Academic

Grade 9 Assessment of Mathematics

2014

RELEASED ASSESSMENT QUESTIONS

Record your answers to the multiple-choice questions on the Student Answer Sheet (2014, Academic).

Please note: The format of this booklet is different from that used for the assessment. The questions themselves remain the same.

Education Quality and Accountability Office

EQAO

1 The following is the formula for the area of a circle:

$$A = \pi r^2$$

If the radius of a circle is 1.25 cm, which of the following is closest to its area?

a $15.4\ \text{cm}^2$

b $7.9\ \text{cm}^2$

c $4.9\ \text{cm}^2$

d $3.9\ \text{cm}^2$

2 What goes in the $\square$ to complete the equation below?

$$(8x^3)(\square) = 24x^{12}$$

a $3x^9$

b $3x^4$

c $16x^9$

d $16x^4$

3 A cellphone company offers four choices for purchasing talk time.

Which of the following has the lowest cost per minute?

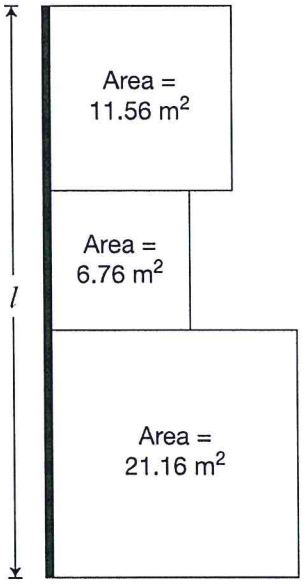
a 200 minutes for $24.50

b 550 minutes for $68.00

c 700 minutes for $80.25

d 850 minutes for $99.50

4 Marc has a garden that is made up of three square sections. He builds a fence on one side of the garden as shown below.



Which of the following is closest to the length of the fence, l?

a 19.7 m

b 10.6 m

c 9.9 m

d 6.3 m

5 What is the value of x in the equation

$$-4(2x - 1) = 36?$$

a -4

b $-\frac{35}{8}$

c $-\frac{37}{8}$

d -5

6 Share the Profits

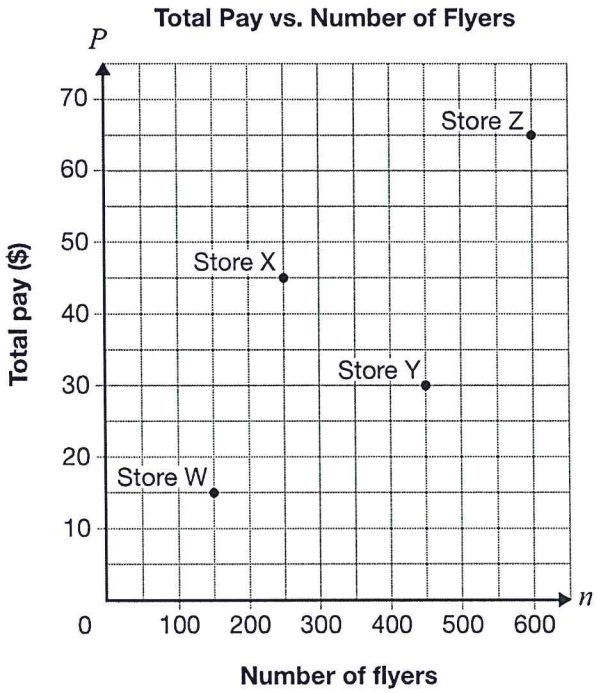
Three partners, Luc, Deborah and Melanie, share the profits of a business in the ratio 2:3:7 respectively.

The profit for this year is $176 496.

Determine the share of the profit for each partner.

Show your work.

7 Four stores hire people to deliver flyers. Each pays a different amount per flyer delivered. The points on the graph below show the total pay for a certain number of flyers delivered for each of the stores.



Which store will pay $45 for 450 flyers delivered?

a Store W

b Store X

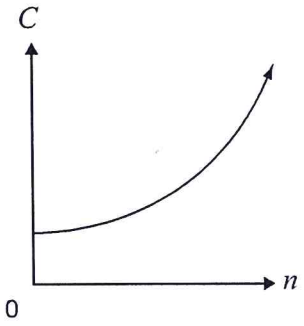
c Store Y

d Store Z

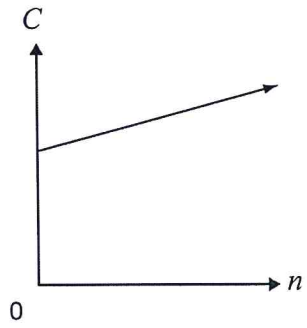
8 The total yearly cost of a museum membership is made up of a fee of $25, plus $5 per visit.

Which graph best represents the relationship between total yearly cost, C, and number of visits, n?

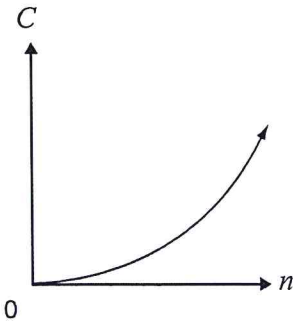
a



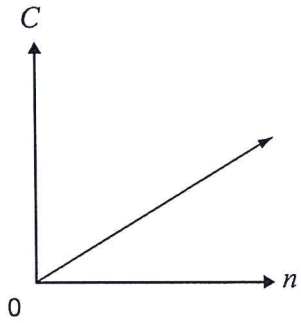
b



c



d



9 Gertrude sells shoes.

Her total pay each week is made up of a base salary and a commission of 15% of her sales that week.

One week, her total pay is $167.50 and she has $850 in sales.

Which equation below represents the relationship between her total pay, P, each week and sales, s?

a $P = 15s$

b $P = 40 + 0.15s$

c $P = 850 + 0.15s$

d $P = 167.50 + 0.15s$

10 Which of the following shows data from a non-linear relation?

a

n	*P*
1	8
2	5
3	2
4	−1

b

n	*P*
5	3.25
10	4.00
15	4.75
20	5.50

c

n	*P*
2	8
4	$8\frac{1}{3}$
6	$8\frac{2}{3}$
8	9

d

n	*P*
3	25
6	16
9	9
12	4

11 What is the value of P in the equation below when $r = -7$?

$$P = 4 - 2r$$

a −14

b −10

c 14

d 18

12 The table below shows information about the linear relationship between Ben's total savings and the number of months he saves money.

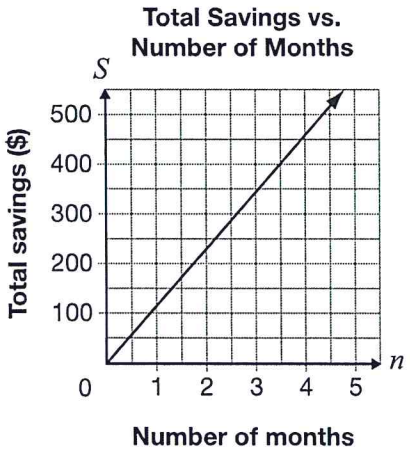
Number of months, n	Total savings, S ($)
3	345
6	540
9	735
12	930

Which of the following represents this relationship?

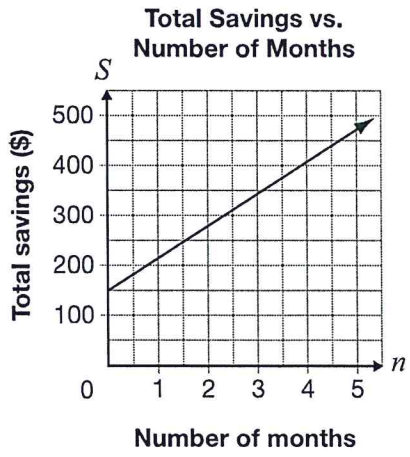
a $S = 65n + 345$

b $S = 195n + 150$

c

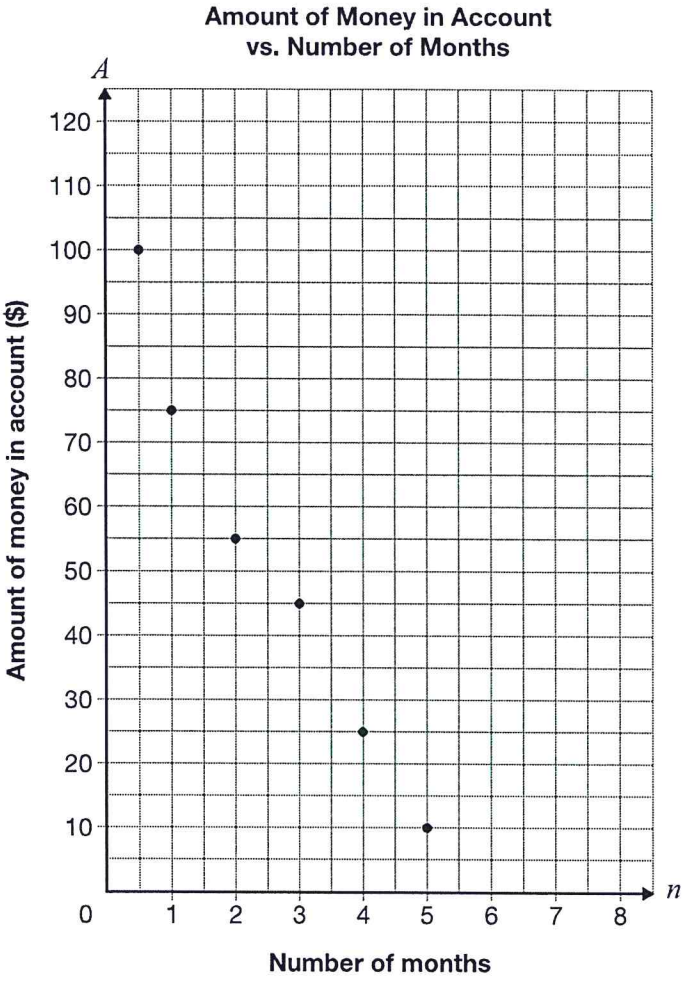


d



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.



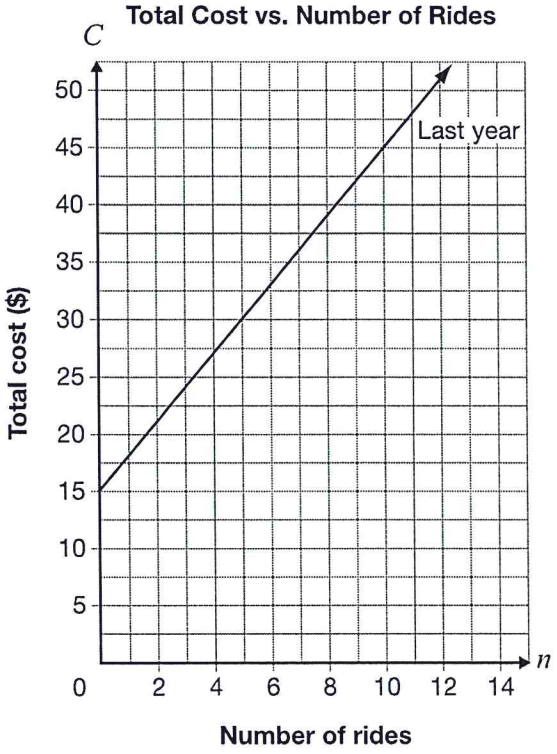
Draw the line of best fit for the data.

Determine the equation of your line of best fit.

Show your work.

14 Roll with It!

The total cost at an amusement park is made up of an admission fee and a cost per ride. Information about the total cost for n rides last year is shown below.



This year, the cost per ride is reduced from last year, but the total cost for 10 rides is the same.

Determine a possible equation for the total cost, C, for this year. Include an admission fee and a cost per ride.

Justify your answer.

15 The equation of a line is $5x - 2y + 10 = 0$.

Which of the following expresses this equation in the form $y = mx + b$?

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

b $y = \frac{5}{2}x + 10$

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

d $y = -\frac{5}{2}x + 10$

16 A formula for determining the slope of a line is given below.

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

What is the slope of the line that passes through the points (2, 3) and (5, −6)?

a -11

b -3

c $-\frac{1}{3}$

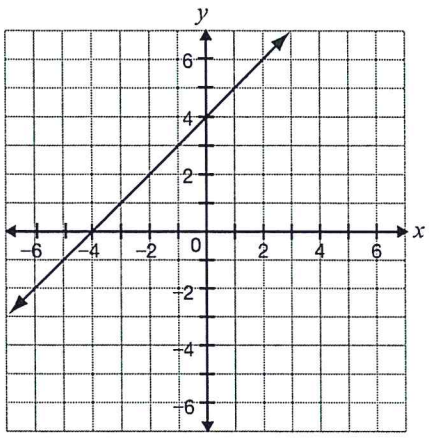
d $-\frac{1}{11}$

17 Consider the line represented by the equation $y = 3x + 2$.

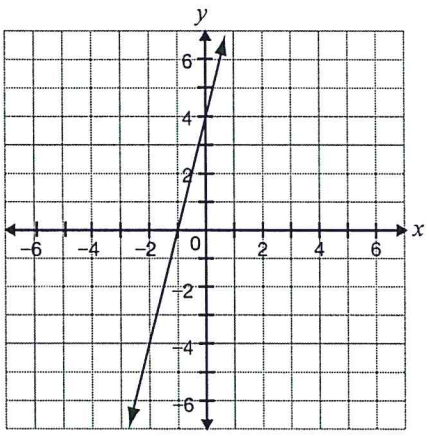
A new line is formed by decreasing the slope and increasing the y-intercept.

Which of the following could be the graph of the new line?

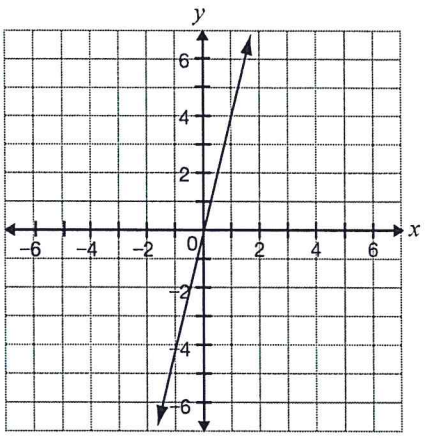
a



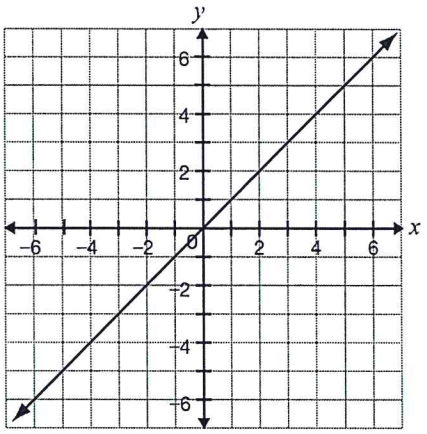
b



c



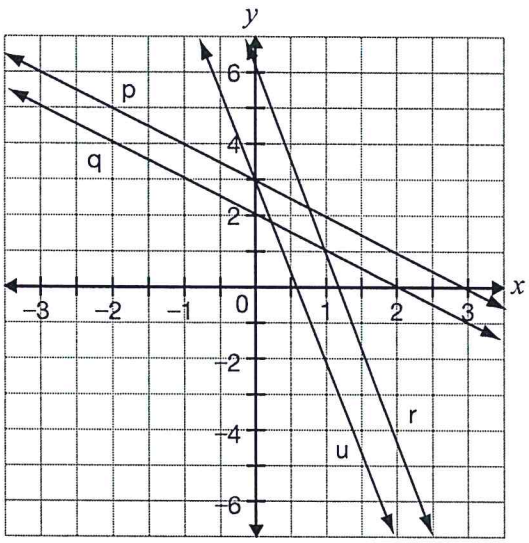
d



18 Lee thinks of a line represented by the equation $y = -4x + 6$.

Which line on the graph below is

- steeper than Lee's line and
- has a y-intercept that has half the value of Lee's line?



a p

b q

c r

d u

19 A line has a y-intercept of 4 and a slope of -3.

Which equation represents this line?

a $y = 4x + 3$

b $y = 4x - 3$

c $y = 4 + 3x$

d $y = 4 - 3x$

20 The table below shows information about the total cost to rent a car and the distance driven.

Distance driven, d (km)	Total cost, C ($)
100	65
200	80
300	95
400	110

What information would the C-intercept and slope of the graph of this linear relationship give?

a There is no fixed fee, and the cost per kilometre is $0.15.

b There is no fixed fee, and the cost per kilometre is $0.65.

c There is a $50 fixed fee, and the cost per kilometre is $0.15.

d There is a $50 fixed fee, and the cost per kilometre is $0.65.

21 Jared uses the equation $C = 30n$ to determine the cost, C, in dollars, for renting a car for n days, where n is a whole number.

If Jared can spend a maximum of $200 on the rental, which of the following describes the possible values of n?

a 7, 8, 9, ...

b 6, 7, 8, 9, ...

c 0, 1, 2, 3, 4, 5, 6

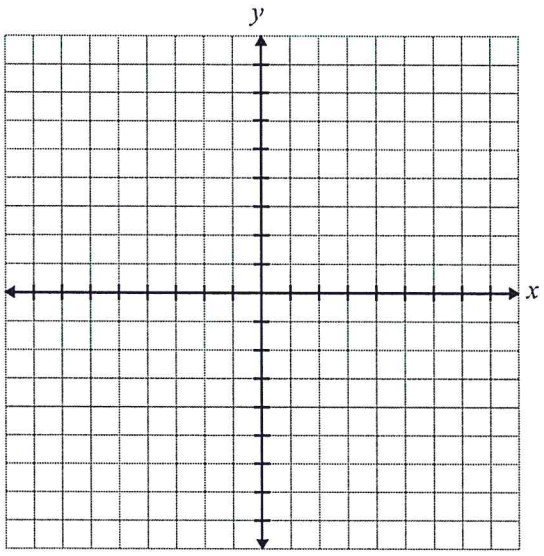
d 0, 1, 2, 3, 4, 5, 6, 7

22 Is It a Line?

Determine whether each of the relations in the chart below is linear or non-linear.

Justify your answers. You may use the grid if you wish.

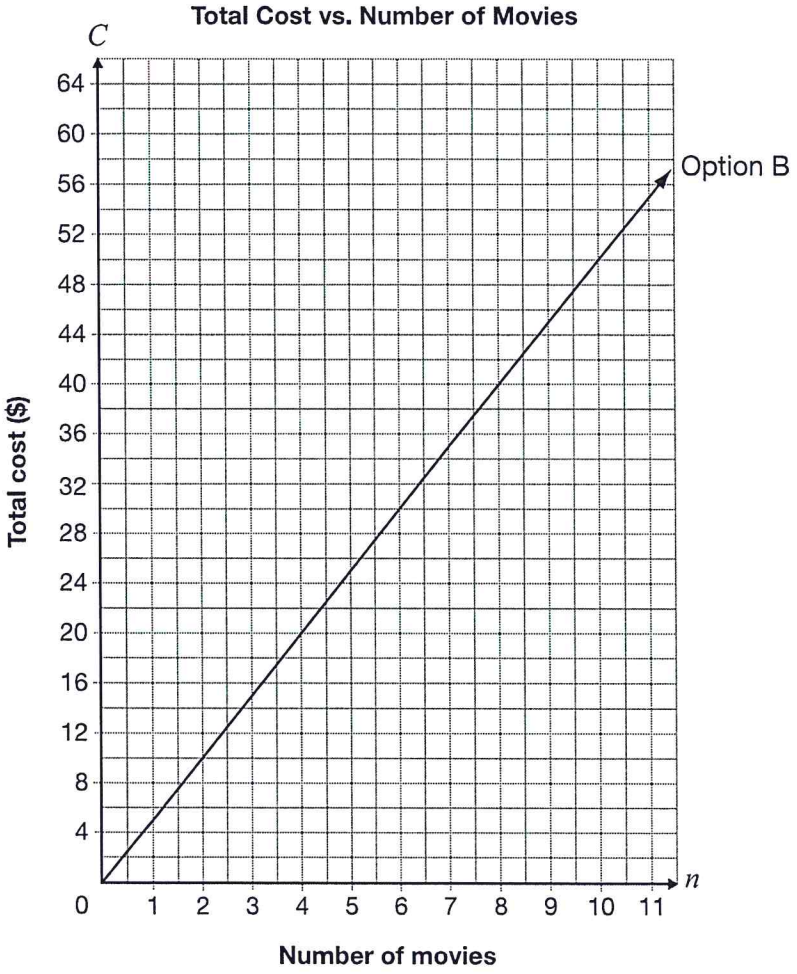
$-2x + 6y = 18$			$y = 4x^2 + 3$		
Circle one:	Linear	Non-linear	**Circle one:**	Linear	Non-linear
Justification			**Justification**		



23 Movie Night

There are two payment options for downloading movies from a Web site.

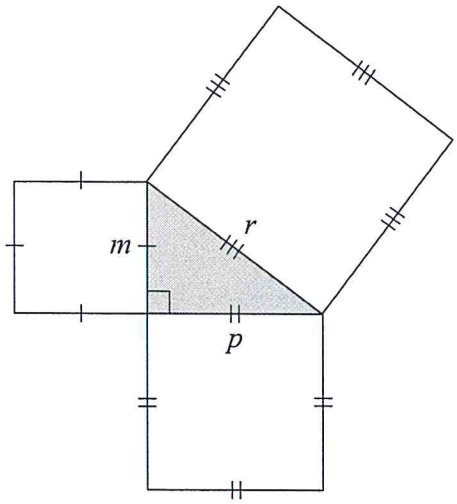
- Option A: Pay $30 for a membership and $2 per movie downloaded.
- Option B: Shown on the grid below.



Determine under which conditions a person should select Option A and under which conditions a person should select Option B.

Justify your answer.

24 The diagram below is made of a right triangle and three squares.



Which of the following is represented by this diagram?

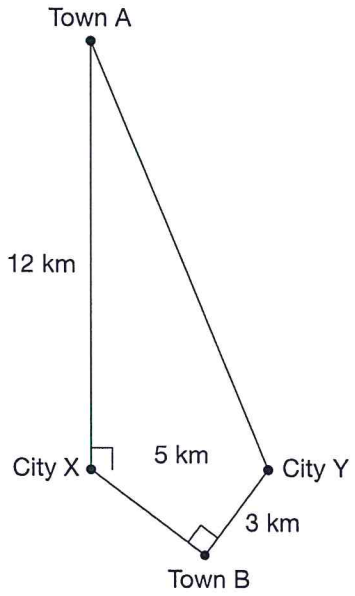
a $p^2 = r^2 - m^2$

b $p^2 = m^2 - r^2$

c $r^2 = p^2 - m^2$

d $r^2 = m^2 - p^2$

25 The 5 km of highway between City X and City Y is closed. There are two possible detour routes: one through Town A and one through Town B, as shown in the diagram below.



How much shorter is the detour through Town B than the detour through Town A?

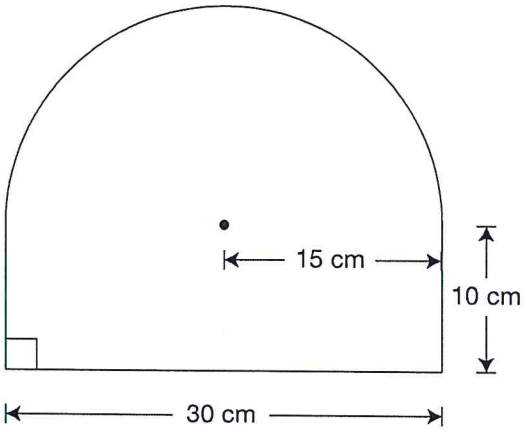
a 7 km

b 9 km

c 16 km

d 18 km

26 The sign below is made up of a rectangle and a semicircle.



Which of the following is closest to the area of the sign?

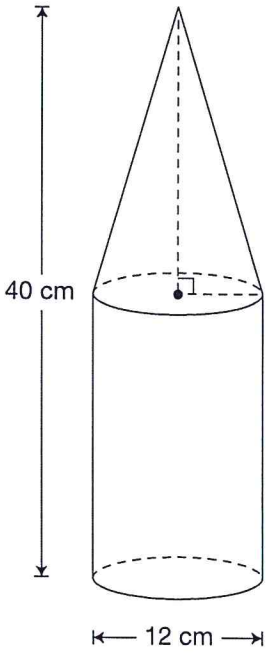
a $347\ cm^2$

b $653\ cm^2$

c $1007\ cm^2$

d $1410\ cm^2$

27 The container pictured below is made up of a cone and a cylinder. The cone and the cylinder have the same height.



Which of the following is closest to the volume of the container?

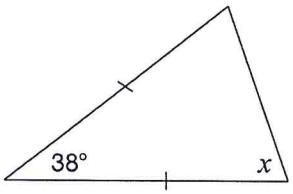
a $2261\ cm^3$

b $3016\ cm^3$

c $3393\ cm^3$

d $4524\ cm^3$

28 What is the value of x in the diagram below?



a 38°

b 71°

c 104°

d 161°

29 The sum of the interior angles of a polygon is 2700°.

How many sides does the polygon have?

a 19

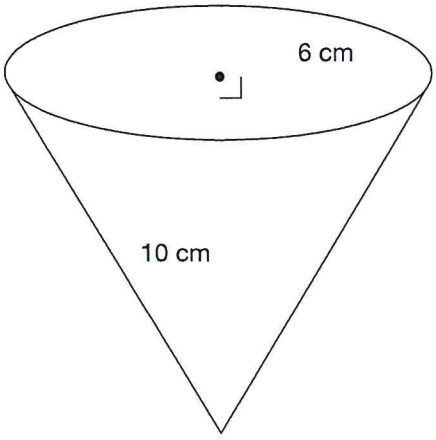
b 17

c 15

d 13

30 Coated Cones

An ice cream store offers chocolate-coated cones as shown in the diagram below.



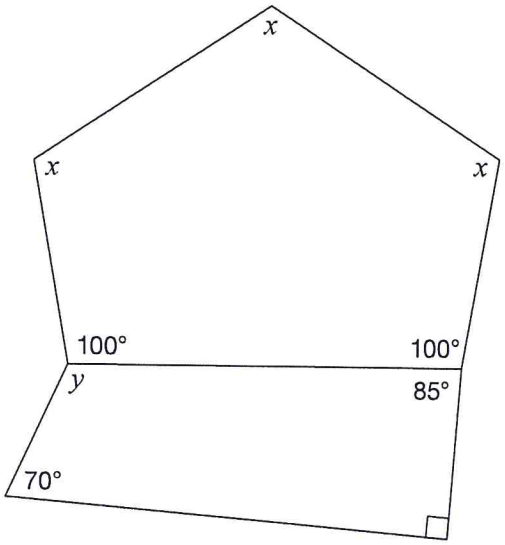
The cone is open topped, and the entire outside is coated in chocolate.

Determine the area of the surface that is coated in chocolate.

Show your work.

31 Daring Diagram

A diagram is shown below.



Complete the table below with the values of x and y. Justify your answers using geometric properties.

Value	Justification using geometric properties
$x =$ _____	
$y =$ _____	