2018

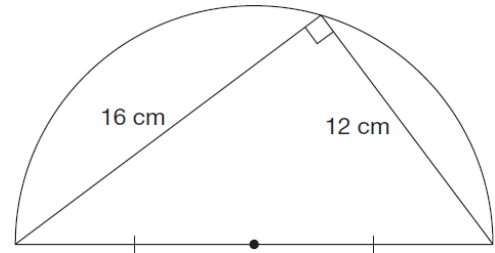**2** A roof can be modelled by four congruent triangles, as pictured.
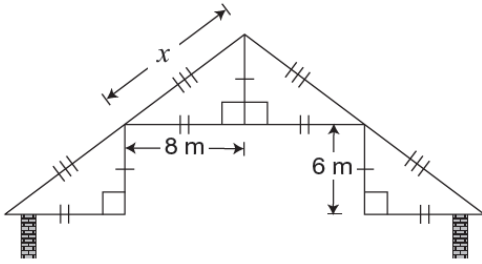
The length of x, in metres, can be determined using the formula $x^2 = 8^2 + 6^2$.

Which is closest to the total length of **both** sides of the roof, $4x$?

a   56 m

b   40 m

c   21 m

d   15 m

20 A semicircle with a right triangle in it is shown.
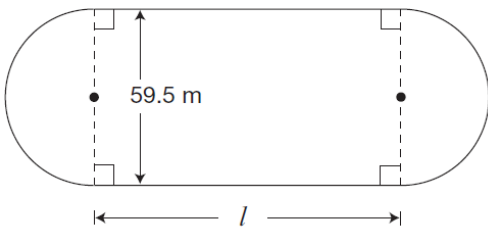

What is the radius of the semicircle?

Hint:
Use the Pythagorean theorem.

a   28 cm

b   20 cm

c   14 cm

d   10 cm

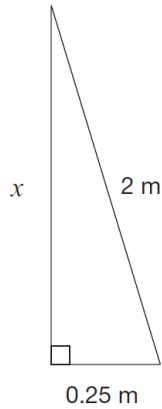**21** A diagram of a track with a perimeter of 475 m is shown below.

Which of the following is closest to the length of a side of the rectangular part of the track, l?
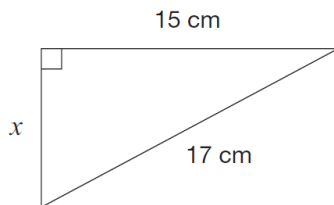
a   51 m

b   144 m

c   288 m

d   356 m

2017

20 Which equation correctly uses the Pythagorean theorem to determine the value of x in the diagram?

x 2 m

0.25 m

a $x = \sqrt{2 + 0.25}$

b $x = \sqrt{2 - 0.25}$

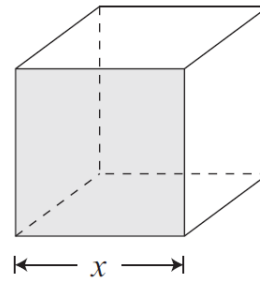c $x = \sqrt{2^2 + 0.25^2}$

d $x = \sqrt{2^2 - 0.25^2}$

2015

28 According to the Pythagorean theorem, what is the length of the third side of the triangle, x?

15 cm

x

17 cm
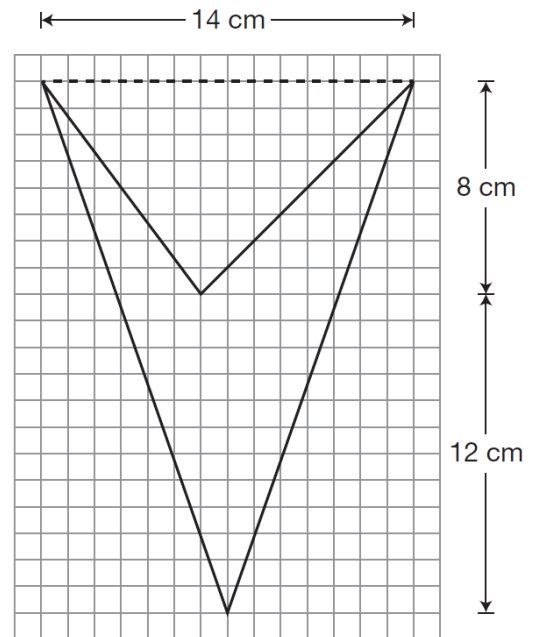
a   2 cm

b   4 cm

c   6 cm

d   8 cm

2016

2 A cube with a given side length is pictured below.

x

Which algebraic expression represents the area of **one face** of the cube?

a $2x$

b $4x$

c x^2

d x^3

19 What is the area of the shape represented below?

14 cm

8 cm

12 cm

a   28 cm^2

b   56 cm^2

c   84 cm^2

d   168 cm^2

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 cm^2

b   7.9 cm^2

c   4.9 cm^2

d   3.9 cm^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.

Town A

12 km

City X   5 km   City Y

3 km
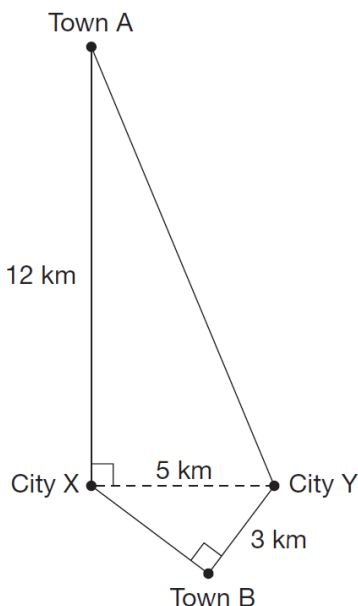
Town B

How much shorter is the detour through Town B than the detour through Town A?
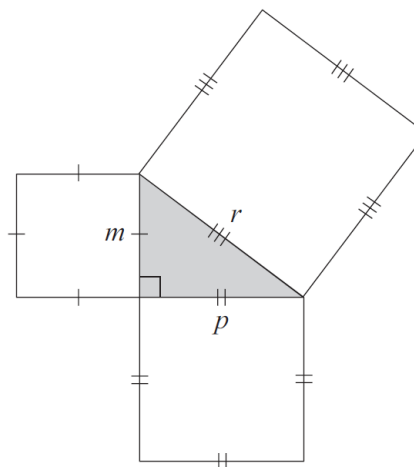
a   7 km

b   9 km

c   16 km

d   18 km

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.

Area = 11.56 m^2

Area = 6.76 m^2

l

Area = 21.16 m^2
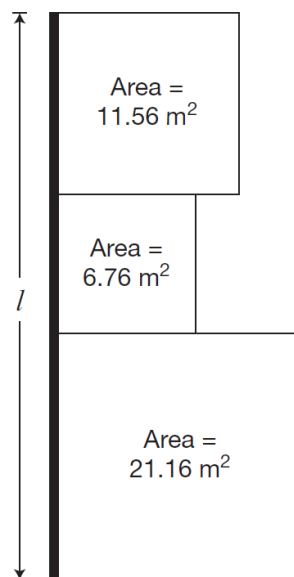
Which of the following is closest to the length of the fence, l?

a   19.7 m

b   10.6 m
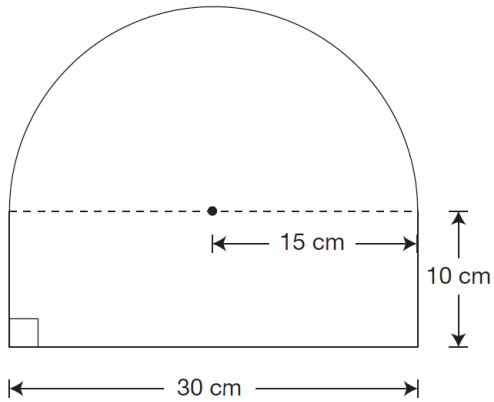
c   9.9 m

d   6.3 m

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

m r

p

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

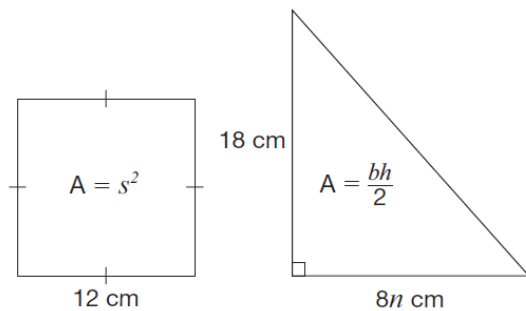**26** The sign below is made up of a rectangle and a semicircle.

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

    a   347 cm^2

    b   653 cm^2

    c   1007 cm^2
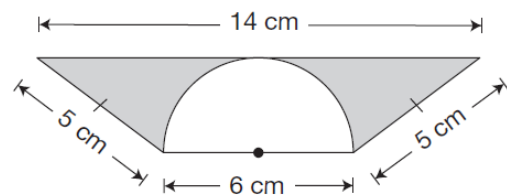
    d   1410 cm^2

2013

5 The square and the triangle below have the same area.

What is the value of n?

    a   1

    b   2

    c   8

    d   16

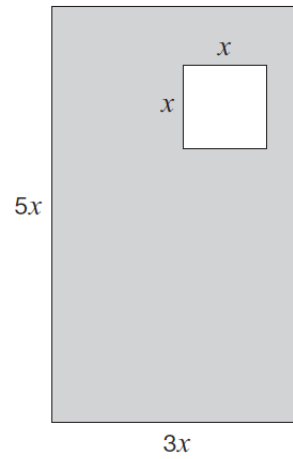**26** The diagram below is made of a trapezoid and a semicircle.

Which is closest to the area of the shaded part of the diagram?

    a   2 cm^2

    b   16 cm^2

    c   21 cm^2

    d   36 cm^2

8 **Square Removed**

This rectangle has a square removed. There are algebraic expressions for the sides, in centimetres.
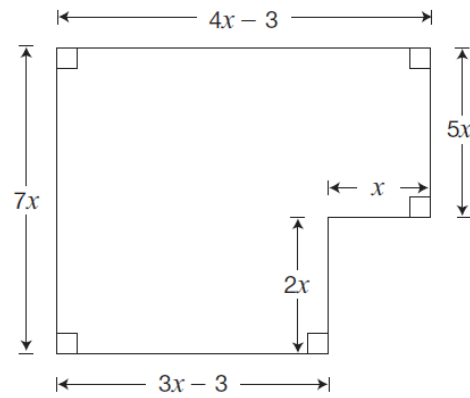

The area of the rectangle without the square is 126 cm².

Determine the side length of the square, x, in centimetres.

Show your work.

The side length of the square, x, is _____ cm.

9 Floored Areas

The diagram of the floor shown below has algebraic expressions for the lengths of its sides, in metres.

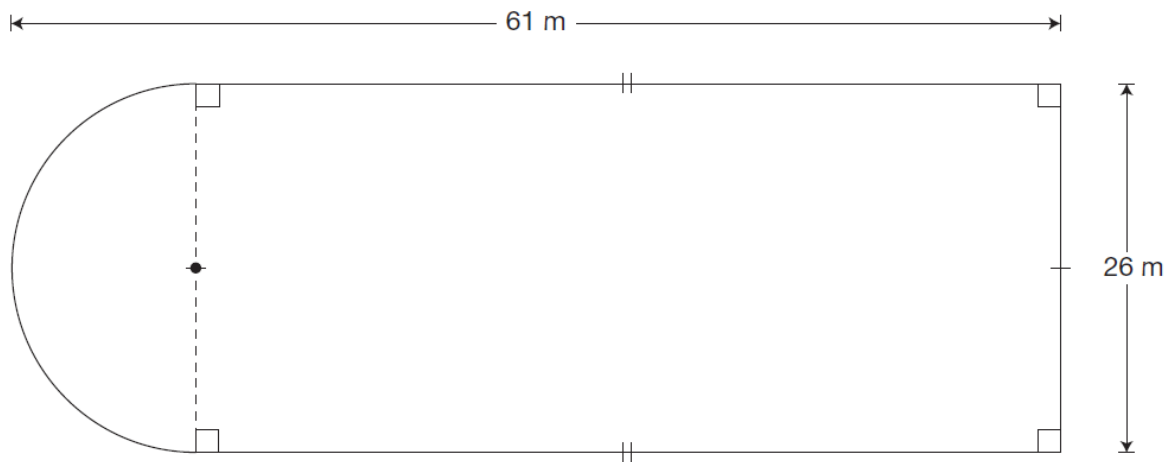Determine an unsimplified expression for the **total area** of the floor, A, in m^2.

$A =$ _____

Simplify your expression fully. Show your work.

17 Skate On!

A diagram of a community ice rink is shown below.

The rink is being enclosed with fencing that costs $6.20/m.

Determine the total cost of fencing for the rink.

Show your work.