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)

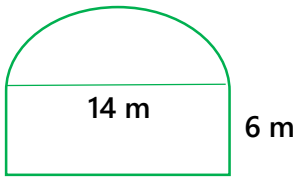
10) Express the following scales as ratios in the form 1 : n.
   a. 1 cm to 2 m **1 : 200**
   b. 1 mm to 10 cm **1 : 100**
   c. 2 cm to 10 m **1 : 500**
   d. 4 cm to 5 m **1 : 125**
   e. 2 cm to 1 km **1 : 50,000**
   f. 0.2 cm to 3 km **1 : 1,500,000**

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.



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)**

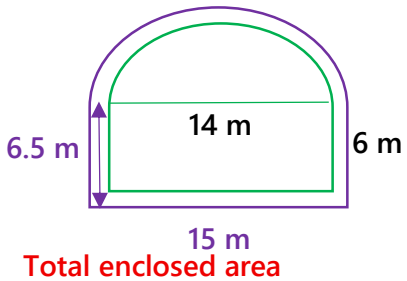
c. Find the actual area of the pond in m^2. Give your answer to 3 significant figures.

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.



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)**