Applied

Grade 9 Assessment of Mathematics

2013

RELEASED ASSESSMENT QUESTIONS

Record your answers to the multiple-choice questions on the Student Answer Sheet (2013, Applied).

Education Quality and Accountability Office

EQAO

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

Directions

Make sure you have the following materials:

- Student Answer Sheet
- the Formula Sheet
- a pencil and an eraser
- a ruler
- a scientific or graphing calculator
- some paper for rough work for multiple-choice questions only

The diagrams in this booklet are **not** all drawn to scale.

Answering Multiple-Choice Questions

When answering the multiple-choice questions, be sure you use the Student Answer Sheet. The circles you will be filling in are lettered a, b, c, d.

1. Try to answer all of the multiple-choice questions. Be sure to read each question and its four answer choices carefully. Do not spend too much time on any one question.
2. To indicate your answer, **use a pencil to fill in the circle completely** on the Student Answer Sheet.
   Like this: ● **Not like this:** ⊗ ⊘ ◒ ◉
3. If you fill in more than one answer to a question, the question will be scored zero.
4. If you leave a question blank, the question will be scored zero.
5. Cleanly erase any answer you wish to change and fill in the circle for your new answer.

Answering Open-Response Questions

1. Do all of your work for each question (even your rough work) in the space provided for the question. Work on additional pages will **not** be scored.
2. Present a complete and well-organized solution to each question. Give as much information as you can.
3. Write your solutions so that they can be understood by someone who does not know your work.
4. Make sure you follow the directions on the Key Words page.
   For example, a question might ask you to "Show your work." Read the Key Words page. It says to record all calculations and steps. So, if you sketch a graph in the process of getting to your answer, show the sketch and label it.
5. When using a calculator, write down the numbers you use and the operations you carry out.
   For example, a question might ask you to "Find the area of a circle with a radius of 7 cm." You need to write $A = \pi(7)^2$ as well as the answer you get on your calculator.

Key Words

Throughout the assessment, key words are used to identify the type of response required from you. The key words are explained below. Refer to this sheet to make sure you are responding fully to each question.

Compare:
Tell what is the same and what is different.

Describe:
Use words to create a mental picture for the reader.

Determine:
Use mathematics to find a solution to the problem.

List:
Use point form.

Explain:
Use words and symbols to make your solution clear.

Justify:
Give reasons and evidence to show your answer is correct.

Show your work:
Record all calculations and all the steps you went through to get your answer. You may use words, numbers, graphs, diagrams, symbols and/or charts.

1 The design for a rectangular garden has a length-to-width ratio of 7:5.

Which of the following could be used to determine the width of the garden if the length is 6.5 m?

a $\frac{5}{7} = \frac{6.5}{x}$

b $\frac{7}{5} = \frac{x}{6.5}$

c $\frac{6.5}{7} = \frac{5}{x}$

d $\frac{6.5}{x} = \frac{7}{5}$

2 What is the value of k in the proportion below?

$$\frac{9}{k} = \frac{24}{32}$$

a 12

b 15

c 16

d 17

3 Last week, Tenisha paid \$65.72 for 62 kg of potatoes for her restaurant. Today, the price of potatoes is \$0.02/kg lower.

How much will Tenisha pay for 50 kg of potatoes today?

a \$46

b \$47

c \$52

d \$53

4 A bicycle has a regular price of \$175. It is on sale for 20% off.

Which of the following is closest to the total cost, including 13% tax?

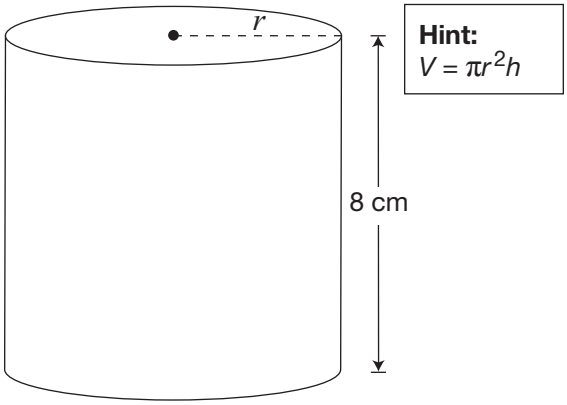
a \$140

b \$158

c \$163

d \$168

5 The volume of the cylinder shown below is 408 cm^3.



Which of the following is closest to the radius of the cylinder?

a 4 cm

b 8 cm

c 14 cm

d 16 cm

6 What value of x makes the equation $4x - 5 = -6x + 15$ true?

a 2

b 1

c -5

d -10

7 An equation representing the height of a burning candle is $H = 2d - \frac{1}{2}t$, where

- H is the height, in centimetres,
- d is the diameter, in centimetres, and
- t is the amount of time that the candle has been burning, in minutes.

A candle has a diameter of 6 cm.

If the candle burns for 2 minutes, what will its height be?

a 1 cm

b 4 cm

c 11 cm

d 13 cm

8 More Apples

Two stores are advertising specials on apples.

Store A
8 apples for $4.40

Store B
12 apples for $5.76

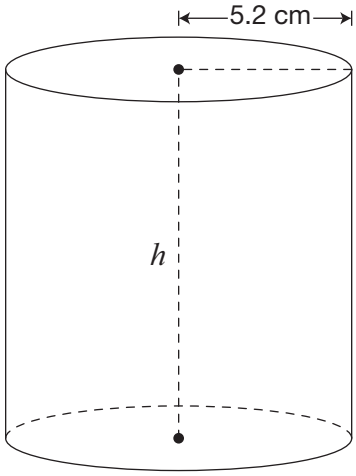
Apples are sold individually.

How much less would 30 apples cost at Store B than at Store A?

Justify your answer.

9 The Height of Solving

The cylinder pictured below has a volume of 807 cm^3.



The formula for determining the volume of a cylinder is

$$V = \pi r^2 h,$$

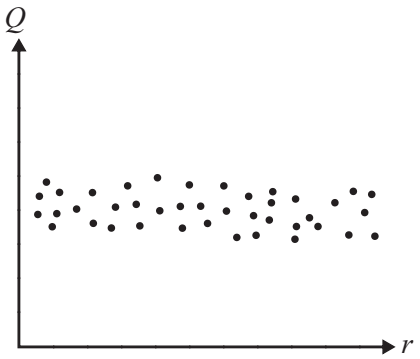
where r is the radius and h is the height.

Determine the height of the cylinder.

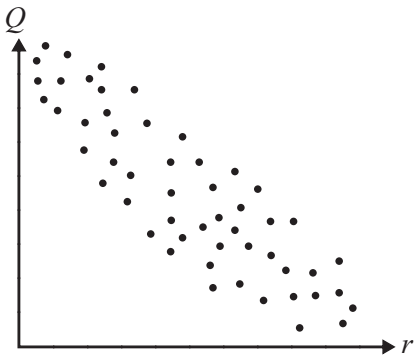
Show your work.

10 Which scatter plot shows data with no trend?

a



b



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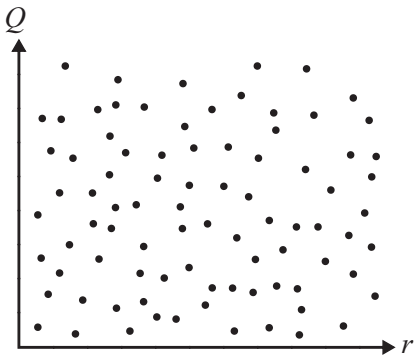
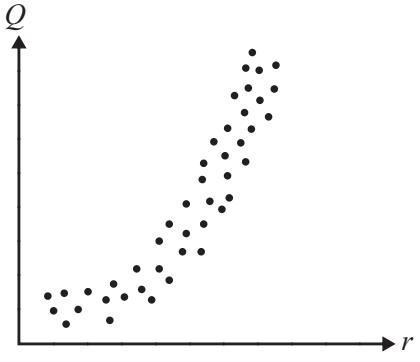


d



11 Kim owes her mother $100. She will pay her back $5 each week.

Which table shows data about the amount Kim still owes for the first 5 weeks of payments?

a

Week	Amount still owing
0	$0
1	$5
2	$10
3	$15
4	$20
5	$25

b

Week	Amount still owing
0	$100
1	$105
2	$110
3	$115
4	$120
5	$125

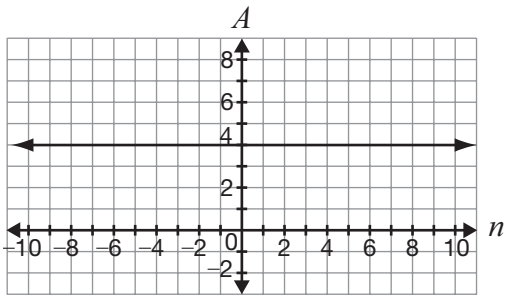
c

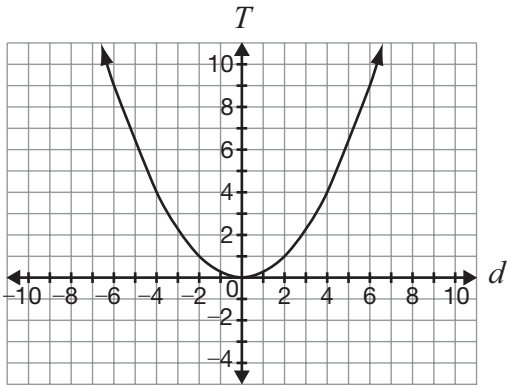
Week	Amount still owing
0	$100
1	$80
2	$60
3	$40
4	$20
5	$0

d

Week	Amount still owing
0	$100
1	$95
2	$90
3	$85
4	$80
5	$75

12 Consider the four different relationships represented below.





w	*A*
0	0
2	14
4	20
6	18
8	8

n	*C*
1	13
2	9
3	6
4	4
5	3

How many are linear relationships?

a 1

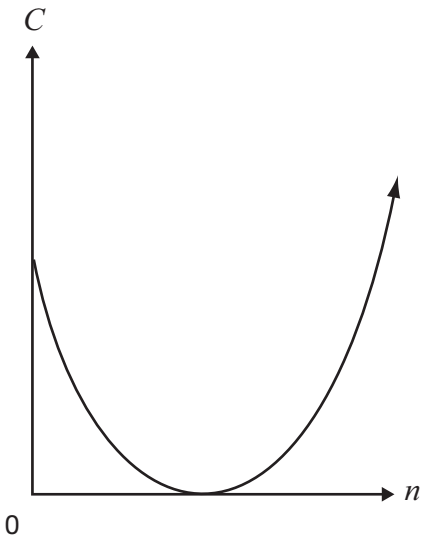
b 2

c 3

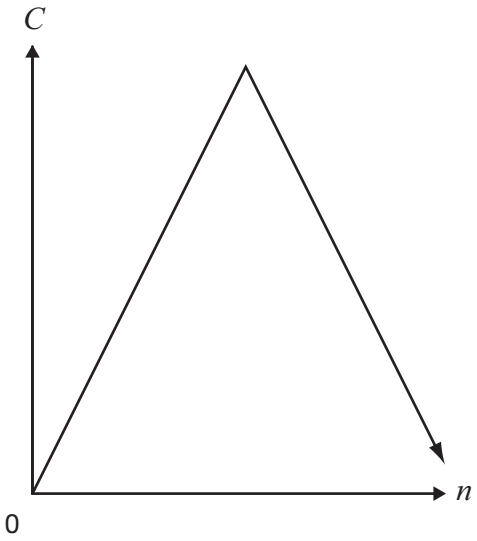
d 4

13 Which of the relationships represented below has a constant rate of change?

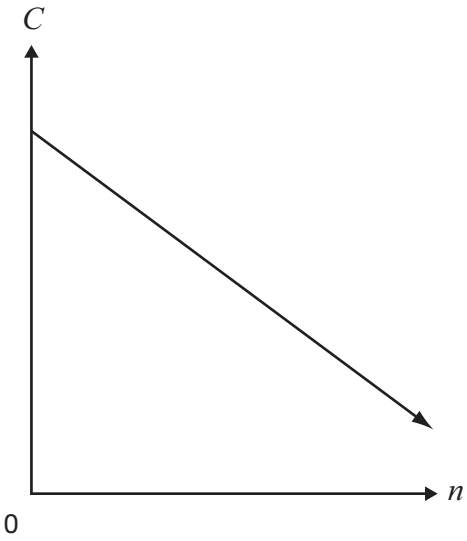
a



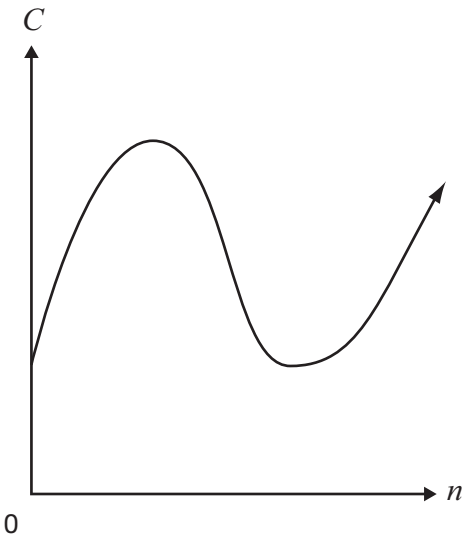
b



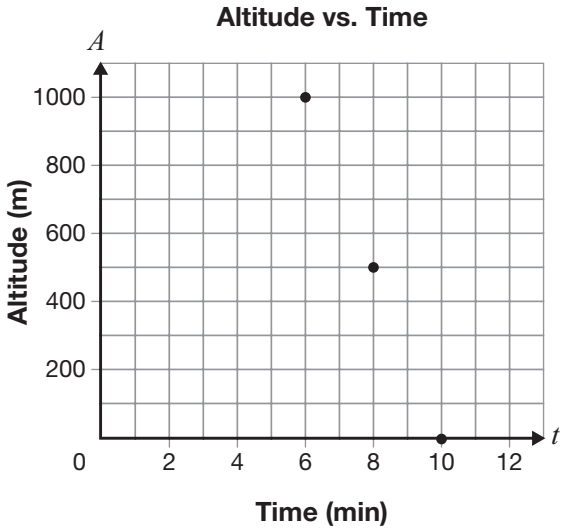
c



d



14 Each of the three points on the grid below gives information about the altitude of a hot air balloon at a certain time.



If the relationship between altitude and time is linear, what was the altitude of the balloon at 4 minutes?

a 1250 m

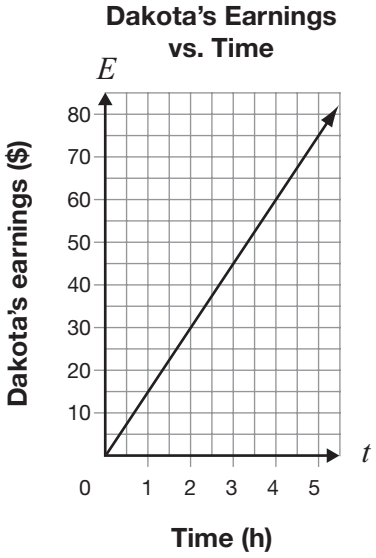
b 1500 m

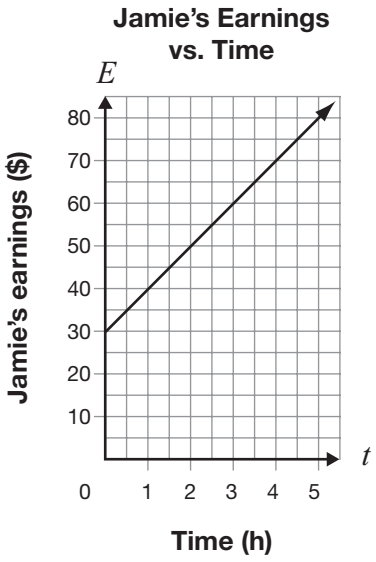
c 1750 m

d 2000 m

15 Dakota and Jamie have part-time jobs.

The graphs below represent the relationship between earnings and the time each of them works.





Whose graph represents a partial variation, and what is the initial value of the relationship?

a Dakota's, $0

b Dakota's, $15

c Jamie's, $30

d Jamie's, $40

16 For babysitting, Becky charges according to the equation $C = 5n + 9$, where C is the amount charged, in dollars, and n is the number of hours she babysits.

Which statement about this situation is correct?

a Becky charges $14 per hour.

b Becky charges a flat fee of $14.

c Becky charges an initial fee of $5, plus $9 per hour.

d Becky charges an initial fee of $9, plus $5 per hour.

17 Each week, Marissa withdraws the same amount from her bank account.

The equation $A = 1550 - 90w$ represents the relationship between the amount of money remaining in her account, A, in dollars, and the number of weeks of withdrawing, w.

For how many weeks has Marissa made withdrawals when the amount remaining in the account is $110?

a 14

b 16

c 17

d 18

18 Oscar rides his bicycle to the beach along a straight road. While at the beach, he realizes he has forgotten his sunscreen and returns home.

The graph below shows information about his trip.

Which of the following is true about Oscar's trip?

a The beach is 10 km from Oscar's home.

b His speed riding to the beach is 0.25 km/min.

c His speed riding home from the beach is 1.7 km/min.

d He stays at the beach for 25 minutes before he returns home to get sunscreen.

19 Water is being pumped to empty a swimming pool.

At 6 a.m., the water level is 150 cm. Every 2 hours, the water level drops by 30 cm.

What is the earliest time when the pool will be empty?

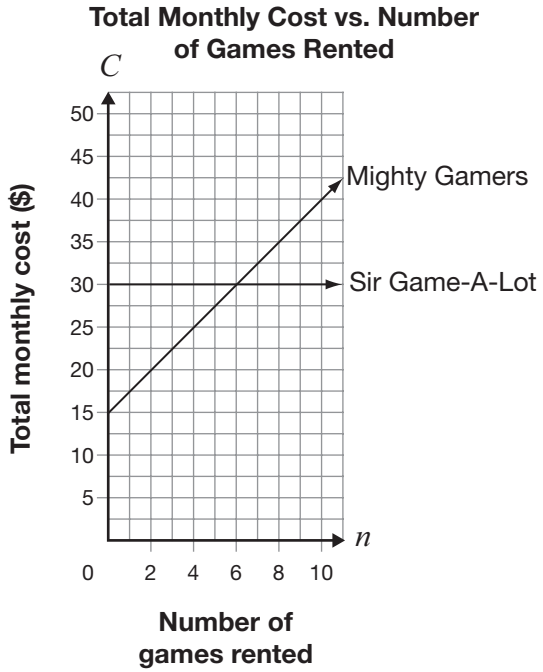
a 10 a.m.

b 11 a.m.

c 4 p.m.

d 5 p.m.

20 Data about the total monthly cost to rent video games from two online game sites are shown on the graph below.



Which of the following statements is true?

a It costs more to rent from Sir Game-A-Lot after 6 games.

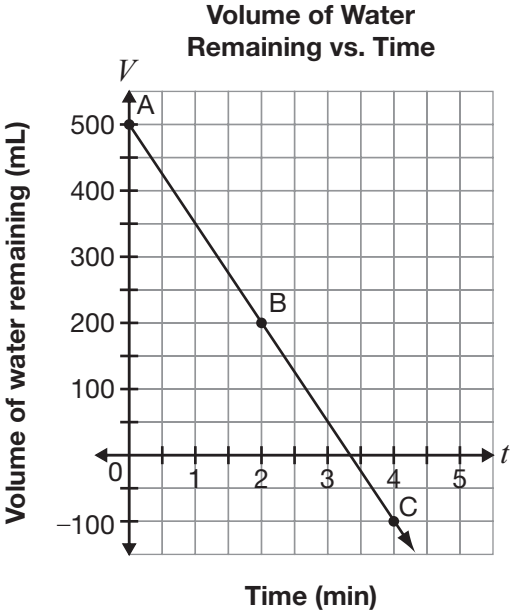
b It costs less to rent from Mighty Gamers after 30 games.

c It costs the same amount to rent 6 games from the two sites.

d It costs the same amount to rent 30 games from the two sites.

21 Drippy Drops

Water is leaking from a bottle at a constant rate. Julia draws the line on the graph below to model the relationship between the volume of water remaining and time.



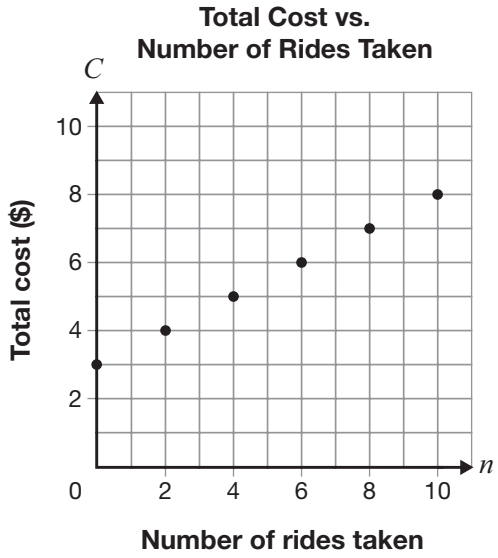
Determine whether each of the 3 points shown on the line is possible in this situation.

Write an interpretation of the meaning of each point.

Point	Is this point possible?	Interpretation
A	**Circle one:** Yes No	
B	**Circle one:** Yes No	
C	**Circle one:** Yes No	

22 Fun Fair

The graph below shows the linear relationship between the total cost of a day at a fair, C, and the number of rides taken, n.



Complete the table below with information about this relationship.

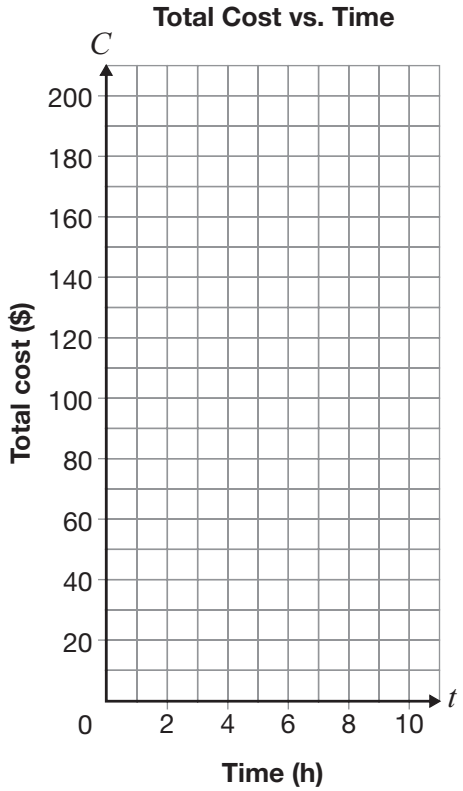
Initial value: _____	**Rate of change: _____**
Meaning of initial value in this situation	**Meaning of rate of change in this situation**

23 Happy Trails

The total cost of horseback riding at a horse ranch is made up of a fixed fee and a cost per hour. The table below shows information about the total cost.

Time (h)	Total cost ($)
2	50
4	80
7	125

Graph the data in the table on the grid below.



Write an equation that relates the total cost of a ride, C, to the time spent riding, t.

$C =$ _____

Show your work.

24 Some students use 24 large square tiles to create a dance floor. They arrange the tiles to make a rectangular area with the smallest possible perimeter.

Which arrangement creates an area with the smallest possible perimeter?

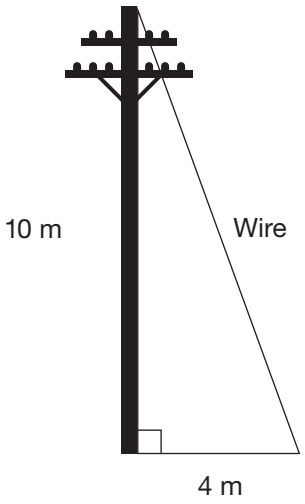
a 1 row of 24 tiles

b 2 rows of 12 tiles

c 3 rows of 8 tiles

d 4 rows of 6 tiles

25 A wire is attached from the top of a 10 m pole to a spot on the ground 4 m away from the base of the pole, as shown below.



Which of the following is closest to the length of the wire?

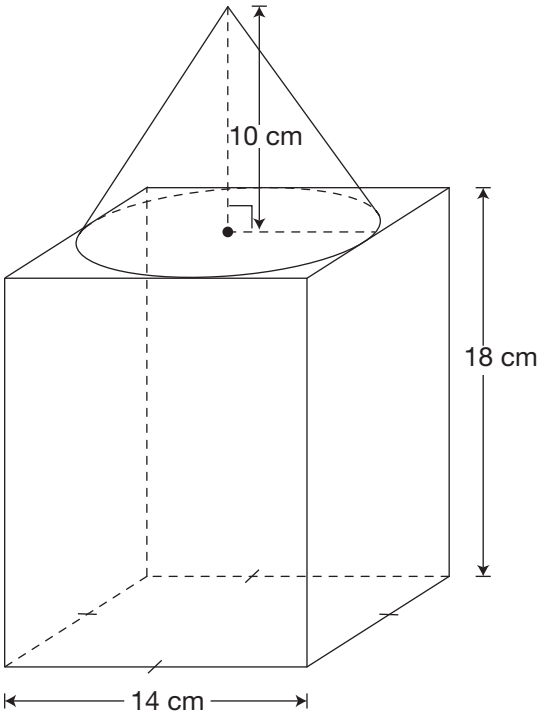
a 11 m

b 14 m

c 20 m

d 28 m

26 The figure below is made of a square-based prism and a cone.



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

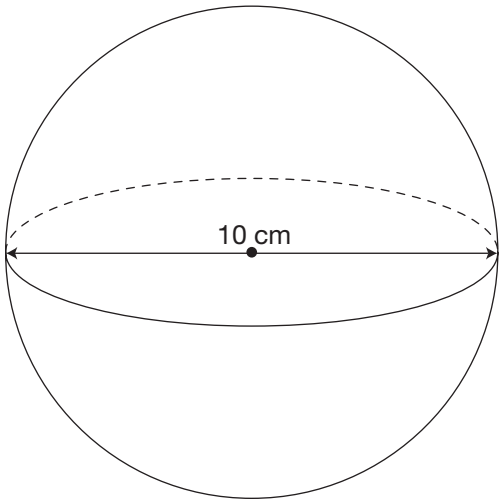
a 3675 cm^3

b 4041 cm^3

c 5067 cm^3

d 5581 cm^3

27 The sphere pictured below has a diameter of 10 cm.



Which expression represents the volume of the sphere?

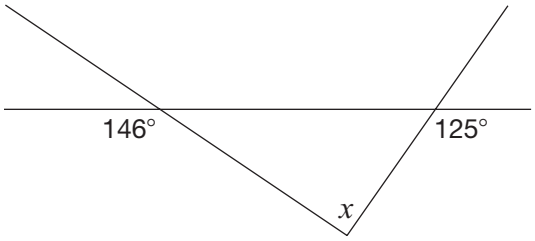
a $\frac{4\pi(5)(3)}{3}$

b $\frac{4\pi(5)^3}{3}$

c $\frac{4\pi(10)^3}{3}$

d $\frac{4\pi(10)(3)}{3}$

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



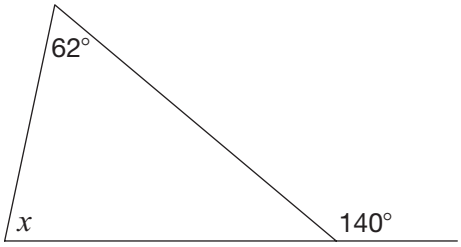
a 91°

b 89°

c 55°

d 34°

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



a 40°

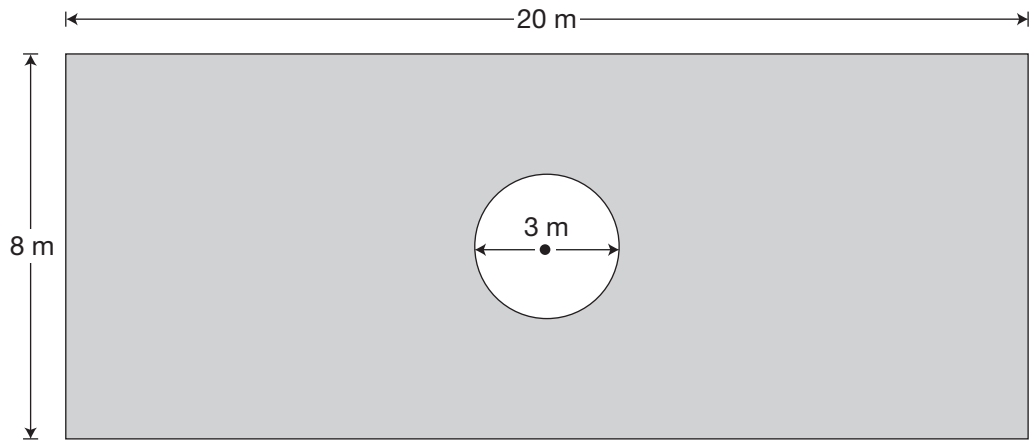
b 62°

c 78°

d 118°

30 Hole in the Wall

Terry is painting the shaded area of the rectangular wall shown below.



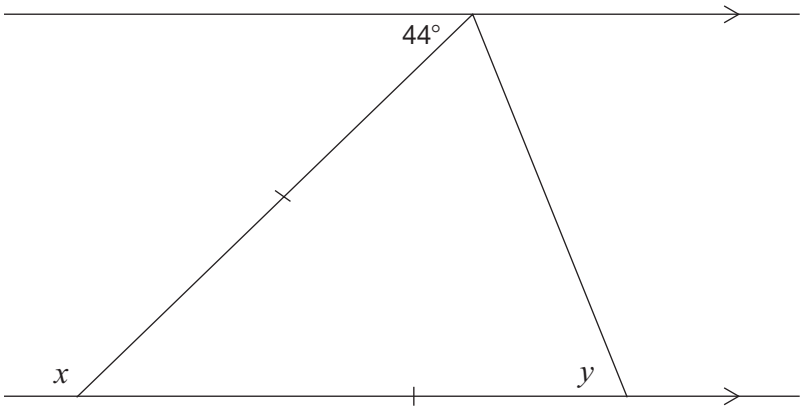
The average cost of paint is \$0.40/m^2.

Determine the total cost of the paint needed to cover the shaded area of the wall.

Show your work.

31 Outside Angles

Look at the following diagram.



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

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

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