Scale & Distance

THINK AND ANSWER

Question
Why do you think that the knowledge of scale is important for reading a map ?

Answer:
The two cities in the space of an inch will be found on a map where the scale is used. e.g. 1 cm on map =100 km on ground. Scales are important as without scales distance between places can't be judged.

VALUES AND LIFE SKILLS

Question
Your friend has invited you to his house. He has drawn a rough sketch on a paper showing the direction to his house for you.
How does the sketch help you ? What quality of your friend is shown through in this gesture ?
Answer:
Sketch will help to reach friend's house easily and early.
A friend is showing a genuine interest and is real. He actually wants a friend to visit his house.

EXERCISES

A. Fill in the blanks. one has been done for u

	Distance on the map	Distance on the ground	Scale
1.	5 cm	25 km	1 cm = 5 km
2.	10 cm	100 km	**1 cm = 10 km**
3.	2 cm	**60000** m	1 cm = 30 km
4.	**7 cm**	49 m	1 cm = 7 m
5.	6 cm	60,000 km	**1 cm = 10,000 km**

B. Match the following

A	B
1. scale	(i) Words
2. statement scale	(ii) Straight line divided into lengths
3. linear scale	(iii) Curved line
4. ruler	(iv) Ratio
5. twine	(v) Straight line

Answer:

A	B
1. Scale	(iv) Ratio
2. Statement scale	(i) Words
3. Linear scale	(ii) Straight line divided into lengths
4. Ruler	(v) Straight line
5. Twine	(iii) Curved line

C. Choose the correct answer.

1. This is the ratio of distance between two places on a map to the actual distance between the same two places on the ground.

1. **scale**
2. map
3. globe
4. atlas

2. This scale is stated in words:

1. Verbal
2. Statement
3. **Both of these**
4. None of these

3. The distance between two points along a straight line can be measured by this method

1. Twine
2. **Ruler**

3. Compass
4. Stick

4. In this fraction, the numerator is always 1.

1. **Representative Fraction**
2. Refractive Fraction
3. Reduction Fraction
4. Reorganization Fraction

D. State whether the following are true or false.

1. Verbal scale is stated in words.
Answer. True.

2. A statement scale consists of a straight line which is divided into lengths.

Answer. False.
Correct : A linear consists of a straight line which is divided into lengths.

3. The numerator in a Representative Fraction expresses the actual distance between two places on the ground.

Answer. False.
Correct : The denominator in a Representative Fraction expresses the actual distance between two places on the ground.

4. The distance along a curved line is measured by a ruler.

Answer. False.
Correct : The Distance along a curved line is measured by a divider.

E. Answer the following questions briefly

Question 1.
What is meant by the scale of a map ?

Answer:
A scale is the ratio of the distance between two places on the map to the actual distance between the same two places on the ground.

Question 2.
Which three ways are used to represent the scale of a map?

Answer:
The three ways used to represent the scale of a map are :

(a) Verbal or statement scale — The scale is stated in words. The units are usually mentioned in this type of scale, for example, 1 cm = 10 km or 1 cm to 10 km. It means that 1 cm on the map is equal to 10 km on the ground.

(b) Graphical or linear scale — This consists of a straight line which is divided into lengths that represent given distances on the earth's surface.

(c) Representative fraction (RF) — This is a fraction in which the numerator expresses the distance on the map and the denominator represents the actual distance on the ground. It must be noted that the numerator is always 1 and both the numerator and the denominator are expressed in the same unit.

Question 3.
Convert the statement scale 1 cm = loo km into R.F. scale.

Answer:

$$\text{R.F.} = \frac{\text{Distance on map}}{\text{Distance on ground}} = \frac{1\,\text{cm}}{100\,\text{km}}$$

$$= \frac{1\,\text{cm}}{10000000\,\text{cm}} = 1 : 10000000$$

$$[\because 1\,\text{km} = 1000\,\text{m and } 1\,\text{m} = 100\,\text{cm}]$$

$$\therefore \quad 100\,\text{km} = 100 \times 1000 \times 100 = 10000000\,\text{cm}$$

Question 4.
What method would you use to measure the length of a river ?

Answer:
The rivers are curved. To measure length of rivers we use either the divider method or the twine methods.

F. Answer the following questions in detail.

Question 1.
Describe any two ways of representing a map scale.

Answer:
The map scale can be represented as :

(a) Verbal or statement scale — The scale is stated in words. The units are usually mentioned in this type of scale, for example, 1 cm= 10 km or 1 cm to 10 km. It means that 1 cm on the map is equal to 10 km on the ground.
(b) Graphical or linear scale — This consists of a straight line which is divided into lengths that represent given distances on the earth's surface.

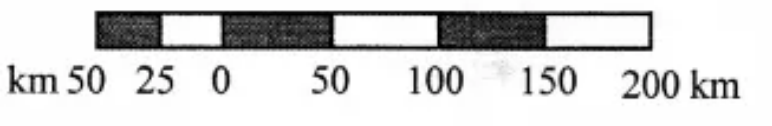
Question 2.
Describe the method by which the distance on a curved line is measured.

Answer:
The distance on a curved line is measured using a piece of twine or a divider. In divider method, a divider whose pointed ends are 1 or 2 cm apart is used. Beginning at one end of the feature to be measured, the divider is turned continuously till the other end is reached. The number of turns are counted and then using the scale of the map, the actual distance on the ground calculated. In the twine method, a twine is placed along the feature to be measured from one end to other. The length of the twine is then measured in cm or inches using a ruler or linear scale and then converted into km or miles using the scale of the given map.

Question 3.
How is distance on a map measured by a piece of twine?

Answer:
Take the piece of the twine, make a knot at one end and place
the knotted end on the starting point of the distance to .be measured. Now move the twine along the object to be measured by slowly placing the twine bit by bit along the route following each bend or curve as closely as possible. When you reach the end of the route you are measuring, mark that end with ink. Now place the twine on the scale with the knotted end at 0 and see how far the ink-marked end reaches on the scale. Measure the length and convert into kilometres. If the distance to be measured is longer than the printed scale on the map, place the twine on the ruler in the same way, calculate the number of centimetres it covers and convert that into kilometres.

G Picture study
Look at the picture and answer the questions



Question 1.
What type of scale is shown alongside ?

Answer:
A graphic scale or linear scale.

Question 2.
State a feature of this scale.

Answer:
This consists of a straight line which is divided into lengths that represent given distances on the earth’s surface. It is usually drawn near the lower portion of the map.

LET’S DO SOMETHING

Question
Look at the plan of a school given here and note the scale given at the top of the plan : 1 cm to 8 m. This verbal scale means that 1 cm on the paper represents 8 m on the ground. Use this scale to find out the length and breadth of the different places shown in the plan.

Answer:
The length and breadth of different places is as follows:

(a) Playground
Length of the playground = 3.5 cm = 3.5 × 8 m = 27 m
Breadth of the playground = 4 cm = 4 × 8 m = 32 m

(b) Office
Length of the office = 1.1 cm- 1.1 × 8 m = 8.8 m
Breadth of the office = 0.8 cm = 0.8 × 8 m = 6.4 m

(c) Library
Length of the library = 1.1 cm= 1.1 × 8 m = 8.8 m
Breadth of the library = 0.8 cm = 0.8 × 8 m = 6.4 m

(d) Classroom
Length of the Classroom = 4.35 cm = 4.35 × 8 m = 34.8 m
Breadth of the Classroom = 2.1 cm = 2.1 × 8 m = 16.2 m

(e) Tennis Court
Length of the Tennis Court = 1.7 cm= 1.7 × 8 m = 13.6 m
Breadth of the Tennis Court = 2.7 cm = 2.7 × 8 m = 21.6 m

(f) Gym
Length of the Gym = 1.5 cm= 1.5 × 8 m= 12 m
Breadth of the Gym = 1.7 cm = 1.7 × 8 m= 13.6 m

(g) Canteen
Length of the Canteen =1.5 cm=1.5 × 8m=12 m
Breadth of the Canteen = 1.75 cm = 1.75 × 8 m = 14 m