

CHAPTER 4

Scale Drawings



What will you learn?

4.1

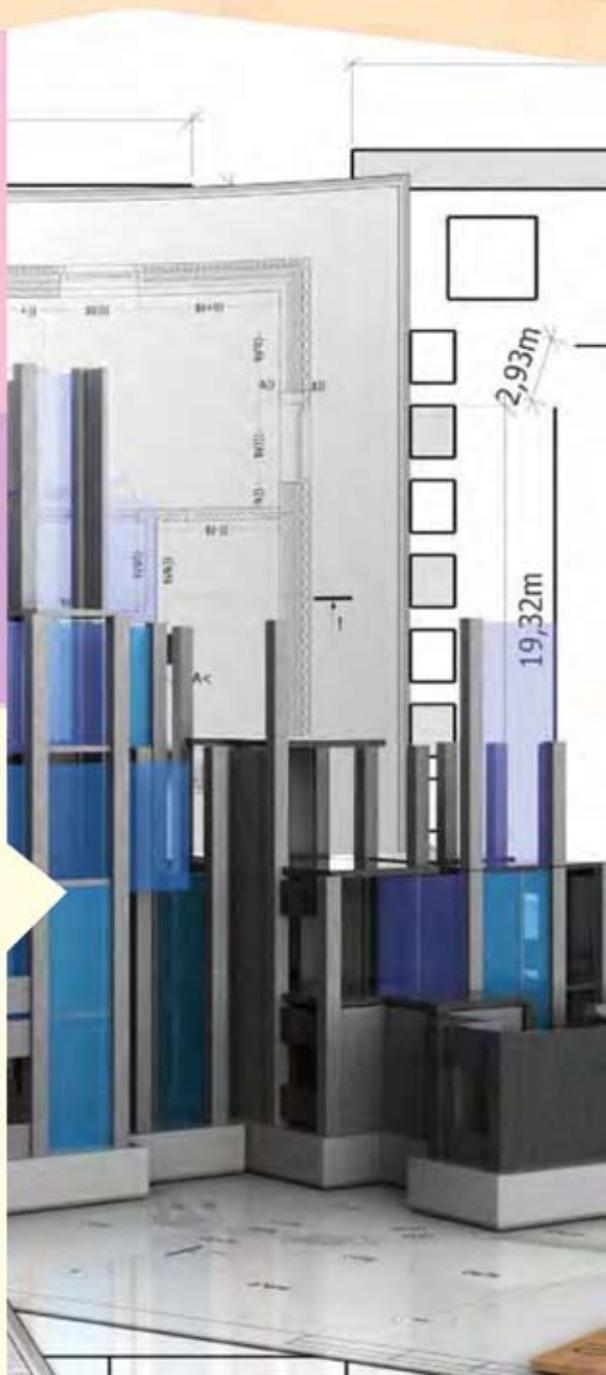
Scale Drawings

Why do you learn this chapter?

- Scale drawings are used to give an idea of object measurements or actual distances.
- Scale drawings are frequently used in architecture, engineering, photography, technological design, and so on.

Housing developers usually prepare models of the housing scheme they are going to build. These models give the buyers an idea of the housing zone and other facilities provided by the developer.

Also, the plans of the houses to be built are drawn using a certain scale with measurements being in proportion to the actual measurements of the houses. These plan drawings allow buyers to choose the type of house to buy based on house size, facilities and also needs and affordability. Have you ever seen your house plan?



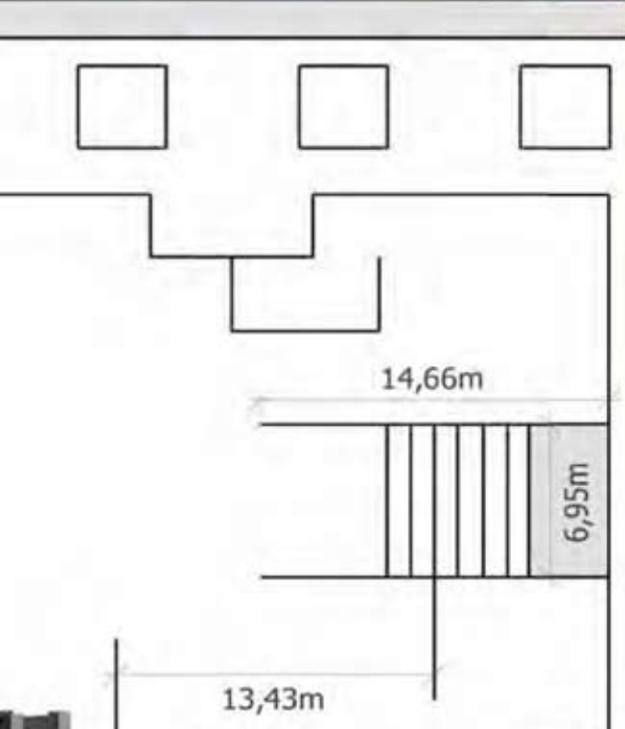


Exploring Era

Angkor Wat in Cambodia is one of the famous monuments in Southeast Asia. It was built by Suryavarman II after his victory over Champa and subsequently uniting Kampuchea. This monument symbolises the strength and sovereignty of Suryavarman II's government. Its height is 213 metres and its area is 208 hectares. The altar is at the centre. It has four storeys with every corner having walls measuring 850 metres wide and 1000 metres long built from laterite and sandstones sourced locally. Carvings depicting stories from Ramayana and Mahabharata epics decorate the walls.



[http://bukutekskssm.my/Mathematics/F3/
ExploringEraChapter4.pdf](http://bukutekskssm.my/Mathematics/F3/ExploringEraChapter4.pdf)



WORD BANK

- original
- geometrical shape
- degree
- grid
- sketch
- object
- size
- scale
- asal
- bentuk geometri
- darjah
- grid
- lakar
- objek
- saiz
- skala

4.1 Scale Drawings

What is the relationship between the actual measurements and the measurements of various sizes of drawings of an object?

Do you know that the maps found in navigation software are drawn to a certain scale?

The distance between two towns shown in the software is proportional to the actual distance.



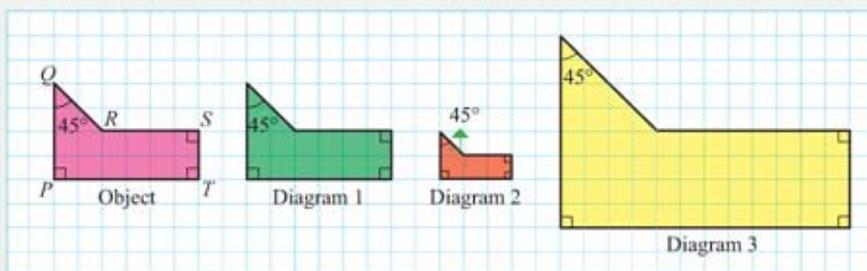
For example, in the picture above, the distance between Johor Bahru and Kuala Lumpur is shown using a scale of 1 cm : 50 km.

LEARNING STANDARD

Investigate and explain the relationship between the actual measurements and the measurements of various sizes of drawings of an object, and hence explain the meaning of scale drawing.

Example 1

The diagram below shows the drawings representing object $PQRST$ drawn to different sizes.



What can you say about the size of Diagram 1, Diagram 2 and Diagram 3 compared to object $PQRST$?

Solution:

Diagram 1: Lengths of all sides and sizes of all angles are the same as object.

Diagram 2: Lengths of all sides reduced by a certain proportion compared to object but sizes of all angles unchanged.

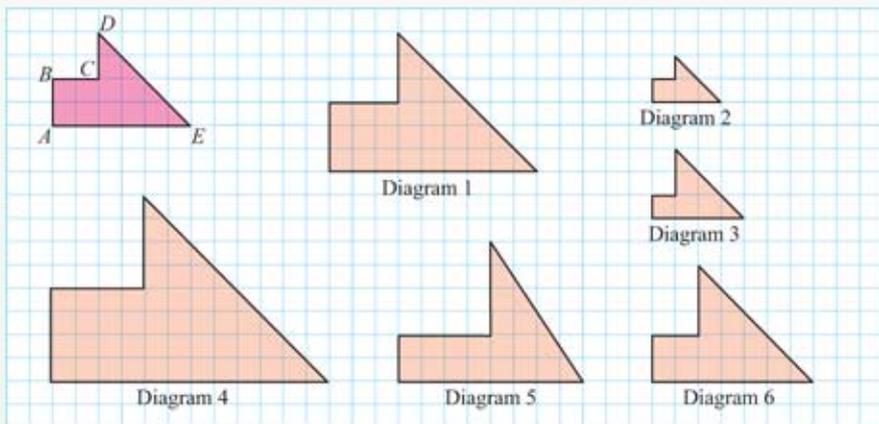
Diagram 3: Lengths of all sides increased by a certain proportion compared to object but sizes of all angles unchanged.

In conclusion, all sides of Diagram 1, Diagram 2 and Diagram 3 follow a certain scale that is proportional to the object whereas angle size remains unchanged. Therefore, Diagram 1, Diagram 2 and Diagram 3 are scale drawings of object $PQRST$.

Scale drawing is the drawing of an object with all measurements in the drawing proportional to the measurements of the object.

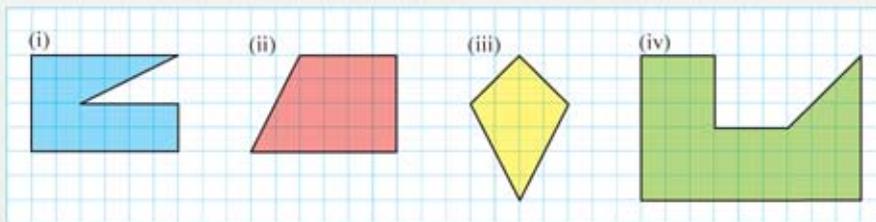
MIND TEST 4.1a

1. The diagram below shows drawings representing object $ABCDE$ drawn to different sizes.



State the diagram which is the scale drawing of object $ABCDE$.

2. Using grid paper, draw all the shapes below using
 (a) the same size (b) a smaller size (c) a bigger size



How do you interpret the scale of a scale drawing?

The scale used to draw a scale drawing depends on the ratio of measurement of scale drawing to measurement of object, which is

$$\text{Scale} = \frac{\text{Measurement of scale drawing}}{\text{Measurement of object}}$$

This ratio can also be written in the form;

$$\text{Measurement of scale drawing} : \text{Measurement of object}$$

Usually, for scale drawings, we use scale in the form of ratio.

$$1 : n$$

where n is a positive integer or fraction

$1 : n$ means one unit on the scale drawing will represent n units on the object.

LEARNING STANDARD

Interpret the scale of a scale drawing.

Brainstorming 1

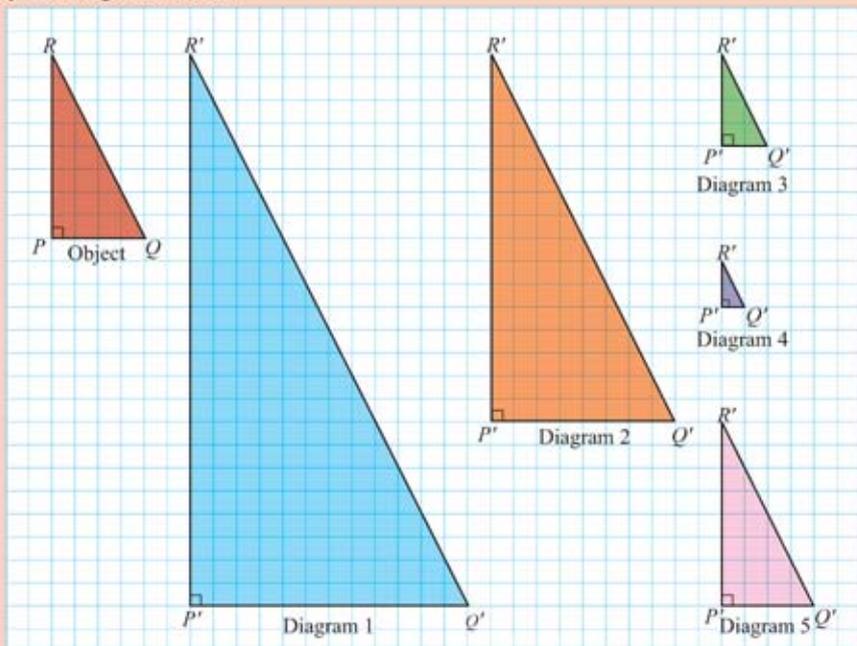


In pairs

Aim: Interpret the scale of a scale drawing.

Steps:

- Study the diagrams below.



- Complete the table below based on the diagrams above.

Diagram	Scale drawing		Object		Scale	
	Side	Length (unit)	Side	Length (unit)	Ratio	1 : n
Diagram 1	$P'Q'$	12	PQ	4	12 : 4	1 : $\frac{1}{3}$
	$P'R'$	24	PR	8	24 : 8	1 : $\frac{1}{3}$
Diagram 2	$P'Q'$		PQ			
	$P'R'$		PR			
Diagram 3	$P'Q'$		PQ			
	$P'R'$		PR			
Diagram 4	$P'Q'$		PQ			
	$P'R'$		PR			
Diagram 5	$P'Q'$		PQ			
	$P'R'$		PR			

Discussion:

Discuss the results based on the table above.

From Brainstorming 1, it is found that:

- If $n < 1$, then the size of the scale drawing is bigger than the size of the object.
- If $n > 1$, then the size of the scale drawing is smaller than the size of the object.
- If $n = 1$, then the size of the scale drawing is the same as the size of the object.

How do you determine the scales, measurements of objects or measurements of scale drawings?

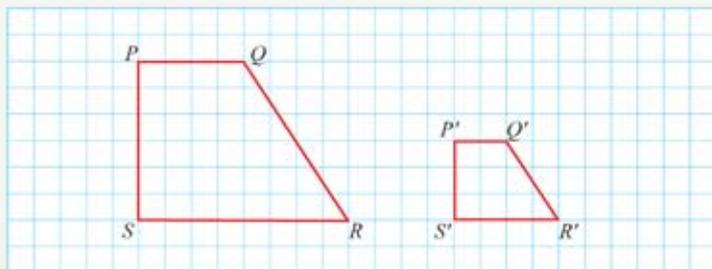
LEARNING STANDARD

Determine the scales, measurements of objects or measurements of scale drawings.

$$\text{Scale} = \frac{\text{Measurement of scale drawing}}{\text{Measurement of object}} = \frac{1}{n}$$

Example 2

The diagram below shows object $PQRS$ and scale drawing $P'Q'R'S'$ drawn on a grid of equal squares. State the scale used in the form $1 : n$.

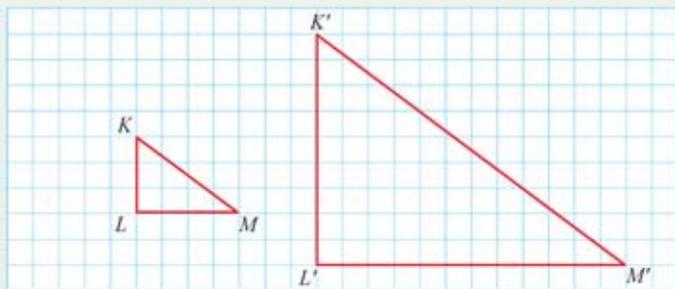


Solution:

$$\text{Scale} = \frac{P'Q'}{PQ} = \frac{2}{4} = \frac{1}{2} \quad \text{or} \quad \text{Scale} = \frac{P'S'}{PS} = \frac{3}{6} = \frac{1}{2} \quad \text{Thus, scale} = 1 : 2$$

Example 3

The diagram below shows object KLM and scale drawing $K'L'M'$ drawn on a grid of equal squares. State the scale used in the form $1 : n$.



Solution:

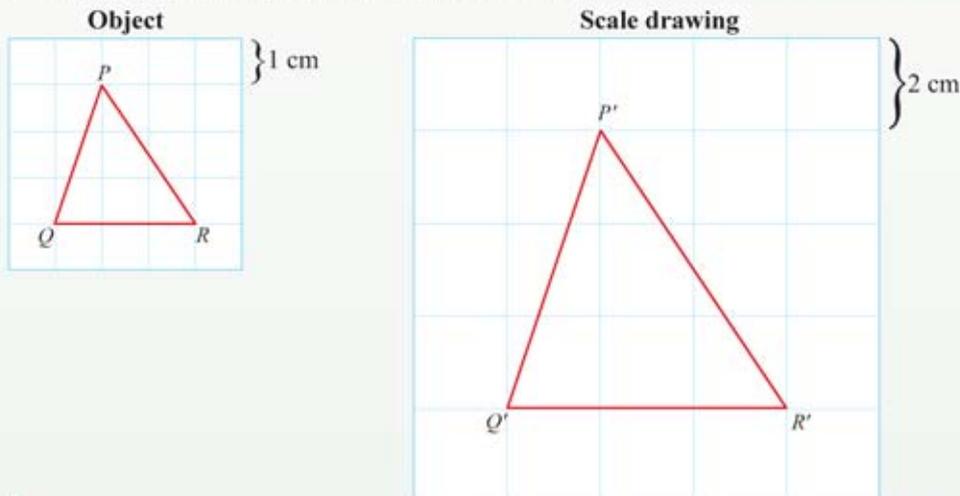
$$\text{Scale} = \frac{K'L'}{KL} = \frac{9}{3} = \frac{3}{1} \quad \text{or} \quad \text{Scale} = \frac{L'M'}{LM} = \frac{12}{4} = \frac{3}{1} \quad \text{Thus, scale} = 3 : 1$$

3 divided by 3 will give 1.

$$\begin{aligned} &= \frac{3}{3} : \frac{1}{3} \\ &\rightarrow 3 \\ &= 1 : \frac{1}{3} \end{aligned}$$

Example 4

The diagram below shows object PQR and scale drawing $P'Q'R'$ drawn on a grid of equal squares of different sizes. Determine the scale used in the form $1 : n$.

**Solution:****Method 1**

$$\begin{aligned} \text{Scale} &= \frac{Q'R'}{QR} = \frac{6 \text{ cm}}{3 \text{ cm}} = \frac{2}{1} \\ \text{Scale} &= 2 : 1 \\ &= 1 : \frac{1}{2} \end{aligned}$$

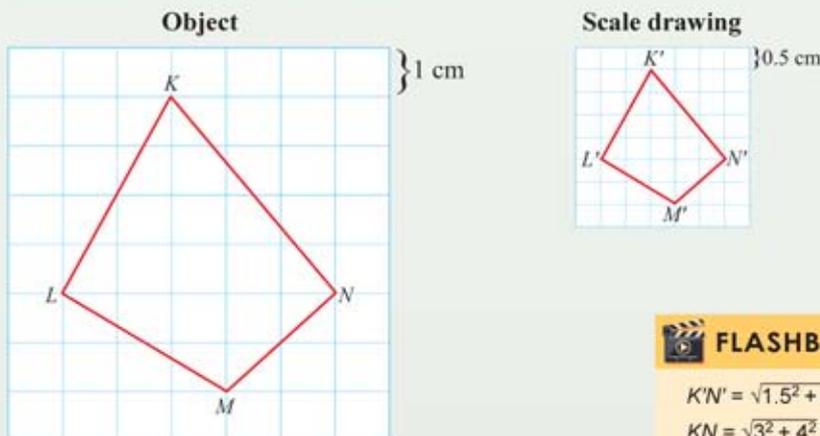
Method 2

$$\begin{aligned} \text{Scale} &= \frac{\text{Grid size of scale drawing}}{\text{Grid size of object}} = \frac{2 \text{ cm}}{1 \text{ cm}} = \frac{2}{1} \\ \text{Scale} &= 2 : 1 \\ &= 1 : \frac{1}{2} \end{aligned}$$

Grid size is used because number of units of sides of object and sides of scale drawing is the same.

Example 5

The diagram below shows object $KLMN$ and scale drawing $K'L'M'N'$ drawn on a grid of equal squares of different sizes. Determine the scale used.

**FLASHBACK**

$$K'N' = \sqrt{1.5^2 + 2^2} = 2.5$$

$$KN = \sqrt{3^2 + 4^2} = 5$$

Solution:**Method 1**

$$\text{Scale} = \frac{K'N'}{KN} = \frac{2.5 \text{ cm}}{5 \text{ cm}} = \frac{0.5}{1} = \frac{1}{2}$$

$$\begin{aligned} \text{Scale} &= \frac{1}{2} : 1 \\ \frac{1}{2} \times 2 &: 1 \times 2 \\ &1 : 2 \end{aligned}$$

$\frac{1}{2}$ multiplied by 2 to get 1.

Method 2

$$\text{Scale} = \frac{\text{Grid size of scale drawing}}{\text{Grid size of object}} = \frac{0.5 \text{ cm}}{1 \text{ cm}} = \frac{1}{2}$$

$$\begin{aligned} \text{Scale} &= \frac{1}{2} : 1 \\ &1 : 2 \end{aligned}$$

Example 6

A map is drawn to a scale of 1 : 300 000. Calculate the actual length, in km, of a river that is 3 cm long on the map.

Solution:**Method 1**

$$\begin{aligned} \frac{1 \text{ cm}}{300\,000 \text{ cm}} &= \frac{3 \text{ cm}}{\text{Actual distance}} \\ \text{Actual distance} &= \frac{3 \times 300\,000 \text{ cm}}{1 \text{ cm}} \\ &= 900\,000 \text{ cm} \\ &= 9 \text{ km} \end{aligned}$$

Method 2

$$\begin{aligned} \text{Scale drawing} : \text{Object} \\ 1 : 300\,000 \\ 1 \text{ cm} : 300\,000 \text{ cm} \\ \boxed{\times 3} \quad 1 \text{ cm} : 3 \text{ km} \quad \boxed{\times 3} \\ \quad \quad \quad 3 \text{ cm} : 9 \text{ km} \end{aligned}$$

Thus, the actual length of the river is 9 km.

**FLASHBACK**

1 km = 1 000 m
1 m = 100 cm
1 km = 100 000 cm

Example 7

The map of Johor is drawn to a scale of 1 cm to 10 km. Calculate the actual distance between Kluang and Ayer Hitam if the distance on the map is 2 cm.

Solution:**Method 1**

$$\begin{aligned} \text{Scale} &= \frac{\text{Distance on drawing}}{\text{Actual distance}} \\ \frac{1 \text{ cm}}{10 \text{ km}} &= \frac{2 \text{ cm}}{\text{Actual distance}} \\ \text{Actual distance} &= \frac{2 \text{ cm} (10 \text{ km})}{1 \text{ cm}} \\ \text{Actual distance} &= 20 \text{ km} \end{aligned}$$

Method 2

$$\begin{aligned} \text{Scale drawing} : \text{Object} \\ 1 \text{ cm} : 10 \text{ km} \\ \boxed{\times 2} \quad 2 \text{ cm} : 20 \text{ km} \quad \boxed{\times 2} \end{aligned}$$

Thus, the actual distance is 20 km.

Example 8

Khairul draws a square to a scale of $1 : \frac{1}{3}$. If the actual length of sides of the square is 6 cm, what is the length of sides, in cm, of the scale drawing?

Solution:

Method 1

$$\text{Scale} = \frac{\text{Side of scale drawing}}{\text{Corresponding side of object}}$$

$$\frac{1}{3} = \frac{\text{Side of scale drawing}}{6 \text{ cm}}$$

$$\text{Side of scale drawing} = 3 \times 6 \text{ cm}$$

$$\text{Length of side of scale drawing} = 18 \text{ cm}$$

Method 2

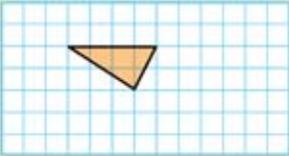
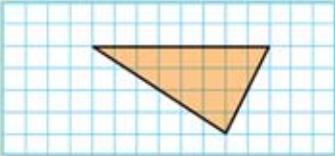
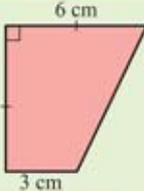
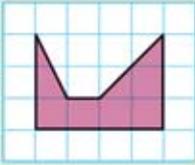
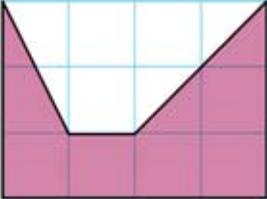
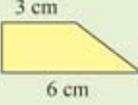
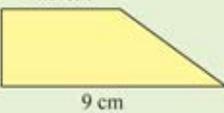
Scale drawing : Object

$$\begin{array}{ccc} & 1 : \frac{1}{3} & \\ \times 18 & \swarrow & \searrow \times 18 \\ \boxed{18 \text{ cm}} & : & 6 \text{ cm} \end{array}$$

Thus, the length of side of scale drawing is 18 cm.

MIND TEST 4.1b

1. Determine the scale used for each scale drawing below in the form $1 : n$.

Object	Scale drawing
(a) 	
(b) 	
(c) 	
(d) 	

- A poster has a length of 24 cm and a width of 8 cm. Calculate the length and width of the scale drawing of the poster, in cm, that is drawn to a scale of 1 : 4.
- A map is drawn to a scale of 1 : 400 000. What is the actual length, in km, of a river with a length of 2.5 cm on the map?
- Siew Lin draws a right-angled triangle to a scale of $1 : \frac{1}{3}$. If the hypotenuse of the scale drawing is 18 cm, calculate the length of the hypotenuse of the original triangle.

How do you draw the scale drawings of objects and vice versa?

LEARNING STANDARD

Draw the scale drawings of objects and vice versa.

Drawing the scale drawing of an object

There are three ways to draw the scale drawing of an object.

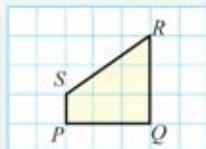
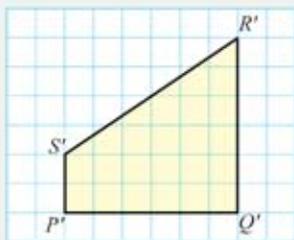
- Use grid paper of the same size for different scales.
- Use grid paper of different sizes.
- Draw on a blank paper according to the given scale.

Example 9

Draw the scale drawing of shape $PQRS$ on a grid of equal squares using a scale of $1 : \frac{1}{2}$.

Solution:

The scale given is $1 : \frac{1}{2}$. Therefore, every side of the scale drawing is two times longer than the length of sides of object $PQRS$.

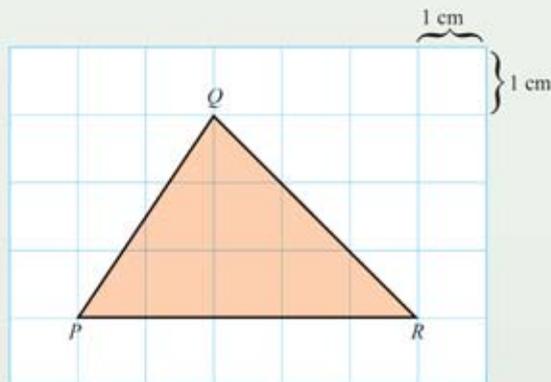


QUIZ

If you have to draw the scale drawing of your school field, what is a suitable scale to be used? Why?

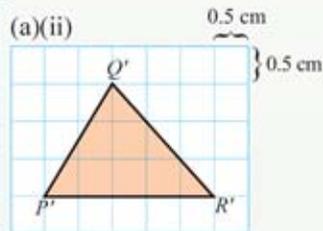
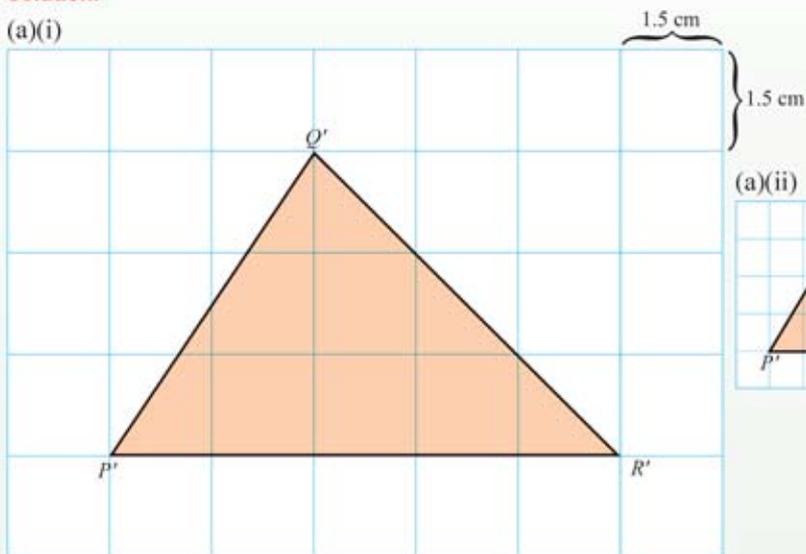
Example 10

- Diagram $\triangle PQR$ is drawn on a grid of 1 cm \times 1 cm. Redraw $\triangle PQR$ on grid paper with dimensions
 - 1.5 cm \times 1.5 cm
 - 0.5 cm \times 0.5 cm
- Calculate the scale used in (a)(i) and (a)(ii) in the form 1 : n .



Solution:

(a)(i)



(b)(i)

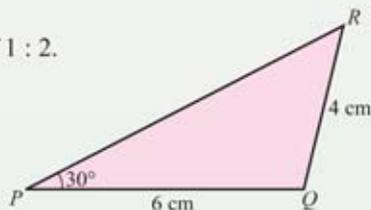
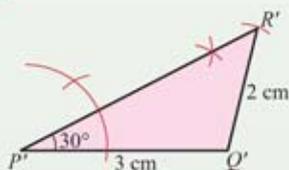
$$\text{Scale} = \frac{\text{Grid size of scale drawing}}{\text{Grid size of object}} = \frac{1.5 \text{ cm}}{1 \text{ cm}}$$

$$\begin{aligned} \text{Scale} &= 1.5 : 1 \\ &= 1 : \frac{2}{3} \end{aligned}$$

(b)(ii)

$$\text{Scale} = \frac{\text{Grid size of scale drawing}}{\text{Grid size of object}} = \frac{0.5 \text{ cm}}{1 \text{ cm}}$$

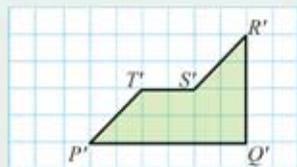
$$\begin{aligned} \text{Scale} &= 0.5 : 1 \\ &= 1 : 2 \end{aligned}$$

Example 11Construct the scale drawing of triangle PQR using a scale of $1 : 2$.**Solution:**

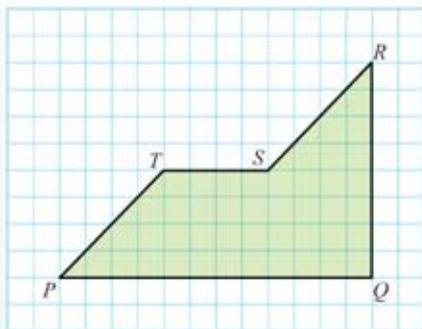
For objects with given angles, the angles of the scale drawing must be accurately drawn and the lengths of sides are drawn to scale.

Drawing the objects for a scale drawing**Example 12**

The diagram shows a scale drawing drawn on a grid of equal squares to a scale of $1 : 2$. Draw the actual object for $P'Q'R'S'T'$.



Scan the QR Code or visit <http://bukutekskssm.my/Mathematics/F3/Chapter4Grid.pdf> to download grid paper of various sizes.

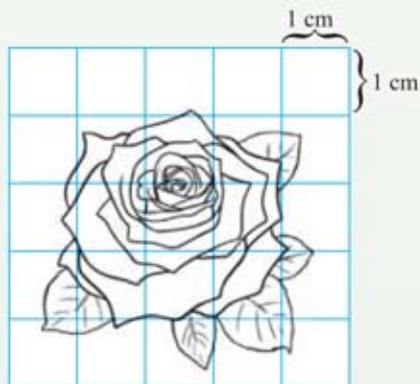
Solution:

The scale used is 1 : 2, that is the size of scale drawing is two times smaller than the object. Therefore, every side of actual object is two times longer than the sides of the scale drawing.

Example 13

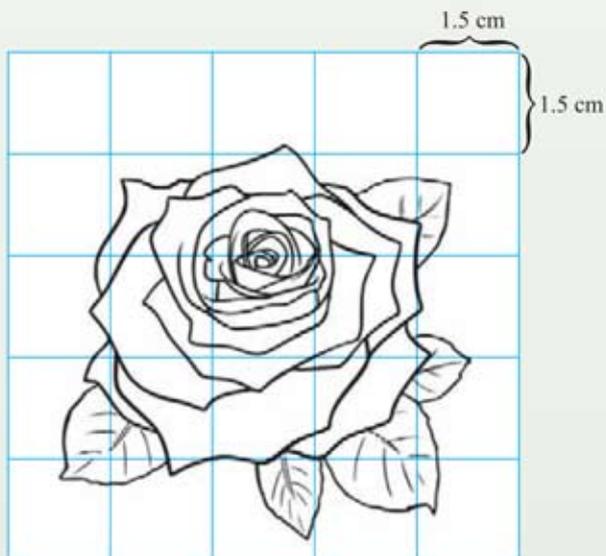
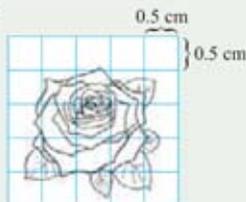
The diagram shows the scale drawing of a flower drawn on 1 cm × 1 cm grids. Draw the actual object on grids of

- 0.5 cm × 0.5 cm
- 1.5 cm × 1.5 cm

**Solution:**

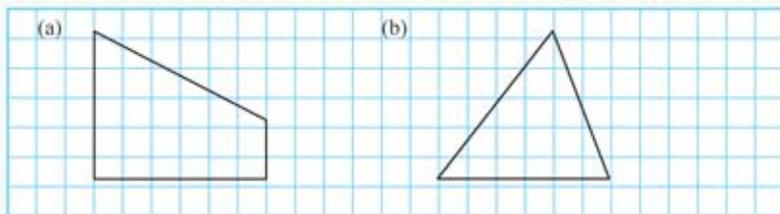
Object must be drawn on grids of different sizes. Thus, the number of units of sides of object is the same as the number of units of sides of scale drawing.

(a)

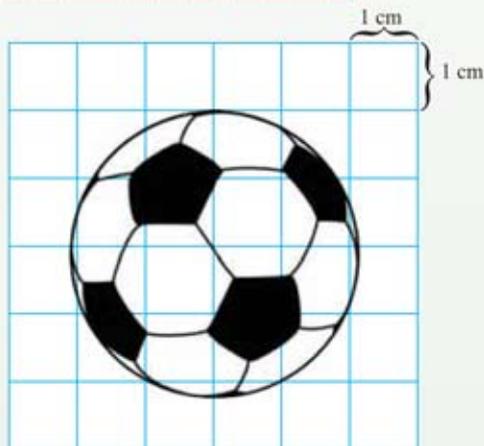


MIND TEST 4.1c

1. Draw the scale drawing of each object below to a scale of $1 : \frac{1}{2}$ and $1 : 3$.

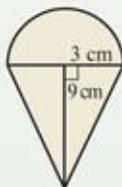


2. (a) The object in the diagram is drawn on $1 \text{ cm} \times 1 \text{ cm}$ grid paper. Redraw the shape of the object on a grid paper of
- $2 \text{ cm} \times 2 \text{ cm}$
 - $0.5 \text{ cm} \times 0.5 \text{ cm}$
- (b) Calculate the scale used in (a)(i) and (a)(ii).

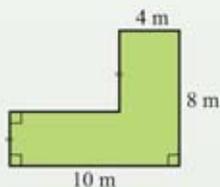


3. Draw the scale drawing of the following shapes to the given scale.

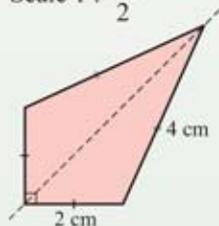
(a) Scale $1 : 3$



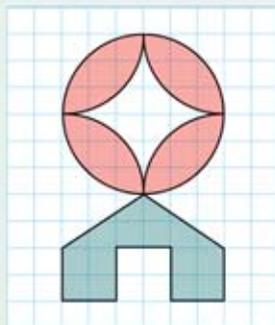
(b) Scale $1 : 200$



(c) Scale $1 : \frac{1}{2}$



4. The diagram shows the scale drawing of a composite shape that is drawn on a grid of equal squares to a scale of $1 : \frac{1}{2}$.
Draw the actual object for the shape.



How do you solve problems involving scale drawings?

Example 14

The distance on a map between Bintulu and Miri is 4 cm.

- If the scale used to draw the map is 1 cm : 50 km, calculate the actual distance, in km, between Bintulu and Miri.
- If the map is redrawn to a scale of 1 : 2 000 000, calculate the distance between Bintulu and Miri on the new map.
- Mr Dominic Lajawa and his family wants to visit Miri. If he plans to drive to Miri at a speed of 80 km h^{-1} , calculate the time taken to drive from Bintulu to Miri in hours and minutes.

LEARNING STANDARD

Solve problems involving scale drawings.

TIP

If the scale of scale drawing and the requirement of the question are in the same unit, the scale need not be changed to cm.

Solution:

Understanding the problem

- Actual distance for 4 cm drawn to scale of 1 cm : 50 km.
- Distance on scale drawing drawn to scale of 1 : 2 000 000.
- Time in hours and minutes for journey from Bintulu to Miri at speed of 80 km h^{-1} .

Planning a strategy

$$\text{Scale} = \frac{\text{Distance on drawing}}{\text{Actual distance}}$$

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}}$$

Making a conclusion

- Actual distance between Bintulu and Miri is 200 km.
- Distance between Bintulu and Miri on the map of scale of 1 : 2 000 000.
- Time taken for Mr Dominic Lajawa to drive from Bintulu to Miri at a speed of 80 km h^{-1} is 2 hours 30 minutes.

Implementing the strategy

$$(a) \text{ Scale} = \frac{\text{Distance on drawing}}{\text{Actual distance}}$$

$$\frac{1}{50 \text{ km}} = \frac{4 \text{ cm}}{\text{Actual distance}}$$

$$\text{Actual distance} = \frac{4 \text{ cm} (50 \text{ km})}{1 \text{ cm}}$$

$$\text{Actual distance} = 200 \text{ km}$$

$$(b) \text{ Scale} = \frac{\text{Distance on drawing}}{\text{Actual distance}}$$

$$\frac{1}{2\,000\,000} = \frac{\text{Distance on drawing}}{200 \text{ km}}$$

$$\text{Distance on drawing} = \frac{(200 \times 100\,000) \text{ cm}}{(2\,000\,000) \text{ cm}}$$

$$\text{Distance on scale drawing} = 10 \text{ cm}$$

$$(c) \text{ Time} = \frac{\text{Distance}}{\text{Speed}}$$

$$= \frac{200 \text{ km}}{80 \text{ km h}^{-1}}$$

$$= 2.5 \text{ hours}$$

Time taken

$$= 2 \text{ hours } 30 \text{ minutes}$$

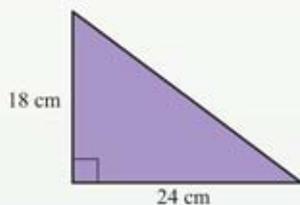


FLASHBACK

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

MIND TEST 4.1d

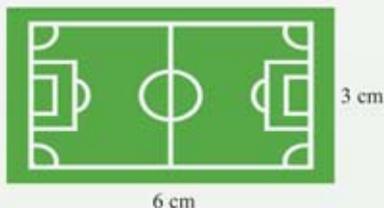
1. The diagram shows a right-angled triangle. A scale drawing of the triangle is drawn to a scale of $1 : \frac{1}{3}$. Calculate the area, in cm^2 , of the scale drawing.



2. The diagram shows a room in the shape of a rectangle. Calculate the perimeter, in cm, of the scale drawing of the room which is drawn to a scale of $1 : 50$.



3. The measurements of a rectangular room on a scale drawing are $7 \text{ cm} \times 5 \text{ cm}$. If the scale used is $1 : 400$, calculate the actual area of the room in m^2 .
4. A regular polygon with an exterior angle of 36° is redrawn using a scale of $1 : 5$. If the actual length of sides of the regular polygon is 10 cm , calculate the perimeter of the scale drawing of the regular polygon.
- 5.



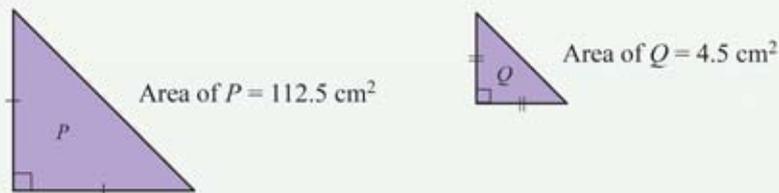
The diagram above shows a scale drawing of a rectangular field.

- (a) If the scale used is $1 : 2\,000$, calculate the actual area of the field in square metres.
- (b) Mr Dany cuts the grass on the field at a rate of 400 square metres in 8 minutes. Calculate the time, in hours and minutes, that Mr Dany takes to cut all the grass on the field.

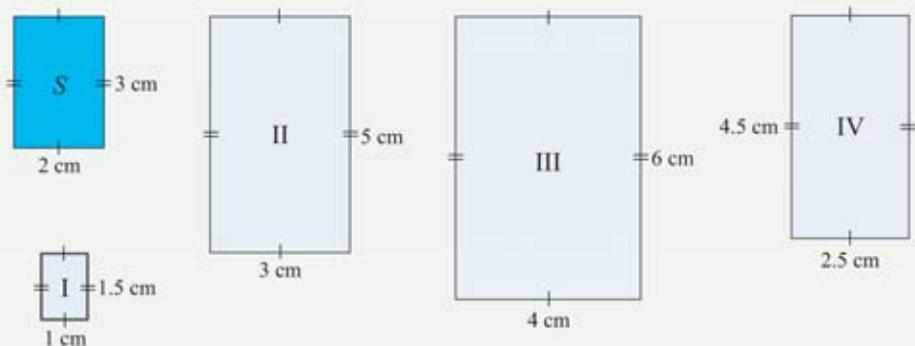
Dynamic Challenge

Test Yourself

1. The diagram below shows triangle P which is the scale drawing of triangle Q with a scale of $1 : n$. Calculate the value of n .

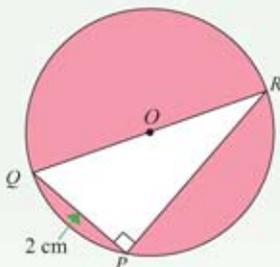


2. The diagram below shows five rectangles.



- (a) Among rectangles I, II, III and IV, which are the scale drawings of rectangle S drawn to a certain scale?
- (b) For each answer in (a), determine the scale used.
- (c) (i) Calculate the area of each rectangle, in cm^2 , for your answer in (a).
 (ii) Determine the ratio of area of S to area of each answer in (c)(i).
 What are your conclusions about the ratios obtained?

3. The diagram shows a scale drawing of a circle with centre O and triangle PQR . It is given that the diameter of the circle is 6 cm and the scale of the drawing is $1 : 3$.
- (a) Calculate the actual length of PR in cm. State your answer correct to three significant figures.
- (b) Using your answer in (a), calculate the actual area of the shaded region in cm^2 . State the answer correct to four significant figures.



Skills Enhancement

1.



The distance by air from Kuching to Kota Kinabalu on a map is 5.4 cm. It is given that the scale of the map is 1 cm : 150 km. If an aeroplane takes off from Kuching International Airport at 1240 hours and lands at Kota Kinabalu International Airport at 1410 hours, calculate the average speed of the aeroplane in km h^{-1} .

2. The diagram shows the scale drawing of Puan Farah's living room. The scale of the drawing is 1 : 50. Puan Farah wants to lay tiles throughout the entire living room. She intends to use tiles measuring 30 cm \times 30 cm which cost RM2.80 a piece. Puan Farah's husband suggests to use tiles of 50 cm \times 50 cm at RM6 a piece. Which tile should Puan Farah choose if she wants to save money? State the reasons for your answer.



3. The diagram shows the scale drawing of a rectangular farm owned by Pak Hassan. It is given that the scale of the drawing is 1 : 2 000.

(a) Calculate the actual area of the freshwater fish pond to the nearest square metre.

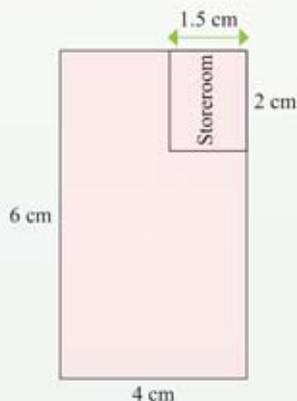
$$\left[\pi = \frac{22}{7} \right].$$

- (b) Calculate the ratio of the area planted with durian trees to the area planted with banana trees.
- (c) Calculate the area, in m^2 , of the vacant land.
- (d) Pak Hassan wants to fence up his farm. If the cost of one metre of fencing is RM5.50, calculate the total cost of fencing, in RM.



Self Mastery

1. The diagram shows the scale drawing of the floor plan of a shophouse that is drawn to a scale of 1 : 400.
- Calculate the actual area of the storeroom, in m^2 .
 - State the ratio of the area of the shophouse to the area of the storeroom.
 - If the actual height of the shophouse is 3.75 m, calculate the volume, in m^3 , of the three-dimensional shophouse.



2.



Diagram 1

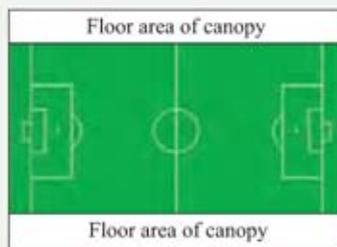


Diagram 2

Diagram 1 shows the scale drawing of a rectangular football field.

- If this scale drawing is drawn to a scale of 1 : 1 000, calculate the actual area, in m^2 , of the football field.
- Sharon wants to redraw the scale drawing in Diagram 1 on a piece of A4-sized paper. What is the maximum scale that Sharon can choose? State the reasons for your answer.
- Several canopies will be set up on the football field as in Diagram 2 for a carnival.
 - If the dimensions of the base of a tent are $5 \text{ m} \times 4 \text{ m}$, calculate the maximum number of tents that can be erected.
 - The rent for a tent is RM100 a day. A 25% discount will be given if the tent is rented for five days or more. Calculate the total rent, in RM, if the carnival lasts for one week.

PROJECT

Draw the map of the district where you live using a suitable scale. You can mark the location of your house, school and interesting places in your district using symbols or suitable illustrations. Exhibit your project in the classroom.



CONCEPT MAP

Scale Drawings

Scale drawing is drawing that shows the original object based on a certain scale.

$$\text{Scale} = \frac{\text{Measurement of scale drawing}}{\text{Measurement of object}}$$

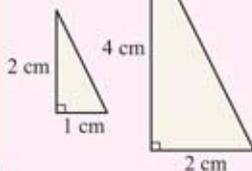
$$\text{Scale } 1 : n, \text{ or } 1 : \frac{1}{n} \\ \text{where } n = 1, 2, 3, \dots$$

$$n < 1$$

Scale drawing bigger than object

$$1 : \frac{1}{2}$$

Object Drawing

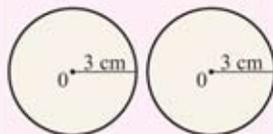


$$n = 1$$

Scale drawing same size as object

$$1 : 1$$

Object Drawing

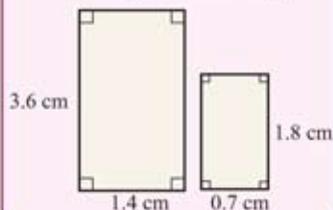


$$n > 1$$

Scale drawing smaller than object

$$1 : 2$$

Object Drawing



SELF-REFLECT

At the end of this chapter, I can:



1. Investigate and explain the relationship between the actual measurements and the measurements of various sizes of drawings of an object, and hence explain the meaning of scale drawing.		
2. Interpret the scale of a scale drawing.		
3. Determine the scales, measurements of objects or measurements of scale drawings.		
4. Draw the scale drawings of objects and vice versa.		
5. Solve problems involving scale drawings.		

EXPLORING MATHEMATICS

- Download grid paper of various sizes.
- Draw your favourite object as shown in Diagram 1 or Diagram 2 on one of the grid papers chosen.

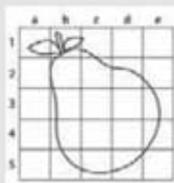


Diagram 1

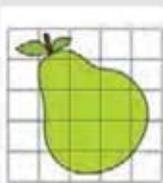


Diagram 2



Scan the QR Code or visit <http://bukutekskssm.my/Mathematics/F3/Chapter4Grid.pdf> to download grid paper of various sizes.

- Redraw the drawing on all the grid papers of different sizes.
- Can you easily draw your favourite object on grids of different sizes?
- Exhibit your work at the mathematics corner of your classroom.