SCALE DRAWINGS

1) On a drawing, the scale is 1 cm to 10 km. What do the following lengths on the drawing represent in real life?
   a. 2 cm **20 km**
   b. 4 cm **40 km**
   c. 5 cm **50 km**
   d. 1.5 cm **15 km**

2) On a design layout, the scale is 1 cm to 5 m. What do the following lengths on the layout represent in real life?
   a. 2 cm **10 m**
   b. 3 cm **15 m**
   c. 0.5 cm **2.5 m**
   d. 0.2 cm **1 m**

3) On a globe, the scale is 1 cm to 500 miles. What do the following lengths on the globe represent in real life?
   a. 5 cm **2500 miles**
   b. 10 cm **5000 miles**
   c. 0.5 cm **250 miles**
   d. 0.1 cm **50 miles**

4) On the diagram of a stadium, the scale is 2 cm to 10 m. How many centimetres on the diagram are needed to represent 30 m?
   6 cm

5) On a blueprint, the scale is 0.5 cm to 1 m. How many centimetres on the blueprint are needed to represent 3 m? **1.5 cm**

6) On a map, the scale is 1 cm to 8 miles. How many centimetres on the map are needed to represent 12 miles? **1.5 cm**

7) On a scale diagram, 1 cm represents 4 m. What is the actual distance for a line of 6.5 cm? **26 m**

8) A map uses a scale of 1 cm to 2 km. How far is 7.5 cm on the map in real life? **15 km**

9) A statue model uses a scale of 1 cm to 20 cm. The model is 18 cm long. What is the actual length of the statue in real life? **360 cm (3.6 m)**

10) Express the following scales as ratios in the form 1 : n.
   a. 1 cm to 2 m **1 : 200**
   b. 1 mm to 10 cm **1 : 100**
   c. 2 cm to 10 m **1 : 500**
   d. 4 cm to 5 m **1 : 125**
   e. 2 cm to 1 km **1 : 50,000**
   f. 0.2 cm to 3 km **1 : 1,500,000**

11) The model of a car has a scale of 1 : 30. The actual length of the car is 4.2 m. How long is the model of the car in centimetres?
   420 cm ÷ 30 = 14 cm

12) The model of an office building has a scale of 1 : 150. The height of the model is 60 cm. What is the actual height of the office building in metres?
   60 × 150 = 9,000 cm = 90 m

13) The map of a national park has a scale of 1 : 25,000. The distance between two points on the map is 14 cm. Work out the actual distance between the two points in kilometres.
   14 × 25,000 = 350,000 cm = 3.5 km

14) A garden pond is made of a rectangle 14 m by 6 m with a semicircle attached to one of the long 14 m sides.

14 m

6 m
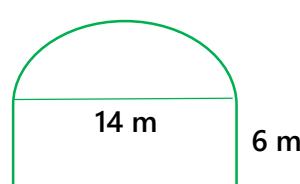
A scale drawing of the pond is made with a scale of 1 : 200.

a. Find the length (in mm) on the drawing of the straight long edge.
14 ÷ 200 = 0.07 m
0.07 × 100 = 7 cm
7 cm × 10 = **70 mm**

b. Work out the area of the pond on the drawing in cm^2. Give your answer to 3 significant figures.
Dimensions of rectangle on drawing:
Length = 14 ÷ 200 = 0.07 m = 7 cm
Width = 6 ÷ 200 = 0.03 m = 3 cm

Rectangle area = 7 × 3 = 21 cm^2
Semi-circle area = ½ × π × 3.5^2
= 19.2422... cm^2

Area of pond = 21 + 19.2
= **40.2 cm^2 (3 sf)**

c. Find the actual area of the pond in m^2. Give your answer to 3 significant figures.
Actual area = (14 × 6) + (½ × π × 7^2)
= 160.9690...
= **161 m^2 (3 sf)**

d. A stone border is built 0.5 m from the outer perimeter of the pond. The border follows the same shape as the pond. Calculate the area between the border and the pond. Give your answer to 3 significant figures.

6.5 m   14 m   6 m
15 m
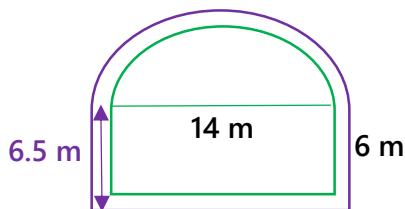
Total enclosed area
= (15 × 6.5) + (½ × π × 7.5^2)
= 185.857 ...

Area between pond and border
= 185.857... – 160.969 ...
= **24.9 m^2 (3 sf)**