

Applied

Grade 9 Assessment of Mathematics

2010

SAMPLE ASSESSMENT QUESTIONS

**Record your answers to the multiple-choice questions
on the Student Answer Sheet (2010, Applied).**

Education Quality and
Accountability Office



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

- 1** Tommy uses the proportion below to determine the amount of butter, x , to use with 120 grams of sugar in his cookie recipe.

$$\frac{2}{3} = \frac{x}{120}$$

How many grams of butter does Tommy need?

- a 40
- b 80
- c 180
- d 240

- 2** The chart below shows the mass and the cost for different brands of cookies.

Brand	Mass (g)	Cost (\$)
1	200	1.99
2	250	2.29
3	300	2.89
4	450	4.29

Which brand costs the least per gram?

- a Brand 1
- b Brand 2
- c Brand 3
- d Brand 4

- 3** Tierney goes to the movie theatre and has \$20 to spend on treats.

Soft drink	\$2.29
Chocolate bars	\$1.69
Popcorn	\$3.49

She buys two soft drinks, a chocolate bar and popcorn. She also pays 13% tax.

How much change should Tierney receive from her \$20?

- a \$8.97
- b \$9.76
- c \$11.03
- d \$11.55

- 4** There are 260 Grade 9 students at a high school and 80% of these students attend a dance. Half the Grade 9 students who attend the dance buy their tickets at the door.

How many Grade 9 students who attend the dance buy their tickets at the door?

- a 40
- b 104
- c 130
- d 208

- 5** Which expression represents the volume of a cube with a side length of x ?

- a x^2
- b x^3
- c $3x$
- d $6x$

- 6** What is the value of the expression $\left(\frac{x}{3}\right)^2$ when $x = 18$?
- a** 2
 - b** 12
 - c** 36
 - d** 108
- 7** The cost of a phone call at a hotel is determined by the formula $C = 0.35t + 0.6$ where C is the cost, in dollars, and t is the length of the call, in minutes.
- What is the length of a call that costs \$5.85?
- a** 3 minutes
 - b** 6 minutes
 - c** 15 minutes
 - d** 18 minutes



8 Fill 'Er Up

The table below shows the cost of water for three customers. They each pay the same cost per litre.

Amount (L)	Cost (\$)
10 000	8.60
20 000	17.20
30 000	25.80

Frank pays \$36.12 for water at the same rate.

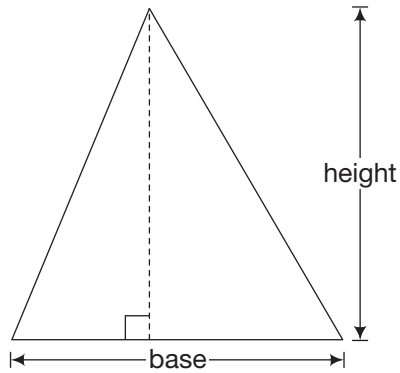
Determine the number of litres of water that he purchases.

Show your work.



9 Sail Away

Alain designs a sail in the shape of a triangle for a boat.



The base and height are equal. The area of the sail is 18 m^2 .

Determine the height of the sail.

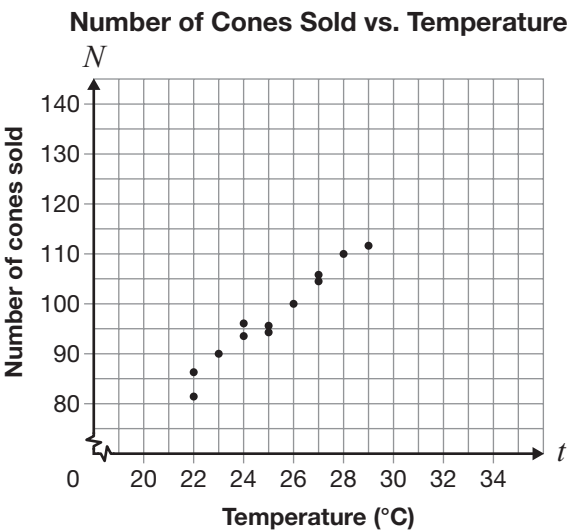
Hint:

$$A = \frac{bh}{2}$$

Show your work.

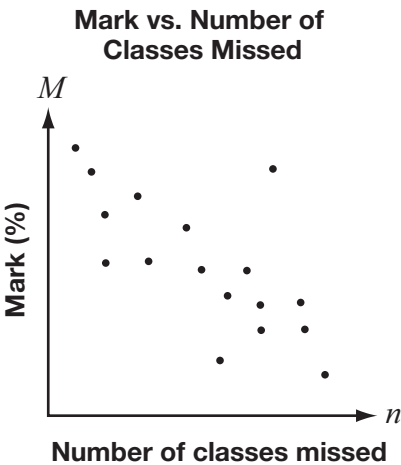
The height of the sail is _____.

- 10 Malia records the number of ice cream cones she sells each day and the maximum daily temperature, as shown on the graph below.



According to this graph, approximately how many ice cream cones will Malia sell on a day when the maximum temperature is 36°?

- a 80
 - b 110
 - c 115
 - d 135
- 11 This graph shows the relationship between students' marks and the number of classes that they have missed.



Which line of best fit is most appropriate for the data?

- a

A scatter plot with 'Mark (%)' on the y-axis (labeled M) and 'Number of classes missed' on the x-axis (labeled n). The data points are scattered around a horizontal line, indicating no clear linear trend.
- b

A scatter plot with 'Mark (%)' on the y-axis (labeled M) and 'Number of classes missed' on the x-axis (labeled n). The data points show a negative correlation, and a line of best fit is drawn with a negative slope.
- c

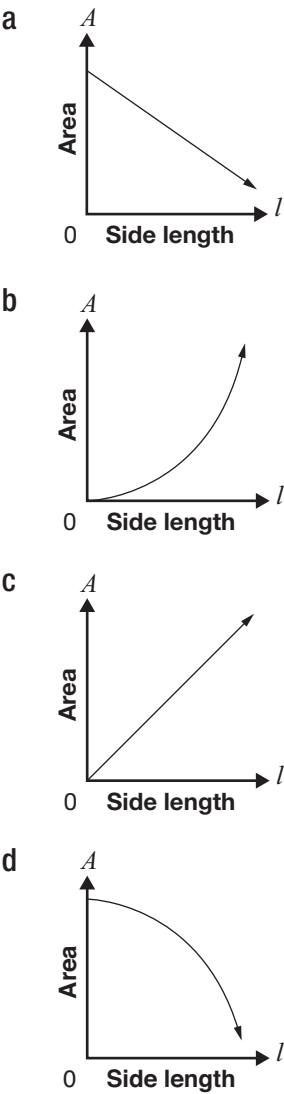
A scatter plot with 'Mark (%)' on the y-axis (labeled M) and 'Number of classes missed' on the x-axis (labeled n). The data points show a positive correlation, and a line of best fit is drawn with a positive slope.
- d

A scatter plot with 'Mark (%)' on the y-axis (labeled M) and 'Number of classes missed' on the x-axis (labeled n). The data points show a positive correlation, and a line of best fit is drawn with a positive slope.

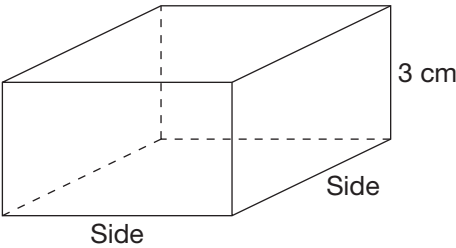
- 12** A student creates a table to show the relationship between the side length of a square and its area.

Side length	Area
1	1
2	4
3	9
4	16
5	25

Which of the graphs below best represents this relationship?



- 13** The square-based prism below has a height of 3 cm.



Hint:
 $V = (\text{area of base})(\text{height})$

Which table represents the relationship between the side length and the volume of this prism?

a

Side length (cm)	Volume (cm ³)
1	3
2	12
3	27
4	48
5	75

b

Side length (cm)	Volume (cm ³)
1	3
2	6
3	9
4	12
5	15

c

Side length (cm)	Volume (cm ³)
1	1
2	4
3	9
4	16
5	25

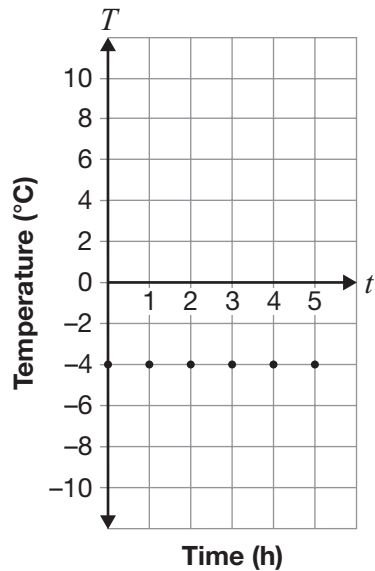
d

Side length (cm)	Volume (cm ³)
1	1
2	8
3	27
4	64
5	125

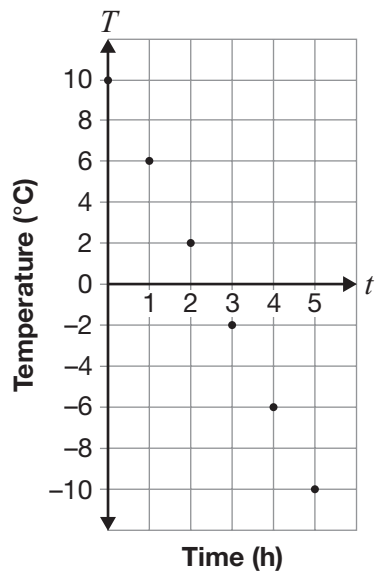
14 The following graphs represent a linear relationship between temperature and time.

Which graph has a rate of change of $-4\text{ }^{\circ}\text{C}$ per hour?

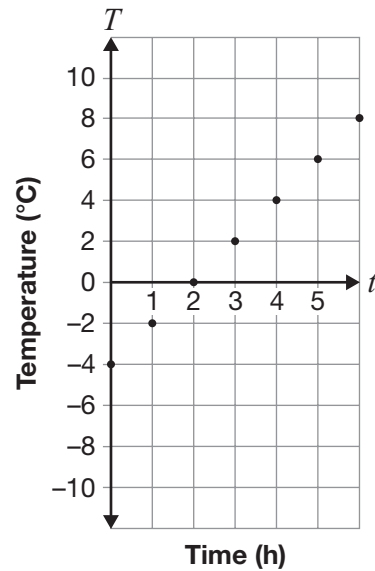
a Temperature vs. Time



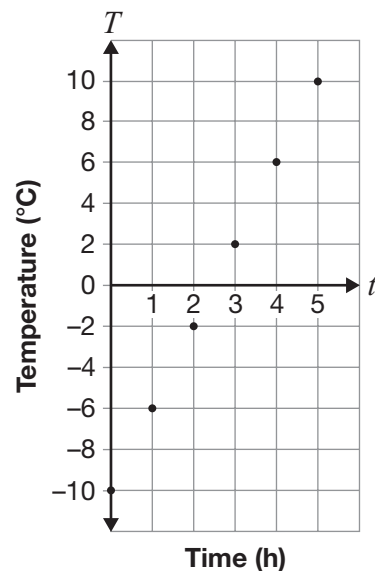
b Temperature vs. Time



c Temperature vs. Time



d Temperature vs. Time



- 15** Sarah is running a 40 km race at a steady pace of 10 km/h.

Which equation represents the distance Sarah has left to run after she starts if D is the distance in kilometres and t is the time in hours since she started the race?

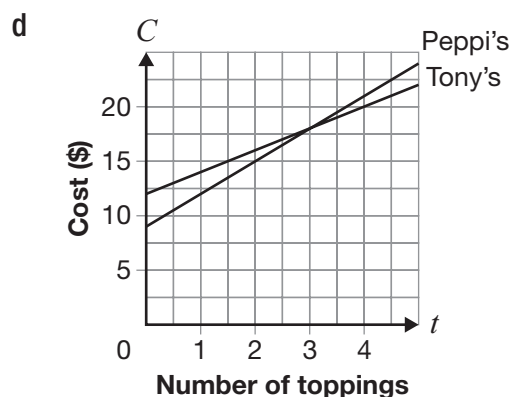
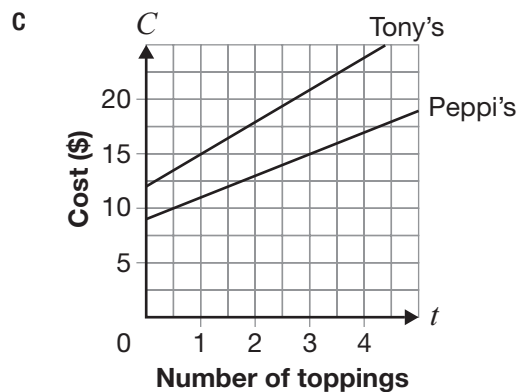
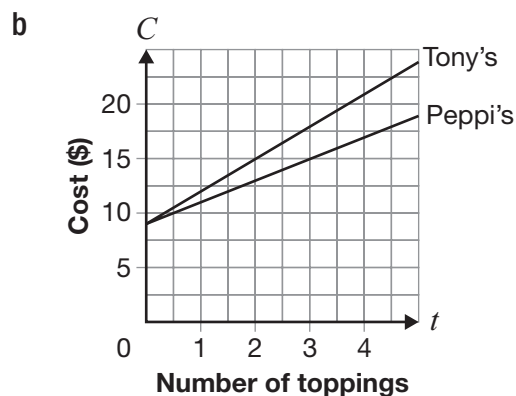
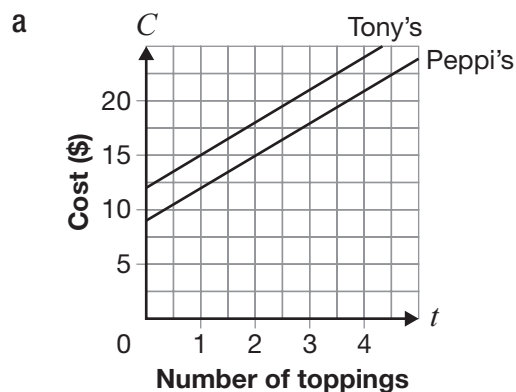
- a $D = 40 - 10t$
- b $D = 40 + 10t$
- c $D = 10 - 40t$
- d $D = 10 + 40t$

- 16** The equations for the cost of a pizza at two restaurants are shown below, where C represents the cost in dollars and t represents the number of toppings.

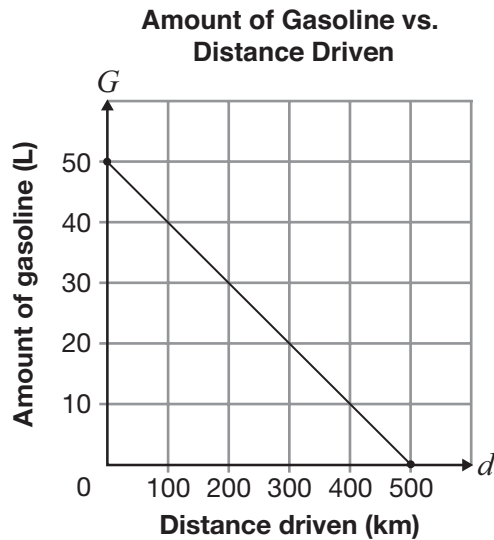
Peppi's Pizzeria $C = 9 + 3t$

Tony's Pizza $C = 12 + 2t$

Which graph best represents the cost of a pizza at each restaurant?



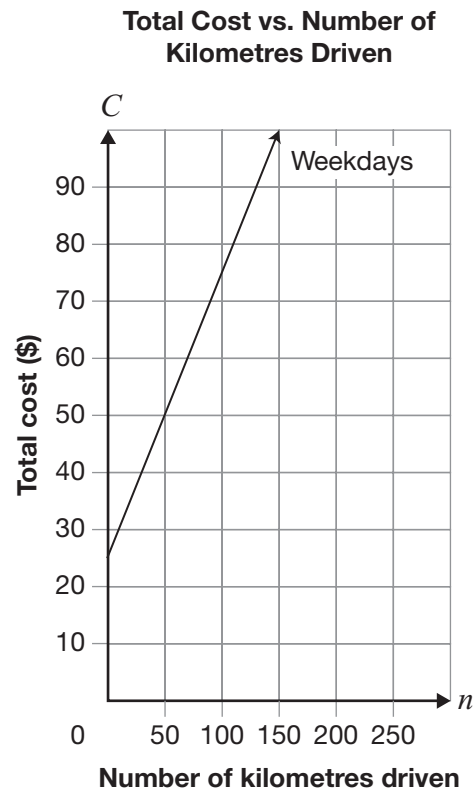
- 17** The graph below illustrates the relationship between the distance driven and the amount of gasoline in the tank of a car.



How many litres of gasoline are in the car's tank when the distance driven is 300 km?

- a 10
 - b 20
 - c 40
 - d 50
- 18** One day, the temperature at 5 p.m. is 4°C . For the next 6 hours, the temperature drops 2°C every hour. What is the temperature at 11 p.m.?
- a 2°C
 - b -2°C
 - c -6°C
 - d -8°C

- 19** The total cost of renting a car on weekdays is represented by the graph below.



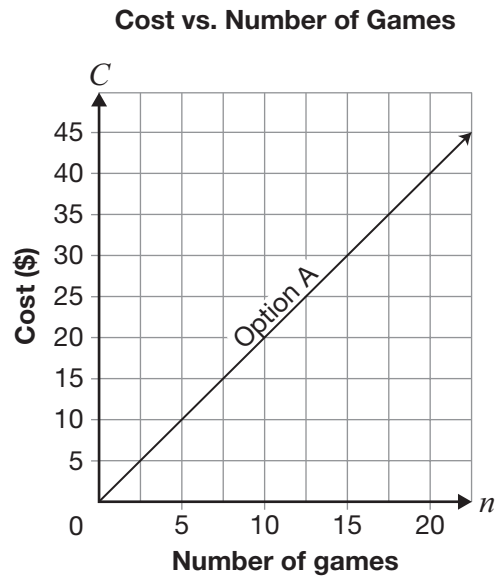
On weekends, the flat fee remains the same but the cost per kilometre is less.

Which of the following statements is true about the graph for weekends?

- a The weekend graph goes through the point (0, 0).
- b The weekend graph stays the same as the weekday graph.
- c The initial cost is the same but the weekend graph is steeper than the weekday graph.
- d The initial cost is the same but the weekend graph is less steep than the weekday graph.

- 20** Parallel Pines Bowling Alley offers two options.

A graph representing the cost of Option A is shown below.



Option B charges \$30 for unlimited bowling.

Which of the following is true?

- a Option A is always cheaper.
- b Option B is always cheaper.
- c Option A is cheaper for fewer than 15 games.
- d Option B is cheaper for fewer than 15 games.



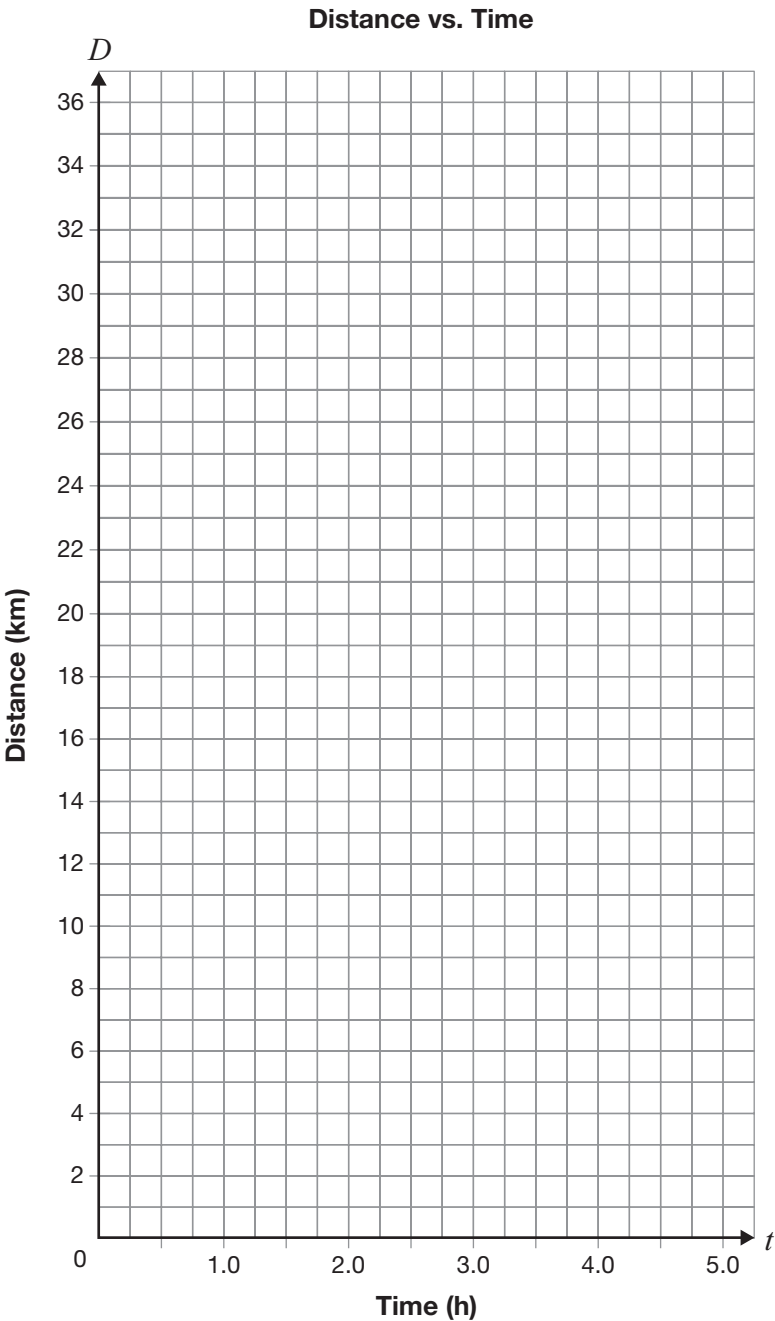
21 Marathon Man

Manny is running a race at a constant rate. He records his distance from the starting line at particular times as shown below.

Complete the table for this linear relationship.

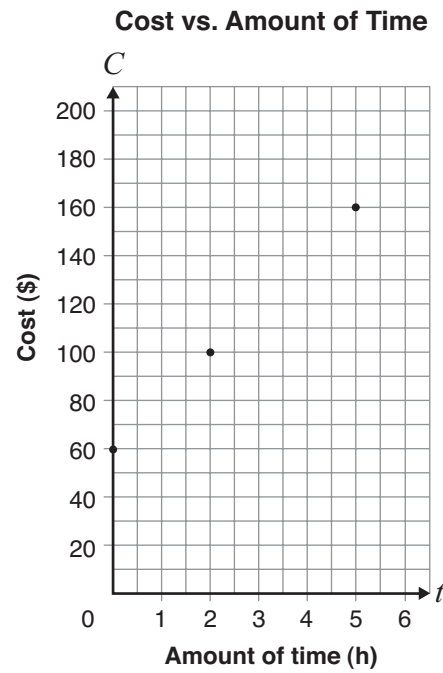
Time, t (h)	Distance, D (km)
0.5	3.5
1.0	
1.5	10.5
2.0	14.0
3.0	
5.0	

Graph this relationship on the grid.



22 Gym Time

The graph below shows the relationship between the cost of renting a gym and the amount of time the gym is used.



Determine the hourly rental rate.

The hourly rental rate is _____.

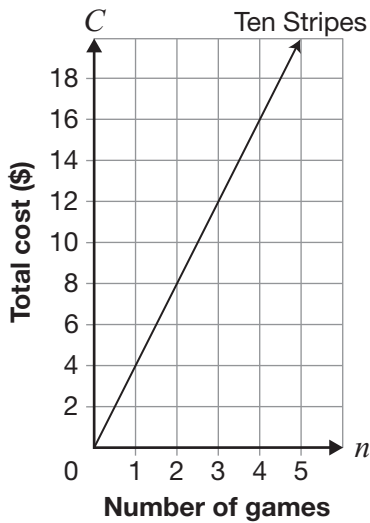
Show your work.

23 Bowling Variations

There are two bowling alleys in town.

The total cost of bowling at Ten Stripes Bowling is represented by the graph below. Ten Stripes offers free shoe rental.

Total Cost vs. Number of Games

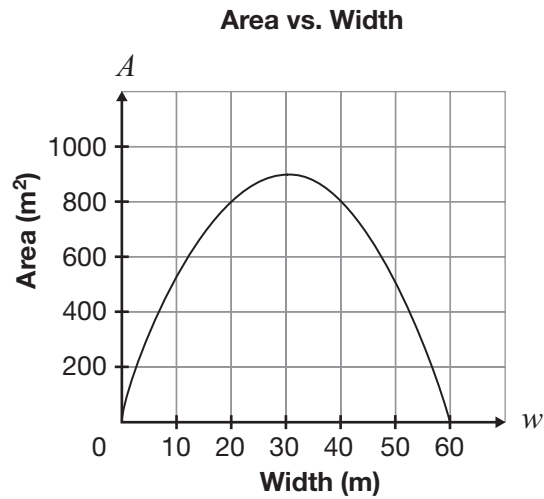


The total cost of bowling at Supreme Bowling is \$4 for shoe rental plus \$3 per game.

Complete the chart.

Ten Stripes Bowling	Supreme Bowling
The initial value is _____.	The initial value is _____.
Circle one: Direct variation Partial variation	Circle one: Direct variation Partial variation
Justification of choice of type of variation:	Justification of choice of type of variation:

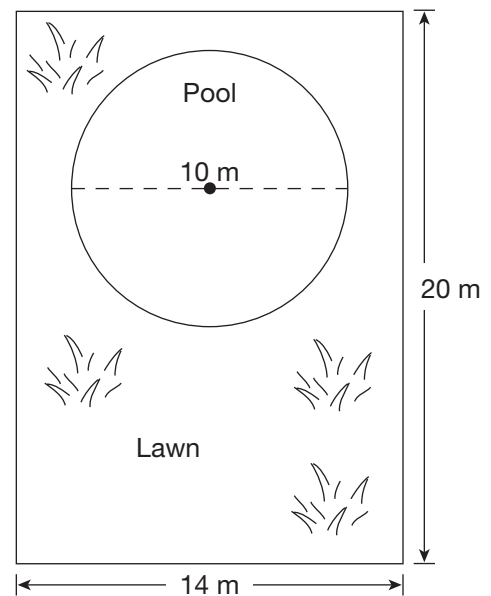
- 24** A rectangle is to have a perimeter of 120 m. The graph below shows the relationship between the area of the rectangle and its width.



What is the width of the rectangle with the largest area?

- a 30 m
- b 60 m
- c 120 m
- d 900 m

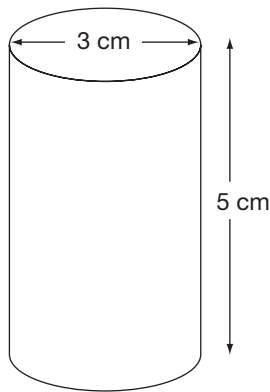
- 25** Gordon has a circular pool in his backyard, as shown below.



Which of the following is closest to the area of the lawn surrounding the pool?

- a 33.5 m^2
- b 34.2 m^2
- c 201.5 m^2
- d 248.6 m^2

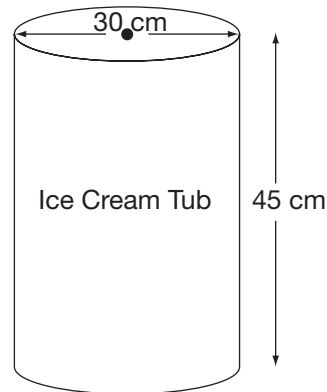
- 26** The water container below needs to be filled.



Which of the following represents the volume, in cm^3 , of water that fills the container?

- a $V = \pi(3^2)(5)$
- b $V = \pi(1.5)(5)$
- c $V = \pi(2 \times 3)(5)$
- d $V = \pi(1.5)^2(5)$

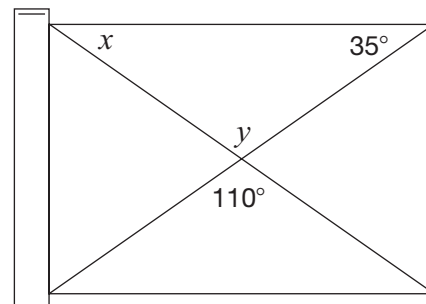
- 27** An ice cream shop sells ice cream cones that each contain an average of 525 cm^3 of ice cream. The ice cream is served from the following cylindrical tub.



About how many cones can be made from a full tub of ice cream with the dimensions shown?

- a 8
- b 16
- c 60
- d 242

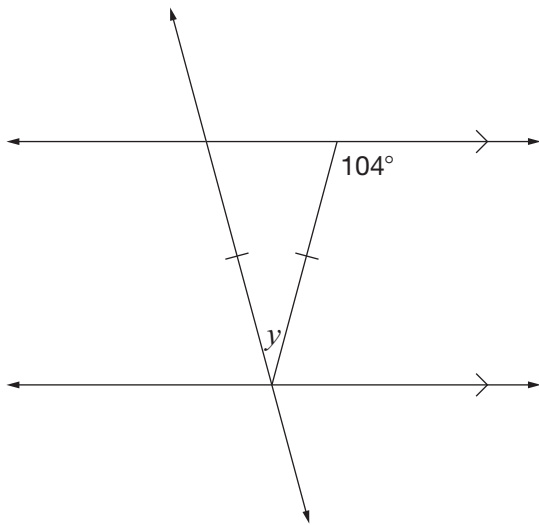
- 28** A carpenter is building a rectangular gate for a fence, as shown below.



What are the values of x and y?

- a $x = 35^\circ, y = 110^\circ$
- b $x = 35^\circ, y = 145^\circ$
- c $x = 55^\circ, y = 110^\circ$
- d $x = 55^\circ, y = 145^\circ$

29 Consider the diagram below.



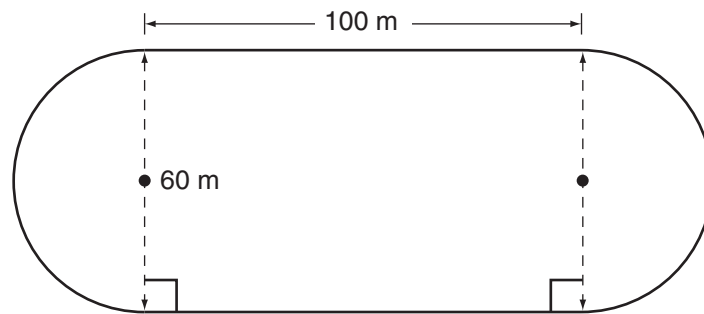
What is the value of y ?

- a 28°
- b 76°
- c 104°
- d 152°



30 Get Trackin'

Ashley runs around the following track.



How many times must she run around the track in order to run a total distance of 4 km?

Show your work.

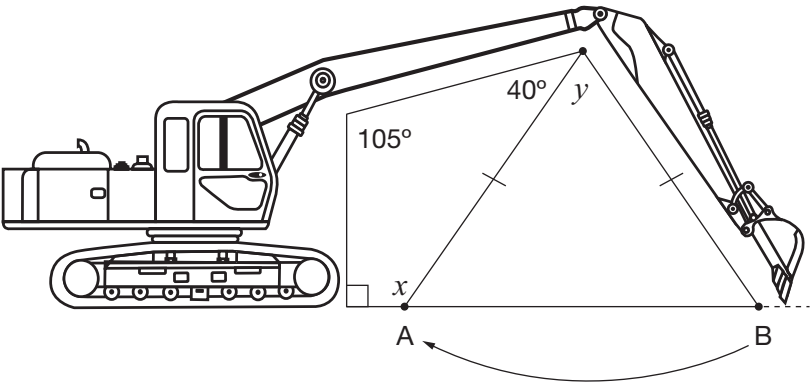
Hint:

$$1 \text{ km} = 1000 \text{ m}$$



31 Digging Around

A hydraulic arm swings from Point B to Point A, as shown in the diagram below.



Determine the values of x and y .
Justify your answers using geometric properties.

Value	Justification
$x =$ _____	
$y =$ _____	

Education Quality and
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