

A scale diagram is a drawing in which measurements are proportionally reduced or enlarged from actual measurements. A scale diagram is similar to the original. These are mostly used for blueprints of a building.

A scale is the ratio of a measurement on a diagram to the corresponding distance measured on the shape or object represented by the diagram.

Example 1: A builder plans to construct a house on a rectangular lot, as shown in this sketch. Draw a scale diagram of the lot and house using a scale of 1 m: 500 m.

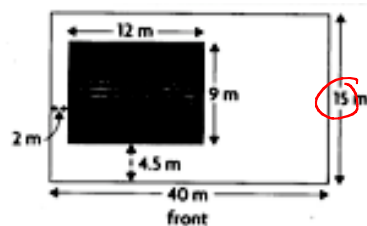
$$15 \times \frac{1}{500} = 0.03 \text{ m} \times 100 = 3 \text{ cm}$$

$$40 \times \frac{1}{500} = 0.08 \text{ m} \times 100 = 8 \text{ cm}$$

$$2 \times \frac{1}{500} = 0.004 \text{ m} \times 100 = 0.4 \text{ cm}$$

$$9 \times \frac{1}{500} = 0.018 \text{ m} \times 100 = 1.8 \text{ cm}$$

$$4.5 \times \frac{1}{500} = 0.009 \text{ m} \times 100 = 0.9 \text{ cm}$$



$$12 \times \frac{1}{500} = 0.024 \text{ m} \times 100 = 2.4 \text{ cm}$$

Example 2: The diameter of an animal cell is actually 0.25 mm. The scale diagram of the cell has a diameter of 3.5 cm. What scale factor was used to draw this scale diagram?

$$\frac{\text{scale diagram length}}{\text{actual diagram length}} = \frac{35}{0.25} = 140$$