

Academic

Grade 9 Assessment of Mathematics

Winter 2008

SAMPLE ASSESSMENT QUESTIONS

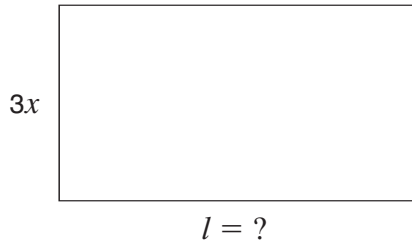
**Record your answers to the multiple-choice questions
on the blank Student Answer Sheet (Winter 2008, Academic).**

Education Quality and
Accountability Office



Please note: The format of these booklets is slightly different from that used for the assessment. The items themselves remain the same.

- 1** The area of the rectangle shown below is $6xy^2$ square units.



Hint: $A = lw$

If the width is $3x$ units, which expression represents the length of the rectangle?

- a $2xy^2$ units
 - b $2y^2$ units
 - c $3xy^2$ units
 - d $3y^2$ units
- 2** The expression below can be simplified.

$$\frac{(x^2y)^3}{(xy)^2}$$

Which of the following shows the expression in its simplest form?

- a x^4y
- b x^4
- c xy
- d x^3y

- 3** Josie works in a sports store. She receives 8% of the total sales each day. One day, she receives \$35 for her portion of the total sales. What are the total sales for that day?

- a \$37.80
- b \$43.75
- c \$280.00
- d \$437.50

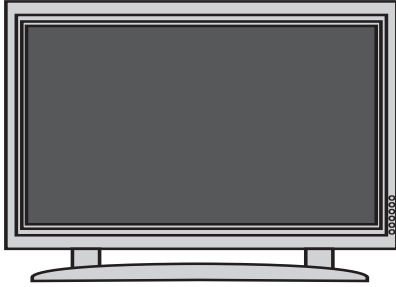
- 4** Which of the following represents the expression $2(3x + 4) + 3(x - 1)$ in a simplified form?

- a $9x + 3$
- b $9x + 5$
- c $8x + 8$
- d $8x + 11$



5 Competing Sales

Sam is interested in buying a TV. At Fair Deal, the TV is regularly priced at \$599.99 and is on sale for 20% off the regular price. At Big Big Discount, the same TV is regularly priced at \$899.99 and is on sale for 30% off the regular price.

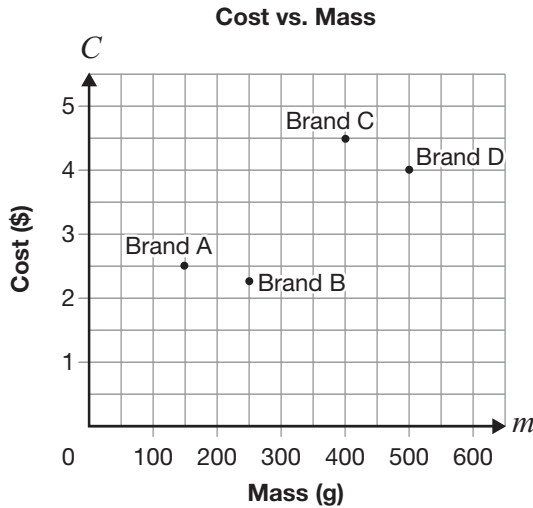


What is the difference in the sale price of the TV between these two stores?

Show your work.



- 6** The following graph shows the relationship between the mass and the cost of four different brands of strawberry jam.



Which statement is true?

- a Brand A has the lowest cost.
- b Brand B has the smallest mass.
- c Brand C has the highest cost per gram.
- d Brand D has the lowest cost per gram.

- 7** Gerry has a table of values representing a linear relation. Two of the numbers are hidden behind a ketchup spill.

x	y
-2	-6
-1	
0	
1	18

The values that are hidden are

- a -2 and 14.
- b 0 and 12.
- c 2 and 10.
- d 3 and 9.

- 8** Nadia lives 11.4 km from school and rides her bike to school every day.

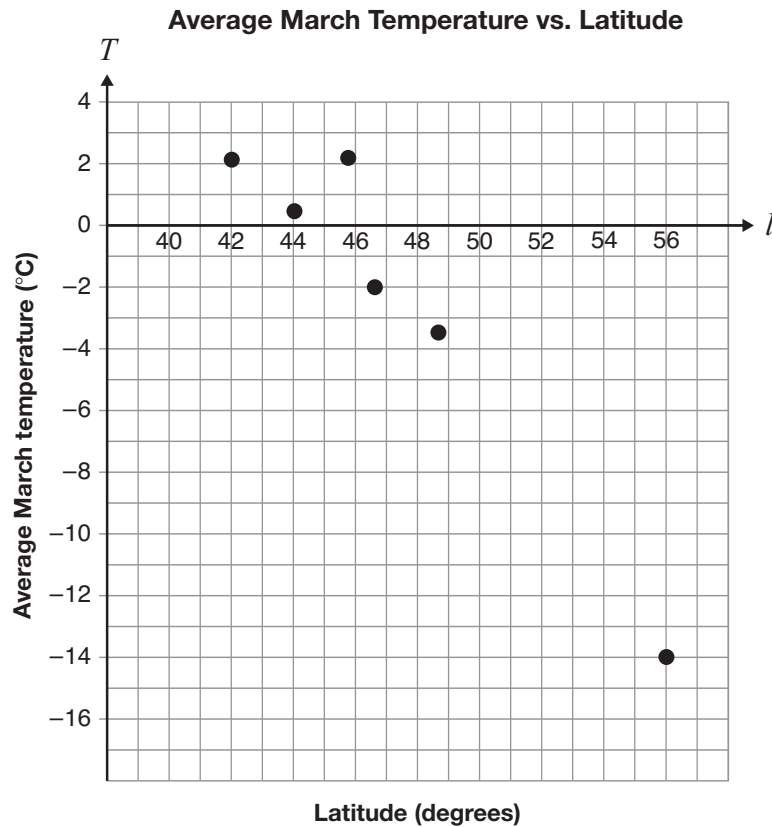
The equation $d = 11.4 - 0.6t$ represents the relationship between d , her distance from school in km, and t , her time spent travelling in minutes.

If she leaves home at 8:05 a.m., what time will she get to school?

- a 8:11 a.m.
- b 8:16 a.m.
- c 8:17 a.m.
- d 8:24 a.m.

9 March Temperatures

The average March temperatures for six Ontario communities are plotted according to their latitudes on the following scatter plot.



The city of Kenora has a latitude of 50° and has an average March temperature of -6.3°C . Does the community of Kenora follow the trend of the data?

Justify your answer.

- 10** The table below shows examples of linear and non-linear equations.

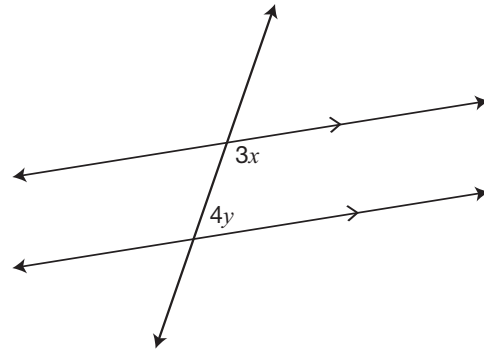
Equation Examples

Linear equations	Non-linear equations
$y = 5x - 3$	$y = 5x^2 - 3$
$y = 125 - 4.25x$	$y = 2x^3$
$y = -3x$	$2x^2 + 5y^2 = 10$

Which of these statements best describes how linear equations are different from non-linear equations in the table above?

- a The exponent of both variables in the linear equations is 1.
- b The exponent of exactly one variable in the linear equations is 1.
- c The exponent of both variables in the non-linear equations is 1.
- d The exponent of exactly one variable in the non-linear equations is 1.

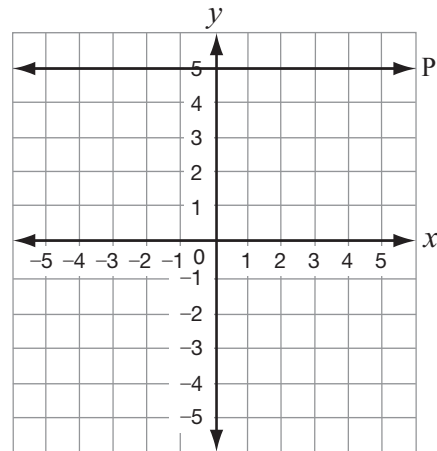
- 11** The relation shown below can be expressed as $3x + 4y - 180 = 0$.



Another way to write this relation is

- a $y = \frac{3}{4}x - 45$.
- b $y = -\frac{3}{4}x + 45$.
- c $y = -\frac{4}{3}x + 60$.
- d $y = \frac{4}{3}x - 60$.

- 12** Line P is shown below.



Which equation represents Line P?

- a $x = 5$
- b $y = 5$
- c $y = x + 5$
- d $x = y + 5$

13 What is the equation of the line that passes through the points (2, 4) and (4, 0)?

a $y = -\frac{1}{2}x + 2$

b $y = -\frac{1}{2}x + 5$

c $y = -2x + 4$

d $y = -2x + 8$

14 Identical bottles are packed in a box. The box will hold a maximum of 38 bottles. The relationship between M , the total mass of the box and its contents, and n , the number of bottles in the box, is represented by the equation $M = 500n + 800$.

Which of the following are possible integer values for the variable n ?

a n is greater than 37.

b n is greater than or equal to 0.

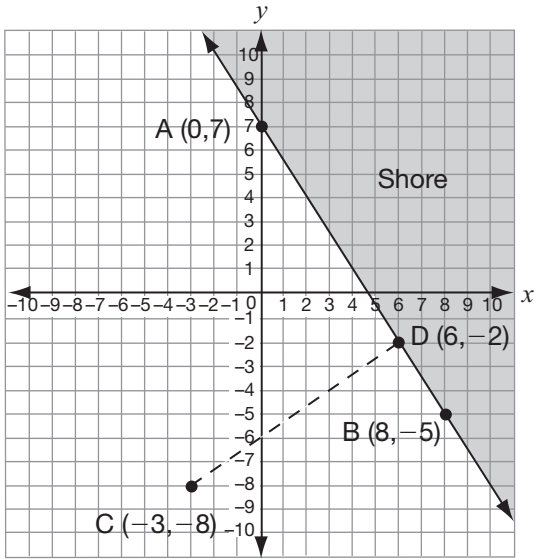
c n is greater than 0 but less than 39.

d n is greater than or equal to 0 but less than 39.



15 Washed Up on the Shore

A boat is travelling from Point C toward Point D, which is on the shoreline. The shoreline is represented by the line through points A and B.



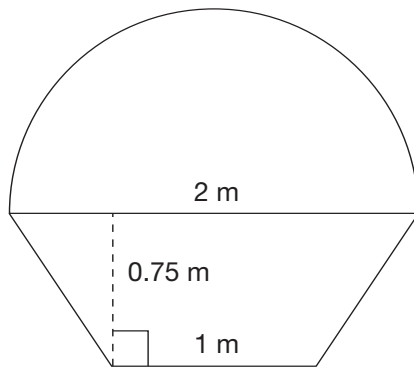
Determine whether the path from C to D is perpendicular to the shoreline. Justify your answer.



- 16** Maria grows several varieties of plants in a rectangular-shaped garden. She uses fencing to divide the garden into 16 squares that are each 1 m by 1 m. She also puts fencing around the perimeter of the garden.

Which of the following represents the smallest amount of fencing that Maria needs?

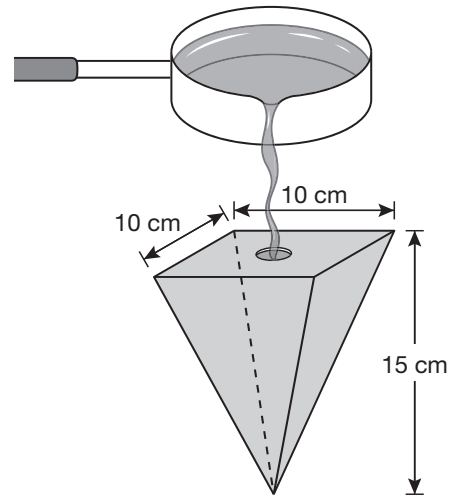
- a 24 m
b 40 m
c 42 m
d 49 m
- 17** The Cutie Cupcake Company is having a sign made. The sign will be a semicircle on top of a trapezoid.



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

- a 4.27 m^2
b 2.70 m^2
c 1.57 m^2
d 1.13 m^2

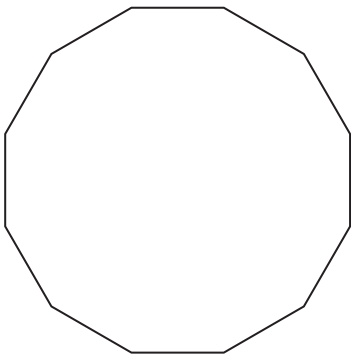
- 18** The mould shown below is used to make a candle in the shape of a square-based pyramid.



What is the volume of the mould?

- a 1500 cm^3
b 500 cm^3
c 400 cm^3
d 35 cm^3
- 19** If the radius of a sphere is tripled, the surface area of the sphere will increase
- a by a factor of 3.
b by a factor of 4.
c by a factor of 6.
d by a factor of 9.

- 20** What is the measure, in degrees, of the sum of the interior angles of a 12-sided regular polygon?

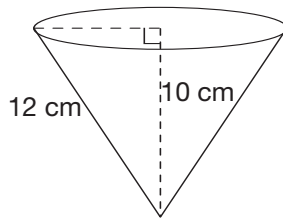


- a 2160°
- b 1800°
- c 1500°
- d 1080°



21 Cone Zone

Zach measures the slant height of a cone-shaped cup and finds that it is 12 cm. The height is 10 cm.



Determine the volume of water in the cup if Zach fills it to the top.

Show your work.

Sample Assessment Questions: Applied

Answer Key

1. a b c d
2. a b c d
3. a b c d
4. a b c d
5. a b c d
6. a b c d

7. Respond in booklet.

8. a b c d

9. a b c d

10. a b c d

11. a b c d

12. a b c d

13. a b c d

14. a b c d

15. Respond in booklet.

16. Respond in booklet.

17. a b c d

18. a b c d

19. a b c d

20. a b c d

21. Respond in booklet.

End of Assessment

Applied

Grade 9 Assessment of Mathematics

Winter 2008

SAMPLE ASSESSMENT QUESTIONS

**Record your answers to the multiple-choice questions
on the blank Student Answer Sheet (Winter 2008, Applied).**

Education Quality and
Accountability Office



Please note: The format of these booklets is slightly different from that used for the assessment. The items themselves remain the same.

- 1** A carton that holds 500 mL of chocolate milk costs \$2.29.
Which of the following containers has a lower cost per mL?
- a 250 mL at \$1.29
 - b 700 mL at \$3.09
 - c 750 mL at \$3.59
 - d 1000 mL at \$4.69
- 2** Which of the following fractions is **not** equivalent to $\frac{10}{30}$?
- a $\frac{2}{6}$
 - b $\frac{15}{35}$
 - c $\frac{1}{3}$
 - d $\frac{100}{300}$
- 3** Aidan is buying a new CD player. The CD player was selling for \$84.79 and now is on sale for 25% off. Which of the following is closest to the total cost of the CD player, including 15% sales tax?
- a \$54.05
 - b \$63.59
 - c \$73.13
 - d \$74.49

- 4** What is the value of the expression $-1 + \frac{77}{100}$?
- a $-\frac{177}{100}$
 - b $-\frac{78}{100}$
 - c $-\frac{76}{100}$
 - d $-\frac{23}{100}$

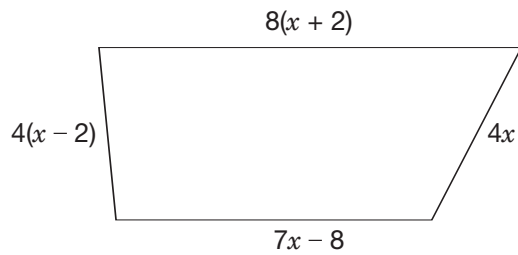
- 5** The volume of a cylinder is 325 cm^3 . The height is 8.5 cm.
Which is closest to the measure of the radius?

Hint: $V = \pi r^2 h$

- a 3.49 cm
 - b 6.09 cm
 - c 12.17 cm
 - d 38.24 cm
- 6** What is the solution to the equation $3x + 80 = 12x - 1$?
- a -27
 - b -9
 - c 9
 - d 27

7 Field Maintenance

A field in the shape of a trapezoid has a perimeter of 460 m. A fence is being built along the field's perimeter.

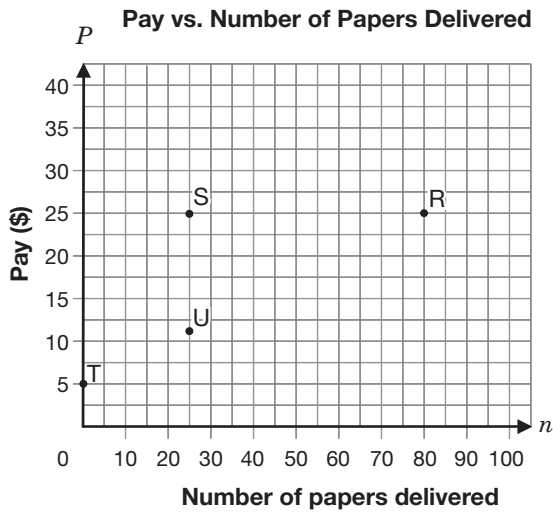


Determine the length of fencing needed for each side of the field.

Show your work.



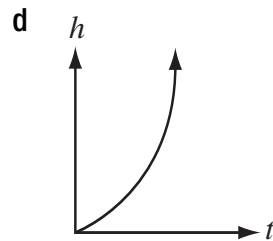
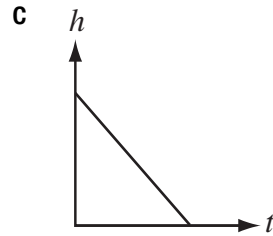
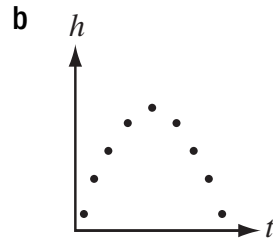
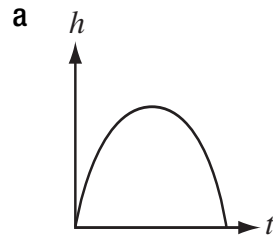
- 8** Mia delivers the local newspaper. Her base pay is \$5 per week, and she gets \$0.25 per paper.



Which of the points on the graph represents Mia's pay for delivering 25 newspapers in a week?

- a Point R
- b Point S
- c Point T
- d Point U

- 9** Which of the following graphs represents a linear relation?



- 10** Simon records the height of a plant each day for five days.

**Plant Growth Over
Five Days**

Day	Height (cm)
0	4
1	5
2	7
3	10
4	14

His chart shows that the relation between height and day

- a** is a linear relation.
b is a non-linear relation.
c has a constant rate of change.
d has a decreasing rate of change.

- 11** Victoria is selling chocolate bars to raise money for her hockey team. She begins with 36 bars to sell and sells four bars per day.

Which of the following represents the relation between N , the number of chocolate bars remaining, and d , the number of days she has been selling?

- a** $N = 36 + 4d$
b $N = 36d - 4$

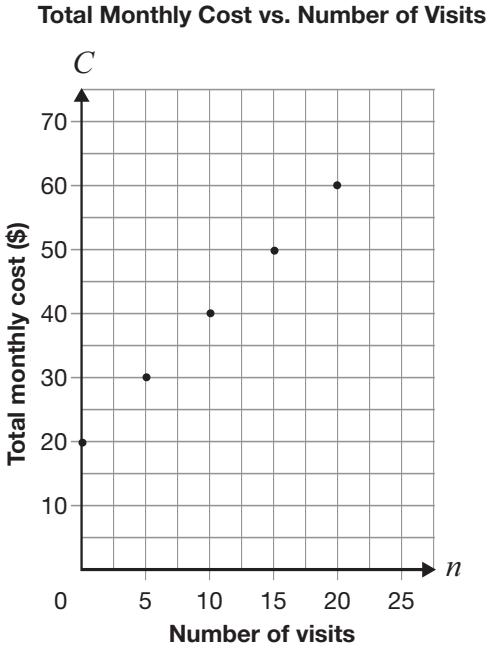
c

Day, d	Number of bars remaining, N	First differences
0	20	
1	24	4
2	28	4
3	32	4
4	36	4

d

Day, d	Number of bars remaining, N	First differences
0	36	
1	32	-4
2	28	-4
3	24	-4
4	20	-4

- 12** Tyler belongs to a fitness club at the community centre. The graph below represents the relationship between the number of times he visits the club and his total monthly cost.



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

- a Direct variation, and initial value is 0
- b Partial variation, and initial value is 0
- c Direct variation, and initial value is 20
- d Partial variation, and initial value is 20

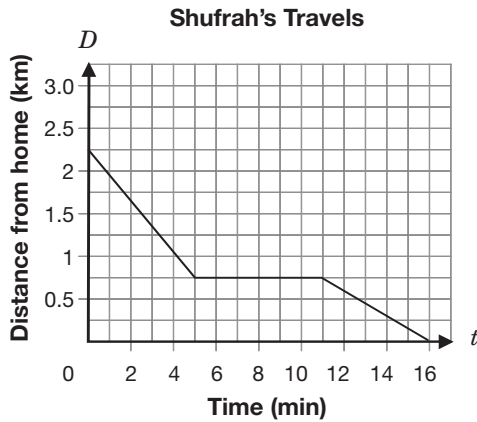
- 13** A tap is leaking into a pail. The height of the water in the pail is represented by the equation $h = 0.5t + 2$, where h represents the height of water in the pail, in cm, and t represents the amount of time the tap has been leaking, in minutes.

What is the height of water in the pail if the tap has been leaking for 56 minutes?

- a 28 cm
- b 30 cm
- c 108 cm
- d 114 cm



- 14** The relationship between t , the number of minutes Shufrah travels, and D , the distance she is from home, is shown on the grid below.



Which of the following statements best describes the way Shufrah travels?

- a While travelling toward her home, Shufrah rides her bike, stops and then walks.
- b While travelling toward her home, Shufrah rides her bike, walks and then rides her bike.
- c While travelling away from home, Shufrah rides her bike, stops and then walks.
- d While travelling away from home, Shufrah walks, rides her bike and then walks.



15 Makin' a Profit!

Student council is planning a dance.

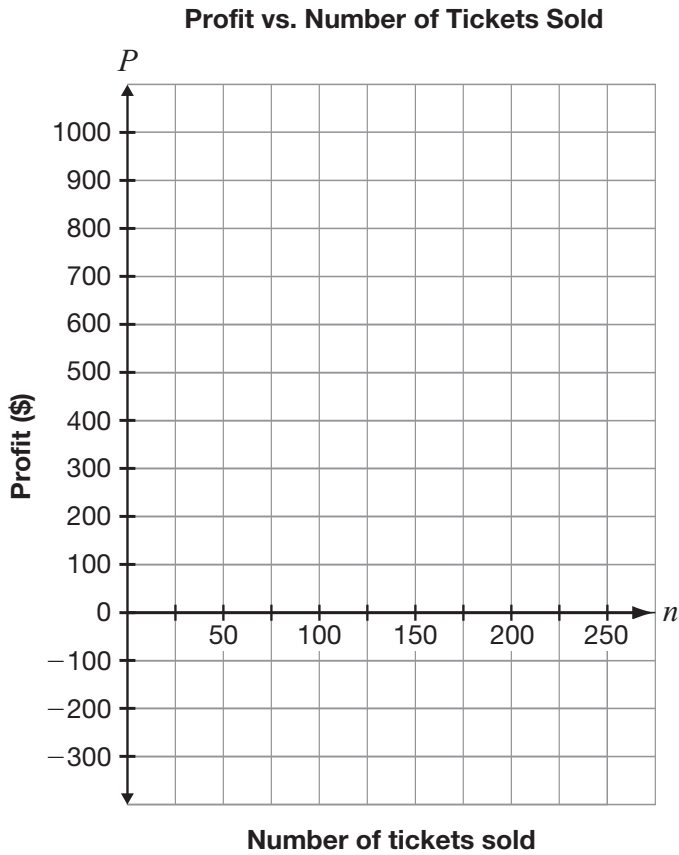
- The cost to hire a DJ is \$300.
- Tickets are sold at \$6 each.
- The profit is based on the amount received from the tickets sold minus the cost of the DJ.

Complete the table of values to show the profit based on the number of tickets sold.

Profit from Ticket Sales

Number of tickets sold	Profit (\$)
0	
50	
100	
150	
200	

Graph these data on the grid below.



16 Rockin' Radicals

The Radicals, a small high school band, recently signed a contract with a record label. Their earnings include a signing bonus plus an amount per CD sold, as shown in the table below.

Number of CDs	Band earnings (\$)
0	10 000
5 000	10 600
10 000	11 200
15 000	11 800
20 000	12 400

Determine the amount of the signing bonus and the amount they receive per CD.

Show your work.

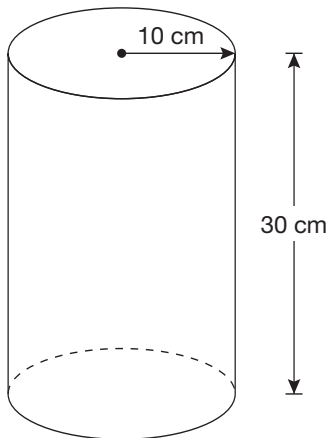


- 17** Germaine wants to calculate the area of the shape shown below. It is composed of a rectangle and two semicircles.



Which of the following pairs of expressions should Germaine use to determine the area of the shape?

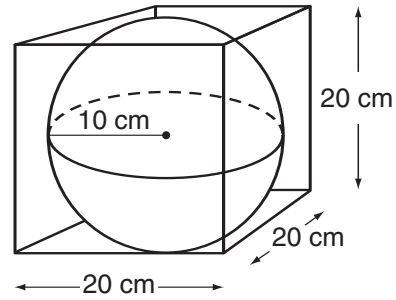
- a $2(l + w), \pi r^2$
 - b $2(l + w), 2\pi r$
 - c $lw, 2\pi r$
 - d $lw, \pi r^2$
- 18** Silvia is making lemonade. She is using a cylindrical container with a radius of 10 cm and a height of 30 cm, as shown below.



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

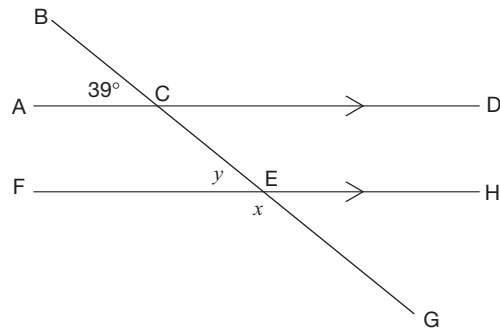
- a 37 700 cm³
- b 9425 cm³
- c 1885 cm³
- d 600 cm³

- 19** A soccer ball is packaged in a cube-shaped box.



Which is closest to the volume of the space in the package that is **not** occupied by the ball?

- a 3811 cm³
 - b 4000 cm³
 - c 4187 cm³
 - d 8000 cm³
- 20** The measure of $\angle ACB$ is 39° .

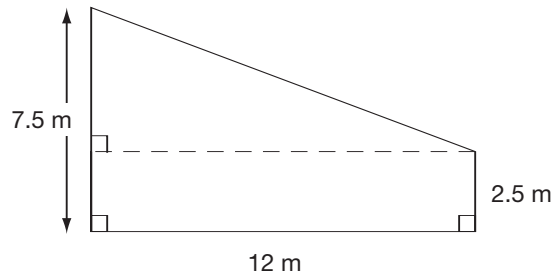


What are the values of x and y ?

- a $x = 39^\circ$ and $y = 141^\circ$
- b $x = 39^\circ$ and $y = 39^\circ$
- c $x = 141^\circ$ and $y = 141^\circ$
- d $x = 141^\circ$ and $y = 39^\circ$

21 Paint

Jackson is buying paint for his wall.



One litre of paint will cover 9 m^2 .

How many litres of paint does he need to cover the wall?

Justify your answer.

Sample Assessment Questions: Academic

Answer Key

1. a b c d
2. a b c d
3. a b c d
4. a b c d
5. Respond in booklet.

6. a b c d
7. a b c d
8. a b c d
9. Respond in booklet.

10. a b c d
11. a b c d
12. a b c d
13. a b c d
14. a b c d
15. Respond in booklet.

16. a b c d
17. a b c d
18. a b c d
19. a b c d
20. a b c d
21. Respond in booklet.

End of Assessment