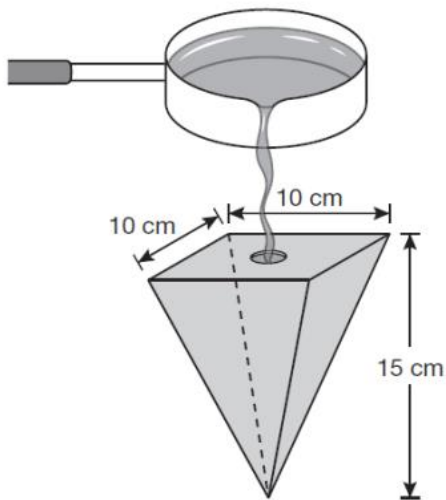# Academic

## Grade 9 Assessment of Mathematics

**Measurement Practice**
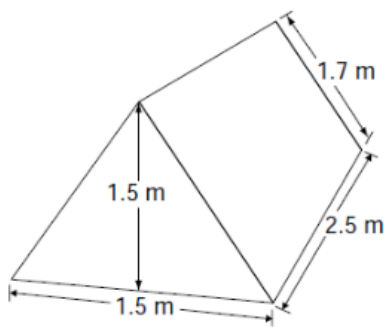
EQAO

Education
Quality and
Accountability
Office

**1**  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?

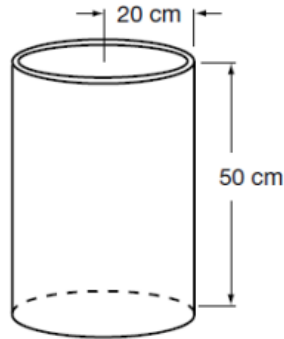a   1500 cm³

b   500 cm³

c   400 cm³

d   35 cm³

**2**  Examine the tent below.



Which of the following is the surface area of the tent, including the ends and the floor?
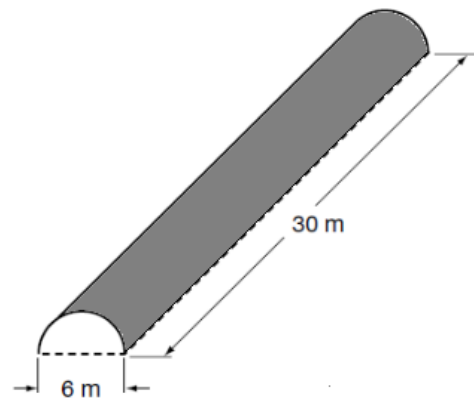
a   4.6 m²

b   10.5 m²

c   14.5 m²

d   20.0 m²

**3**  Brad has a cylindrical metal container that is open at the top. He wants to paint the outer surfaces of the container, including the bottom.



Which expression should he use to calculate the area to be painted?

A   $\pi(20)(50)$ cm²

B   $2\pi(20)(50)$ cm²

C   $2(\pi(20)^2 + \pi(20)(50))$ cm²
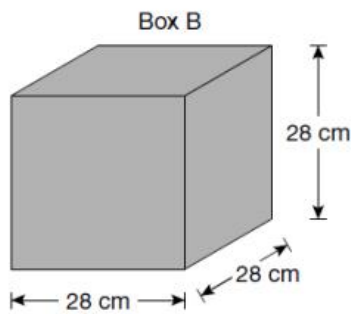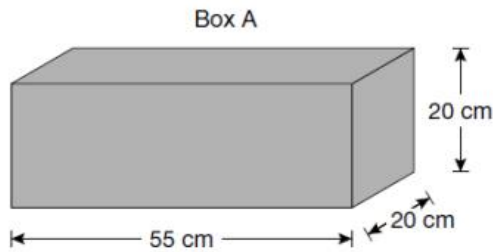
D   $(\pi(20)^2 + 2\pi(20)(50))$ cm²

**4**  The figure shows a greenhouse roof in the shape of half a cylinder, with no ends.



What is the approximate surface area of the curved roof?

a   283 m²

b   424 m²

c   565 m²

d   848 m²

**5** Box A and Box B have about the same volume. The cost to make a box depends on the amount of cardboard used.

Box A

20 cm

55 cm

20 cm

Box B

28 cm

28 cm

28 cm

Which of the following statements is correct?

**F** Box B costs less; it uses 48 cm³ less cardboard to make.

**G** Box A costs less; it uses 290 cm³ less cardboard to make.

**H** Box B costs less; it uses 496 cm² less cardboard to make.

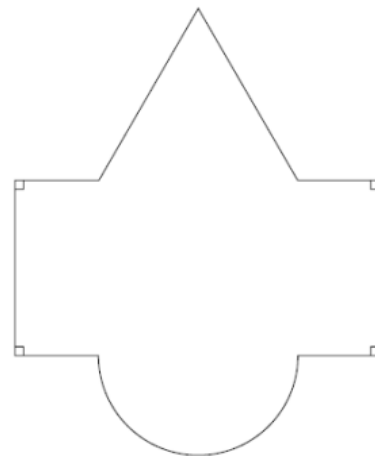**J** Box A costs less; it uses 496 cm² less cardboard to make.

**6** The Cutie Cupcake Company is having a sign made. The sign will be a semicircle on top of a trapezoid.

2 m

0.75 m

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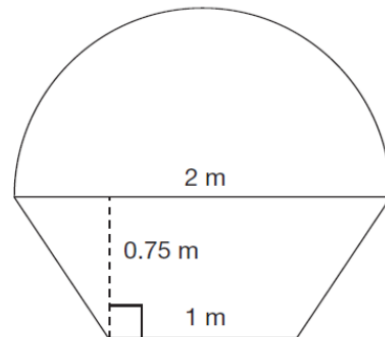
Which of the following is closest to the total area of the sign?

**a** 4.27 m²

**b** 2.70 m²

**c** 1.57 m²

**d** 1.13 m²

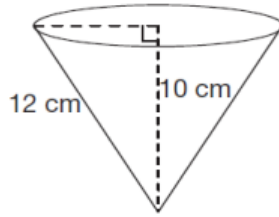**7** The floor plan of the lobby of a hotel is shown below.

Which of the following formulas is not useful to determine the area of part of the lobby?

**a** $\frac{b \times h}{2}$

**b** $\frac{\pi r^2}{2}$

**c** $\frac{4}{3}\pi r^3$

**d** $l \times w$

## 8   Cone Zone

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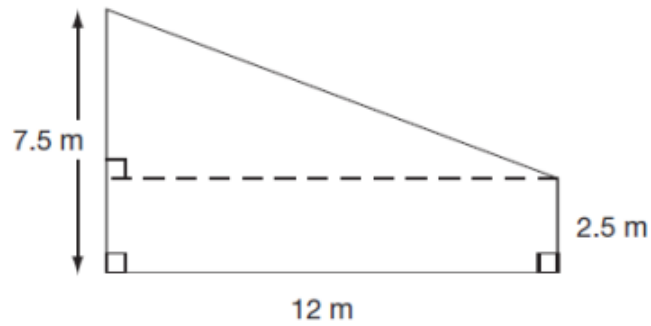


Determine the volume of water in the cup if Zach fills it to the top.

Show your work.

## 9    Paint Purchase

Jackson is buying paint for his wall.



One litre of paint will cover 9 m².

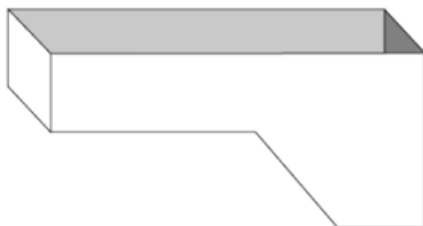How many litres of paint does he need to cover the wall?

Justify your answer/

**10**  **Pool Problem**

Jackie runs a pool maintenance service.

In order to add the correct amount of chlorine to keep the pool clean, she needs to know how much water is in the pool when the pool is full.

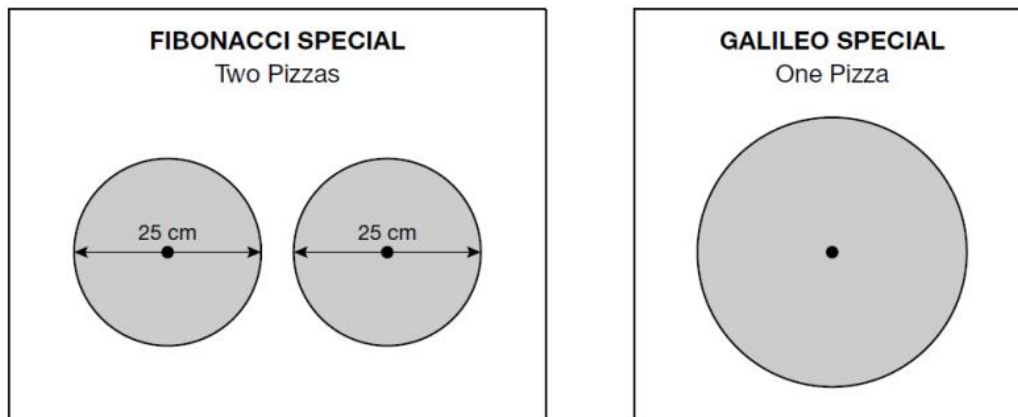The following is a diagram of the pool.



Assuming she knows all the lengths, widths and heights, **list the steps** that Jackie should take to determine the amount of water in the pool.

**11**  ## Pizza Puzzle

One weekend, a pizza shop offers two specials for the same price.  The pizzas are all the same thickness.

| FIBONACCI SPECIAL | GALILEO SPECIAL |
|---|---|
| Two Pizzas | One Pizza |
| 25 cm     25 cm | |

Determine the diameter of the Galileo Special if the two specials contain the same amount of pizza.  Show the work.

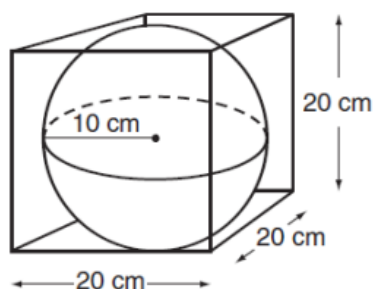**12**  Elisa wants to pack CD cases into a storage box.



1 cm

12.5 cm

|←14 cm→|

10 cm

38 cm

28 cm
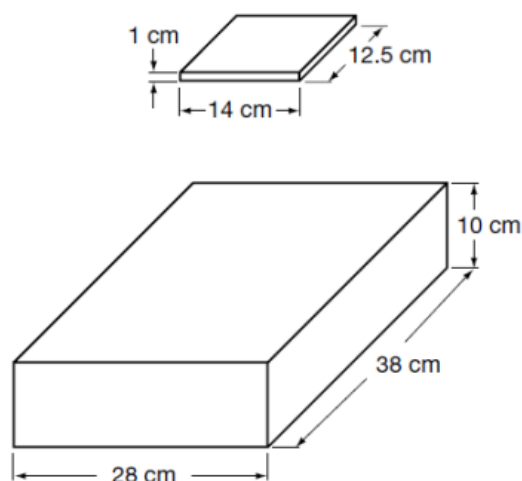
What is the largest number of CD cases Elisa can pack inside the covered storage box?

a    about 40

b    about 50

c    about 60

d    about 70
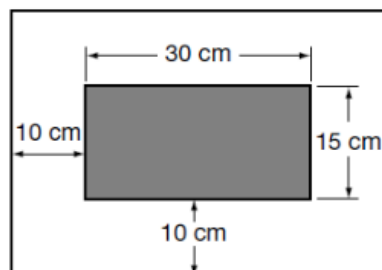
**13**  A soccer ball is packaged in a cube-shaped box.



20 cm

10 cm

20 cm

20 cm

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

a    3811 cm$^3$

b    4000 cm$^3$

c    4187 cm$^3$

d    8000 cm$^3$

**14**  A picture measures 30 cm by 15 cm. The mat around the picture is 10 cm wide as shown.



30 cm

10 cm

15 cm

10 cm

Find the **area** of the mat.

A    450 cm$^2$

B    1000 cm$^2$

C    1200 cm$^2$

D    1300 cm$^2$

**15**  If the diameter of a volleyball is three times the diameter of a tennis ball, which statement below is true?

a    The volume of the volleyball is 3 times the volume of the tennis ball.

b    The volume of the volleyball is 9 times the volume of the tennis ball.

c    The surface area of the volleyball is 9 times the surface area of the tennis ball.

d    The surface area of the volleyball is 27 times the surface area of the tennis ball.
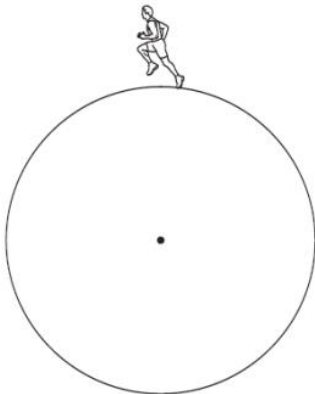
**16** If the perimeter of this rectangle is 120 units, what is its area in square units?
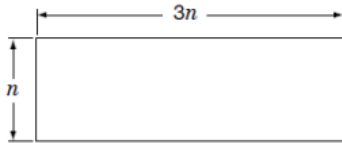


F    675

G    900

H    1225

J    2700

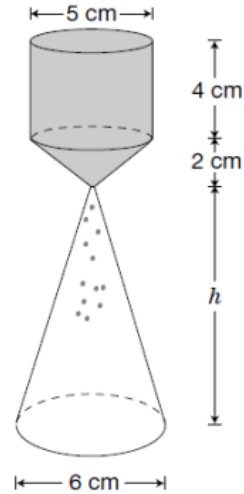**17** The distance covered in 5 laps of a circular track is $400\pi$ metres.



What is the shortest distance between any point on the track and the centre?

a    400 m

b    200 m

c    80 m

d    40 m

**18** Sand is being poured from one container to another, as shown below. The sand flows from the shaded part to the unshaded cone.



The shaded part starts full of sand. The sand empties into the unshaded cone and fills it to the top. What is the height of the unshaded cone?

F    6.0 cm

G    8.3 cm

H    9.7 cm

J    12.5 cm

**Answers**

1] B
2] C
3] D
4] A
5] H
6] B
7] C
8] 460.32 cm$^3$
9] 6.67 L
10] Break shape into 2 rectangular prisms and 1 triangular prism. Calculate the volume of each shape. Add the three volumes together.
11] 35.36 cm
12] C
13] A
14] D
15] C
16] F
17] D
18] H