

Learning Goals: I will learn to

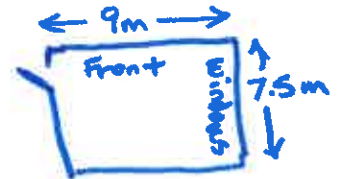
- represent a place or object by creating a scale diagram
- use scale diagrams to determine unknown measurements

scale diagram: a 2-D drawing that represents a place or object

1. Measure to the nearest 0.5 m, the length and width of your classroom.

m → cm
x 100

7.5 m wide × 9 m long
750cm 900cm



2. Choose an appropriate scale and create a scale diagram (back page) that represents the top view of your classroom. Pick a scale so that the diagram will take up most of the space on the page.

scale factor = $\frac{1}{50}$

2cm on drawing = 1m real world

1 cm = 0.5m

1 cm = 50cm

1:50 scale

actual length × $\frac{1}{50}$ = drawing length.

$750\text{cm} \times \frac{1}{50} = 15\text{cm}$

$900\text{cm} \times \frac{1}{50} = 18\text{cm}$

3. a) Measure the distance from the door of your classroom to the nearest corner. Measure the width of the door opening.

door to corner = 1m }
door opening = 1m } 2cm on drawing

b) Erase a "hole" at the appropriate location of the diagram for the door opening

c) Which side of the opening are the hinges on? Does the door open into the classroom or out?

d) Draw the symbol to show the door. The straight line comes out from the hinges, and the curve represents the path of the door as it swings open.

4. a) Write the scale of your diagram, as a 1 : ■ ratio, in the bottom corner of your drawing.

b) Measure one of the diagonals on your diagram. Use the scale of your drawing to determine the actual distance in your classroom. Measure the actual distance and compare the results.

23.4 cm on drawing
× 50 = 1170 cm
in real world.

cm → m ÷ 100

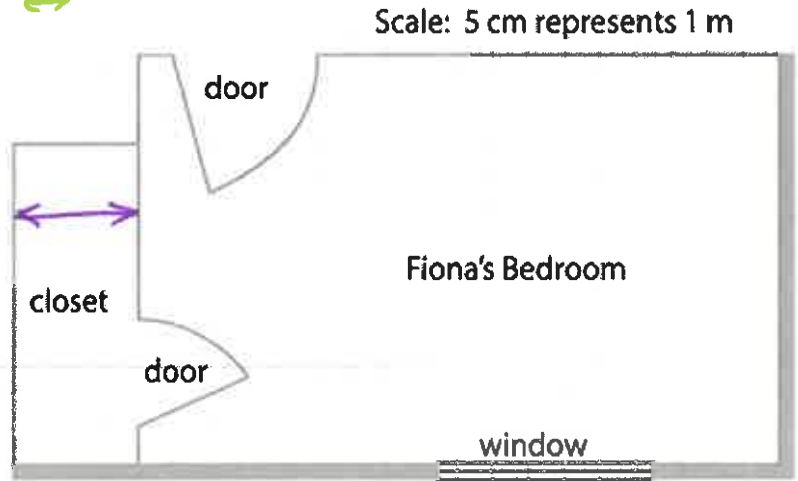
$1170 \div 100 = 11.7\text{m}$

measured length = 11.7m

Example 1: Read Scale Diagrams

This scale drawing of Fiona's bedroom is on centimetre grid paper. Her bedroom is in one corner of the house. Exterior walls are shown as half a square thick. Interior walls, which are much thinner, are shown as lines.

imagine that each square is 1cm tall / 1cm wide



a) Explain the scale of the diagram.

5cm represents 1m
 5 squares represents 1m
 1 square represents 0.2m
 (1cm on drawing = 20cm in the real world)

b) Convert the scale of the diagram to a 1 : ■ ratio.

1:20

real world is 20 times bigger than drawing

drawing is $\frac{1}{20}$ the size of the real world

c) What are the dimensions of Fiona's bedroom? Explain how you know.

length → 18 squares long
 $18 \text{ cm} \times 20 = 360 \text{ cm} \div 100$
 width → 11.5 squares wide
 $11.5 \text{ cm} \times 20 = 230 \text{ cm} \div 100$

3.6m long AND 2.3m wide

d) How wide is each door?

closet door: → 3 squares
 $3 \times 20 = 60 \text{ cm OR } 0.6 \text{ m}$

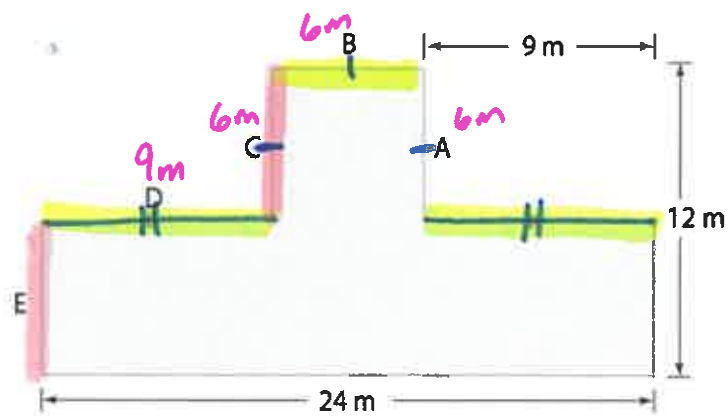
bedroom door: → 4 squares
 $4 \times 20 = 80 \text{ cm OR } 0.8 \text{ m}$

e) How deep is the closet?

→ 3.5 squares
 $3.5 \times 20 = 70 \text{ cm OR } 0.7 \text{ m}$

Example 2: Determine Missing Dimensions

To avoid clutter, many scale drawings include a minimum amount of information. Use the measurements given to determine the lengths of walls A, B, C, D, and E.



$$D = 9\text{ m} \quad \text{hash marks tell us } \#$$

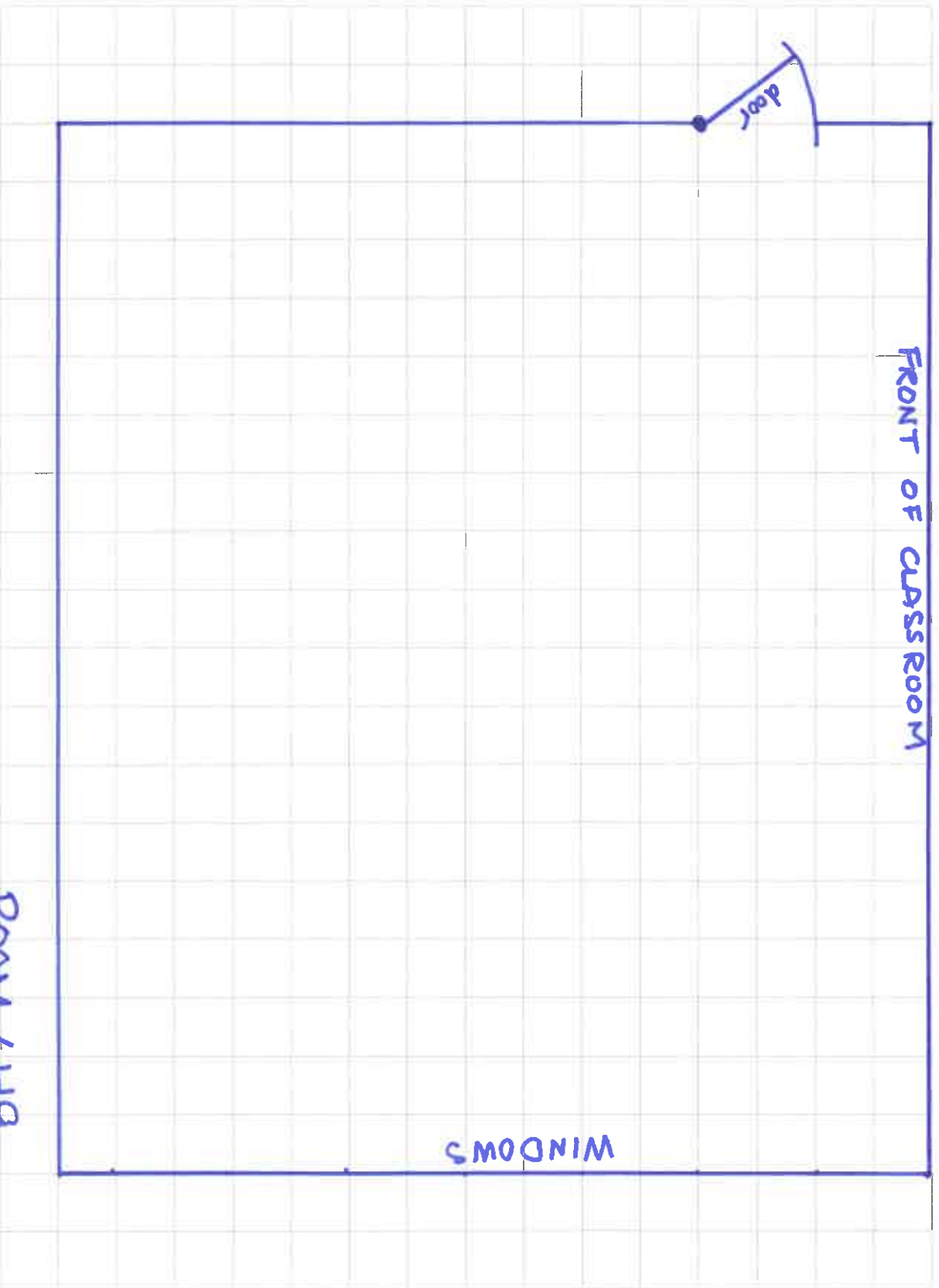
$$E = 12 - 6 = 6\text{ m}$$

$$B = 24 - 9 - 9 = 6\text{ m}$$

$$A = B = C = 6\text{ m}$$

hash marks tell us +

$$A = B = C = E = 6\text{ m}$$
$$D = 9\text{ m}$$



FRONT OF CLASSROOM

WINDOWS

door

ROOM 649

1:50