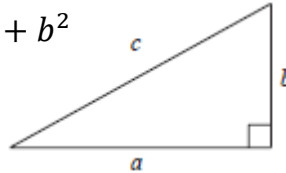**Calculators permitted but all working needs to be shown.**

## Formulae:

**Area of a Circle:** $A = \pi r^2$    **Circumference of a Circle:** $C = \pi d$
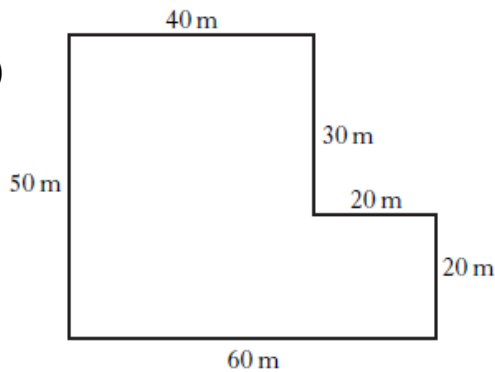
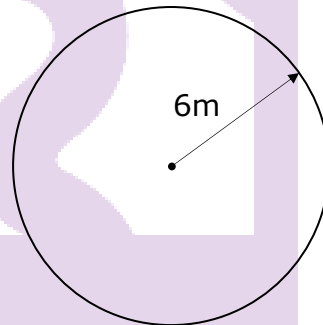**Theorem of Pythagoras:** $c^2 = a^2 + b^2$

## Essential knowledge:

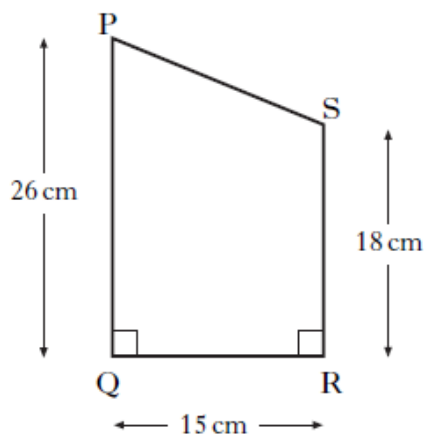Calculate the perimeter **AND** area of each shape in Q1 and Q2:

**1.**
(a)

40 m
30 m
50 m
20 m
20 m
60 m

(b)

6m

**2.**
(a)

P
S
26 cm
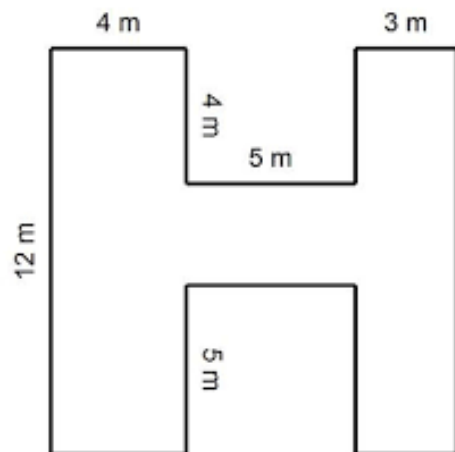18 cm
Q        R
15 cm
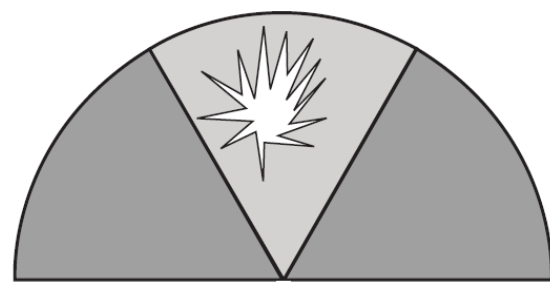
(b)

4 m        3 m
4 m
5 m
12 m
5 m

## Unit level:

**3.** A semi-circular window is made from three identical pieces of glass.
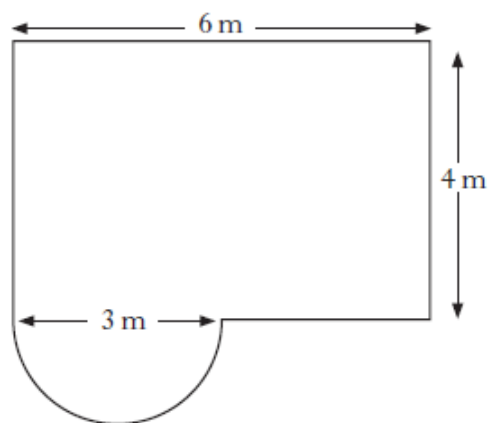
Calculate the area of the damaged piece of glass.

Circle - $C = \pi d$    $A = \pi r^2$

35 cm

Pythagoras - $c^2 = a^2 + b^2$

**4.** Calculate the perimeter of the shape shown.

Round your answer to **one decimal place.**
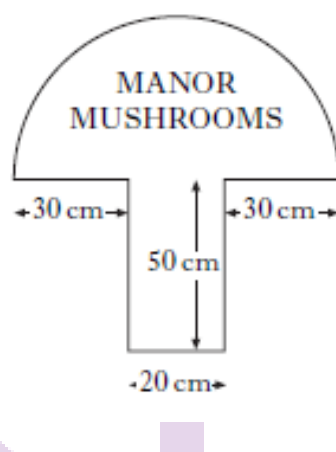
*6 m*

*4 m*

*3 m*

**Assessment level:**

**5.** A sign for a mushroom farm consists of a semi-circle and a rectangle.

There is a red border painted all-round the edge of the sign.

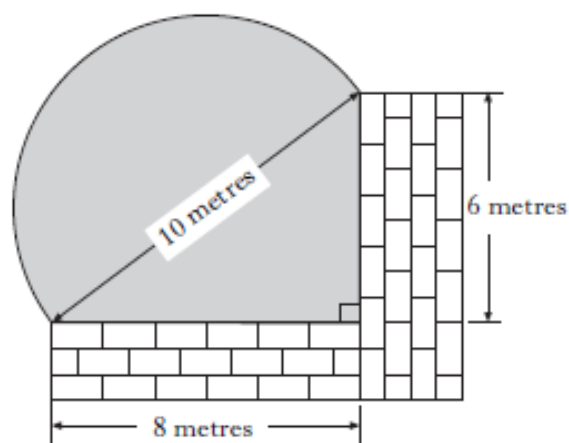Calculate the total length of the red border.

**Give your answer to the nearest centimetre.**

MANOR
MUSHROOMS

←30 cm→    ←30 cm→

50 cm

-20 cm→

**6.** The diagram shows part of a garden which is being watered from a sprinkler.

The area being watered is in the shape of a semi-circle and a right-angled triangle.
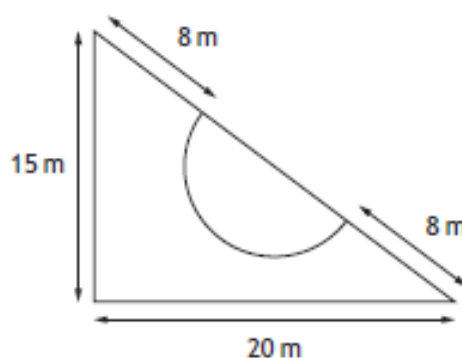
Calculate the area being watered.

10 metres

6 metres

8 metres

**7.** A garden in the shape of a right-angled triangle has a semi-circular pond on the hypotenuse as shown.

(a) Calculate the diameter of the pond.

(b) The garden, excluding the pond, is to be covered with stone chips.

Calculate the area to be covered with stone chips.

8 m

15 m

8 m

20 m

Circle - $C = \pi d$    $A = \pi r^2$        Pythagoras - $c^2 = a^2 + b^2$