

$800 = 3n + 115$

$800 - 115 = 3n$

$685 = 3n$

$\frac{685}{3} = \frac{3n}{3}$

$n = 228.3$

$n = 228$ max t-shirts

The possible values of C in this situation are minimum cost = $190 ; maximum cost = $799.

25 t-shirts

$C = 3n + 115$

$C = 3(25) + 115$

$C = 75 + 115$

$C = 190$

228 t-shirts

$C = 3n + 115$

$C = 3(228) + 115$

$C = 684 + 115$

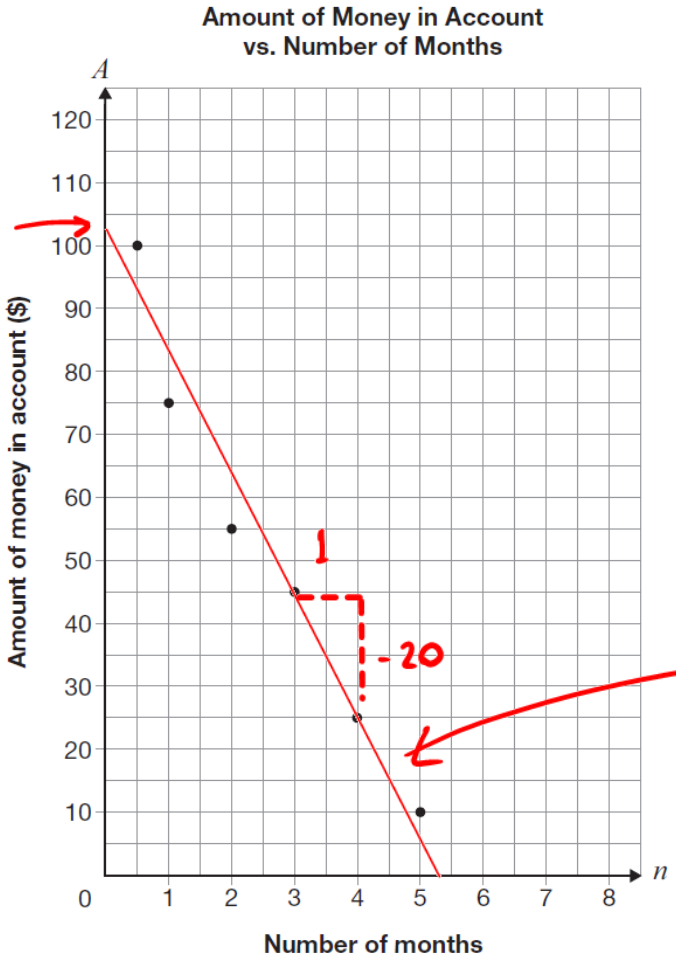
$C = 799$

max cost cant be $800 since if you have a maximum of 228 shirts, the cost is $799

2014

13 More Money, Please!

The graph below shows information about the amount of money, A, in Shreya's bank account and the number of months, n, she has had the account.



y-intercept = 102.5

Slope of the line

$m = \frac{\text{rise}}{\text{run}} = \frac{-20}{1}$

$m = -20$

Draw the line of best fit for the data.

Determine the equation of your line of best fit.

$A = -20n + 102.5$

Show your work.