UNIT - II

MEASUREMENT OF AREA

Section 2.1 - Instructional Objectives.

2.2 - Initial Instruction.

2.3 - Formative Test.

2.4 - Remedial Instructional Material.

2.5 - Enrichment Activities.

2.6 - Final Test

2.1 INSTRUCTIONAL OBJECTIVES

1. The pupil will be able to recall and write that the surface covered by a figure is measured in terms of its area. (K)

2. Shown two areas, the pupil will be able to discriminate between the smaller area and the larger area. (A)

3. Given areas differing in size, the pupil will be able to number them in a sequence from the smallest to the largest area. (A)

4. Shown two situations, the pupil will be able to reason out that when equal areas are removed from equal areas the remaining portions will have equal areas. (A)

5. The pupil will be able to recall the units of measurement of area. (K)

6. The pupil will be able to recall that Sq.km > Sq.m > Sq. Cm > Sq.mm. (U)

7. Given different situations, the pupil will be able to identify the accurate unit of measurement of area to be used in those situations. (A)

8. The pupil will be able to measure and report the area of a rectangle (regular surface) using square centimetre as the unit of measurement with the help of a square of 1 square centimetre area (cardboard) as follows:

   a. Locate the edge of the rectangle.

b. Place the square in such a way that it touches both the corner edgesof the rectangle.

c. Mark the boundary of the square.

d. Take off tne square and place it again side by side to the marked area.

e. Mark the boundary.

f. Continue this procedure till the entire rectangle has been covered.

g. Now count the number of squares in the rectangle.

h. Multiply the total number of squares with 1 Sq.cm.

i. Write down this product as follows:

Write the number on the L.H.S. and the unit of measurement on tne R.H.S. (S)

9. The pupil will be able to measure and report the area of a rectangular cardboard piece (regular surface) with the help of a graph paper having squares of 1 square centimetre area, as follows:

a. Place the rectangular card on the graph paper in such a way that the horizontal and vertical lines of the graph paper coincide with the two sides (Length and Breadth) of the rectangle.

b. Mark tne boundary of the rectangular card on the graph paper.

c. Take off the card and count tne number of squares within the boundary.

d. Identify this total number as tne area of the card.

e. Write down the total number of squares on L.H.S. and the unit of measurement on tne R.H.S. (S)

10. The pupil will be able to measure and report the area of a rectangle using sq.cm. as the unit of measurement with the help of a measuring scale as follows:

    a. Locate the length of the rectangle.

    b. Locate the breadth of the rectangle.

    c. Measure the length using cm as the unit of measurement.

    d. Measure the breadth using cm as the unit of measurement.

    e. Multiply length and breadth.

    f. Write down the measurement of the areas as follows:

        i) Write down the product of length and breadth on the L.H.S.

        ii) Write down the unit of measurement of the area on the R.H.S. (S).

11. The pupil will be able to measure and report the area of an irregular surface with the help of a graph paper having squares of one square centimetre area as follows:

    a. Place the irregular card on the graph paper.

    b. Mark the boundary of the irregular card on the graph paper.

    c. Take off the card.

    d. Count the number of full squares within the boundary.

    e. Count the number of half or more than half squares within the boundary.

f. Add the total number of full squares and half squares.

g. Identify this grand total as the area of the irregular card.

h. Write down the grand total number of squares on the L.H.S. and express the unit of measurement of area used on the R.H.S. (S)

2.2 INITIAL INSTRUCTION

SS 1 Look at these figures. Which of them is bigger?

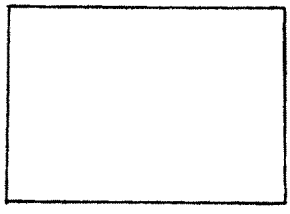


Fig.A

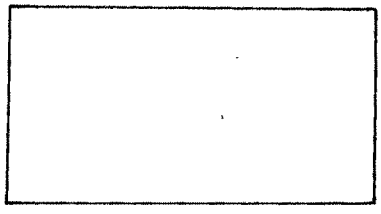


Fig.B

Fig. B is bigger

Look at the cards given in the envelope 'A'. Which of them is the smallest?

Card 'C' is the smallest.

Which of them is the largest?

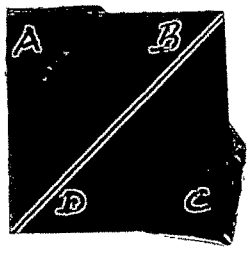
Card 'D' is the largest.

Now arrange these cards according to their increase in size. Mention how you arranged them.

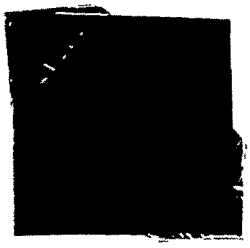
You are right if you arrange them in this order. Place the card which is smallest first (Card 'C') then place the next smallest card (Card 'A'). Thus if you go on arranging in this manner, you will have the following arrangement.

1. Card 'C' 2. Card 'A', 3. Card 'B', 4. Card 'D'

Look at the rectangles 'P' and 'Q'.
Are they equal in area?

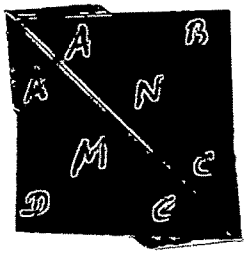


P

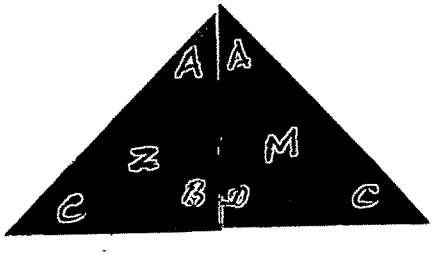


Q

Now cut rectangle P along the blue line. You get two parts. Label them as 'M' and 'N'.



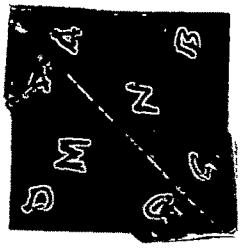
Now place AB of 'N' adjacent to 'M' such that B falls on D.



R

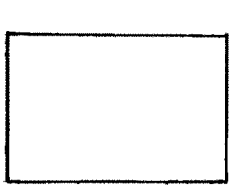
Label this figure 'R'. Now look at 'R' and 'Q'. Do they have the same area?

If your answer is 'No'. Then place M on rectangle 'Q' as shown below and place 'N' on the remaining portion of rectangle 'Q' as shown below.

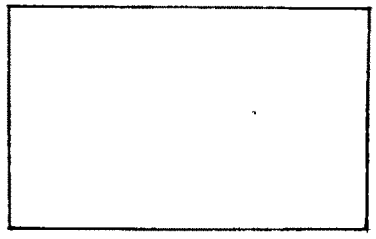


Now observe that both of them fit in rectangle Q and therefore rectangle Q is equal to figure R.

Now observe these two rectangles.



'A'



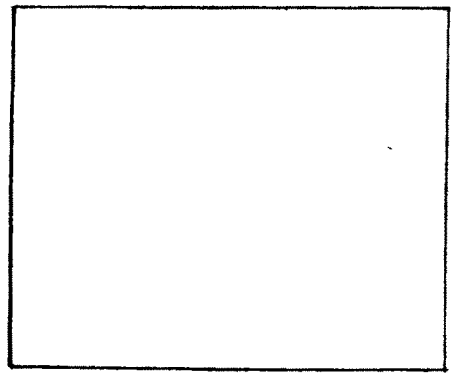
'B'

How much bigger is rectangle 'B' from rectangle A?

For knowing this you can first find how big each of them is and then compare their size. Thus we are actually measuring the size of these figures. This measurement of the figure is expressed as its area.

§§ 2 Just as the length is measured in km, m, cm and mm depending on the length of the object, area is measured in terms of sq.km., sq.m, sq.cm and sq.mm. depending on how large the area is. The sq.cm. is a convenient unit to use in finding the area of, for example, this page, but for larger surfaces it is much too small. To give the area of a wall of a room, a field, or a country in sq.cm. would mean that we should often be dealing with millions of the unit. In any case we would never measure the necessary lengths in centimetres. We would use metres or kilometres. The sq.m. is the standard unit of measurement of area. Its length is one metre and breadth is one metre. Sq.km. is bigger unit than sq.m. Sq.cm. and sq.mm. are smaller units than sq.m.

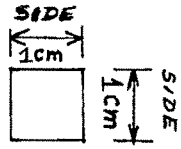
Let us measure the area of the rectangle given below:



Which of the units will you use for measuring this area?

You are right, if you say sq.cm.

Now cut out a cardboard into a square of sides 1 cm. long (A square has four equal sides)



Its area = SIDE x SIDE
= 1 cm. x 1 cm.
= 1 sq.cm.

Now we place this 1 sq.cm. cardboard upon the rectangle and find out how many such 1 sq.cm. cardboards are required to cover this rectangle completely. For this, we proceed as follows:

1. Place this 1 sq.cm. cardboard on one end of the rectangle touching both the corner edges of the rectangle as shown in figure A. Do not place the rectangular cardboard as shown in figure B.

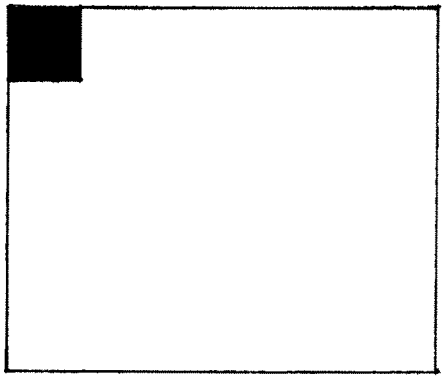


Fig.A

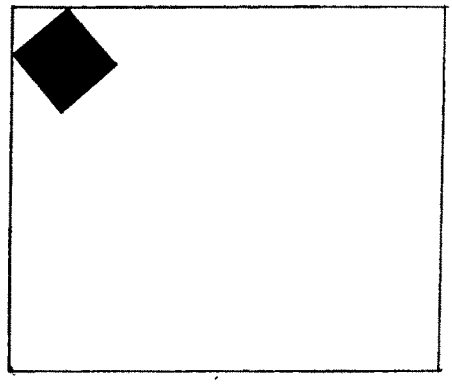
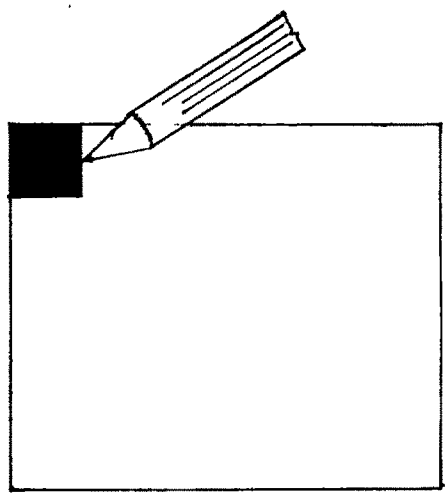
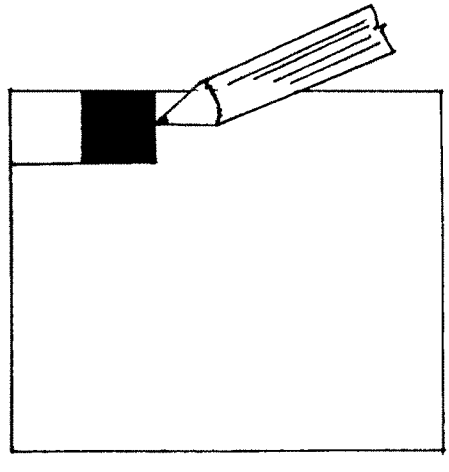


Fig.B

2. Mark the boundary of the 1 sq.cm. cardboard.



3. Lift the cardboard and place the cardboard side by side the marked area and again mark its boundary.



4. Repeat this process until the entire rectangle has been covered.

5. Now count the number of squares within the rectangle.

1	2	3	4	5	6
12	11	10	9	8	7
13	14	15	16	17	18
24	23	22	21	20	19
25	26	27	28	29	30

6. Since each of these squares is 1 sq.cm. area and there are 30 squares in the rectangle, so the area of the rectangle is

$$30 \times 1 \text{ sq.cm.}$$
$$= 30 \text{ sq.cm.}$$

Thus area can be found out by this procedure.

The above procedure is tedious because you have to lift the 1 sq.cm. cardboard many times and place it exactly side by side to the markings. To overcome this difficulty, we can measure the area using a graph paper that has squares of one sq.cm. area. The procedure to be adopted is as follows:

1. Place the rectangular card on the graph paper such that the horizontal and vertical lines of the graph paper coincide with the two sides (length and breadth) of the rectnagle as in

Figure A. Do not place the rectangular card as in Figure B.

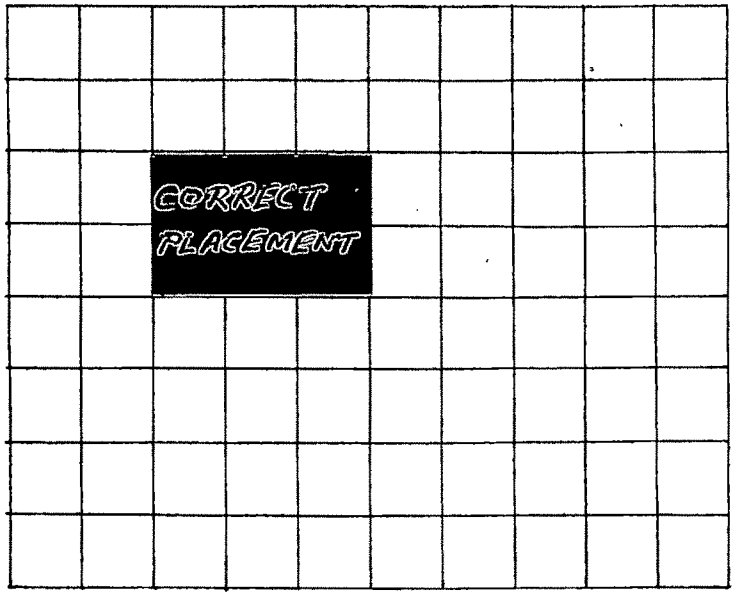


Fig.A

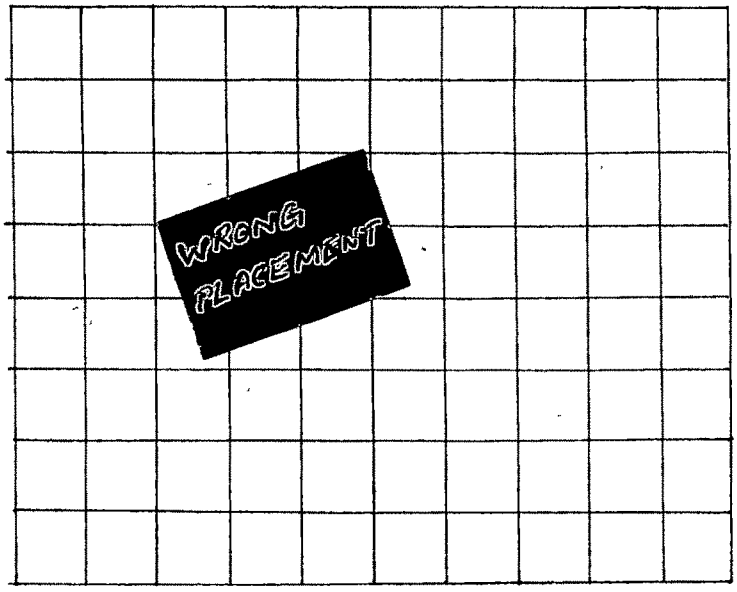
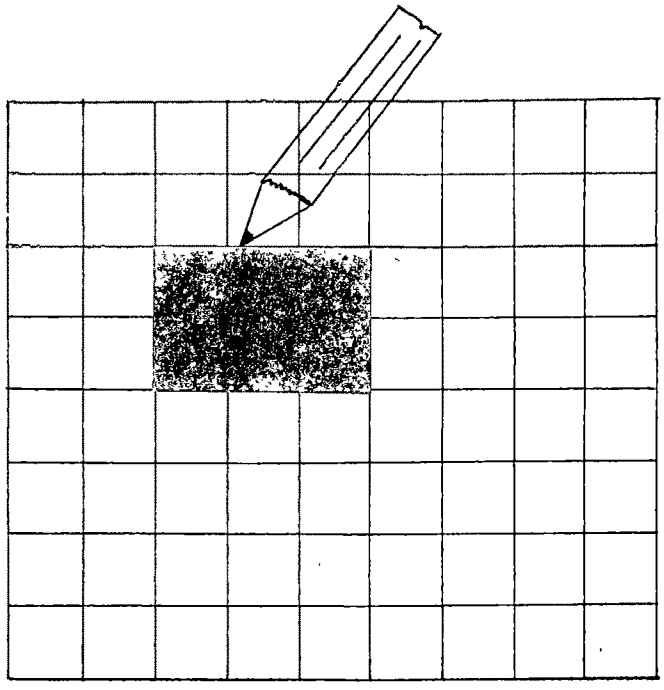
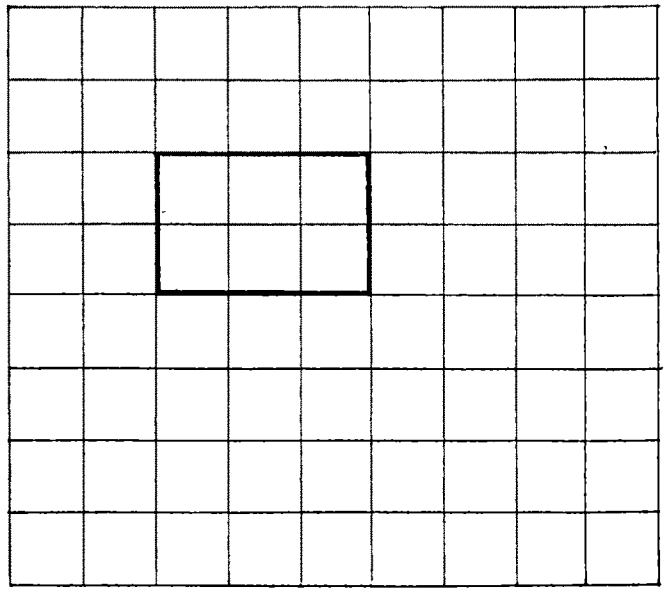


Fig.B

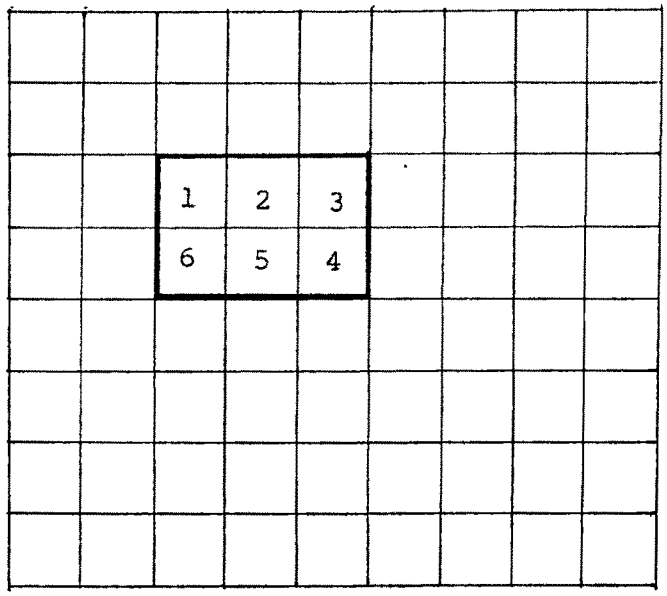
2. Now mark the boundary of the rectangular card on the graph paper.



3. Take off the card.



4. Now count the number of squares within the boundary.



The total number of such squares present within the boundary form the area of the rectangular card.

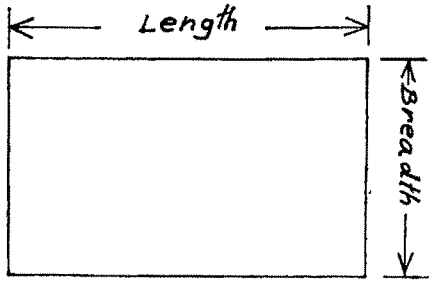
In this example since there are 6 squares of one sq.cm. area, the area is 6 x 1 sq.cm = 6 sq.cm.

§§ 3 There is yet another simple way of finding the area of a rectangle.

In this procedure the length and breadth of the rectangle are found. Then these measurements are multiplied. The product obtained is the area of that rectangle.

i.e. Length x Breadth = Area.

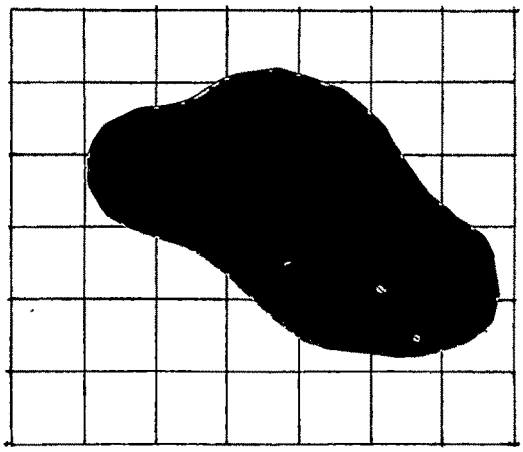
Using this procedure let us measure the area of this rectangle.



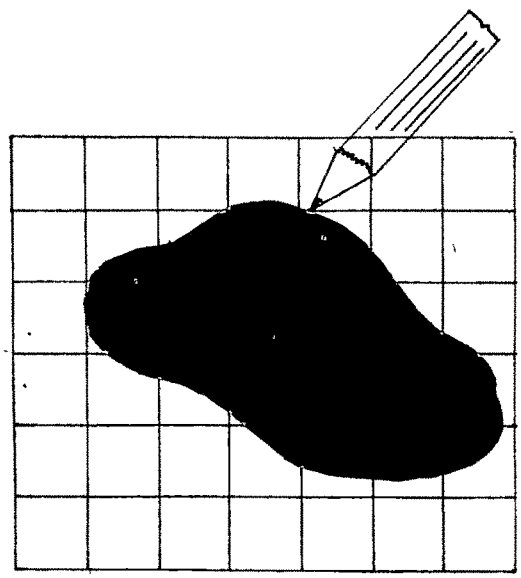
Length = 5 cm
Breadth = 3 cm
Area. = 5 x 3
= 15 sq. cm.

So far we have seen how the areas of regular surface can be measured. Let us now see how to find out the area of an irregular card.

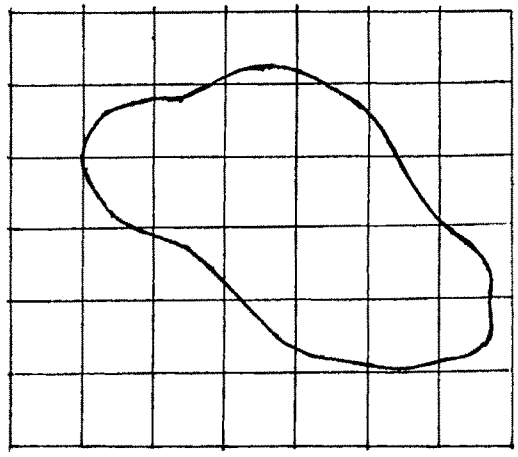
1. Place the irregular card upon the graph paper.



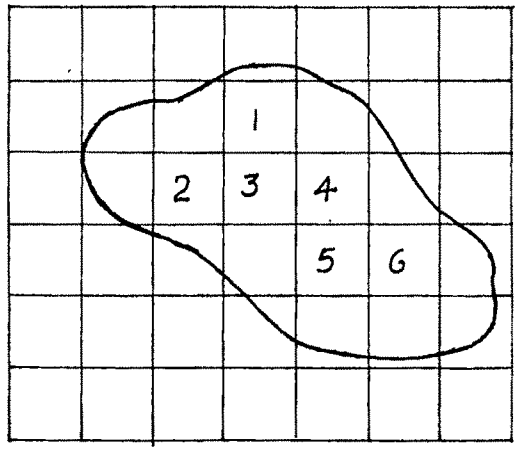
2. Mark the boundaries of the card on the graph paper.



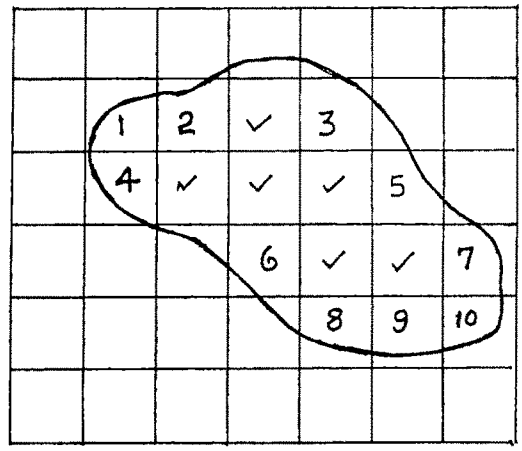
3. Take off the card.



4. Count the number of full squares within the boundary.



5. Count the number of squares cut by the boundary of the irregular card which are equal to or bigger than half sq. cm.



6. Leave the squares whose area is less than half sq.cm. within the boundary.

7. Now add up the total number of full squares within the boundary with the total number of squares having half or more than half of their area within the boundary. The sum of these squares constitutes the area of the irregular card.

   Thus the area of the above irregular card is the total number of full squares + total number of half or more than half squares.

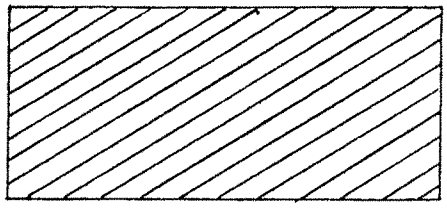
$\therefore$ Area = 6 + 10
= 16 sq. cm.

Summary

The surface occupied by a shape is measured in terms of its area. The area is expressed as sq.cm. Centimetre being the unit used to measure the length and breadth. The area is measured using units like sq.cm., sq.m., sq.mm., and sq.km. The sq.km. is the largest and the sq.mm. is the smallest of these units.

The area of a rectangle can be measured using a square of one sq.cm. area and finding out how many such squares are present by placing this square in the rectangle and marking its boundary. When the entire rectangle has been covered, the number of these squares should be counted. The total number of these squares should be multiplied by 1 sq.cm. This being the area of the square. The product is the area of the rectangle. Another method of finding the area of a rectangular card is with the help of a graph paper. The card is placed touching the edges of the lines of the graph on either side. The outline is drawn. The number of squares are counted. The total number of squares is multiplied by 1 sq.cm. This being the area of each square in the graph. The product forms the area of the card. Area of a rectangle can be measured by measuring the length and breadth of the rectangle and multiplying the length by the breadth. The product is the area of the rectangle in sq.unit. The area of an irregular card is found with the help of a graph paper. The outline of this card is drawn. The number of full squares in the outline are counted. Then the number of half or more than half squares are counted. Both these number of squares are added and then multiplied by 1 sq.cm., this being the area of each square in this graph paper. The product forms the area of the irregular card.

1.



Tick mark (✓) the correct answer:

The surface within this rectangle is measured in terms of its

a. Length ( )
b. Area ( )
c. Breadth ( )

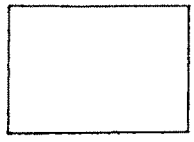
2. Models of two fields 'A' & 'B' placed on the table. From which of the two fields will a cow get more grass to eat.

_____

_____

3. Number the following areas in sequence from 1 to 5 from the smallest to the largest area

(N.B. Do not measure them with any unit of measurement)



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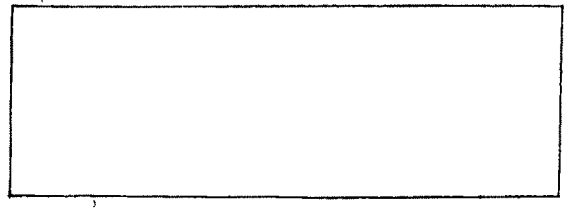

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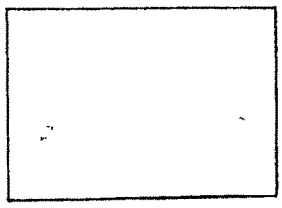

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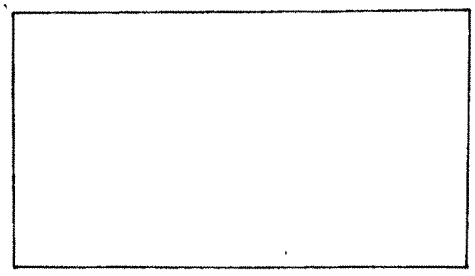

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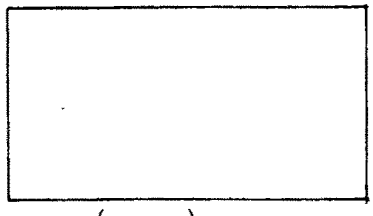
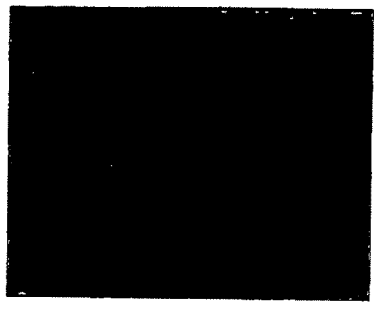


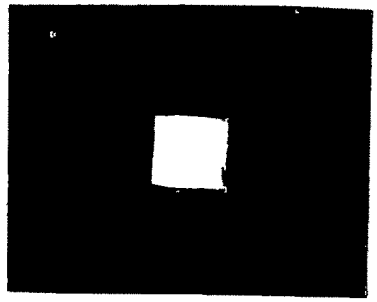
( )

4. a. Look at these two areas. Are they of equal area?



b. Look at these two areas. A portion from each of them has been cut off. Now are they of equal area?

c. Look at these two areas. A portion of each has been cut off from different regions. Are they still of equal area?



5. Name the four units of measurement of area.

6. Arrange the four units of measurement of area in a descending order (largest to the smallest) according to their size.

7. Write your answer in the bracket given below.

Among the following units (a) Sq.mm., (b) Sq.cm., (c) Sq.m., (d) Sq.km., which is the most appropriate unit you will use to measure?

i) Area covered by a piece of rubber. ( )

ii) Your school playground. ( )

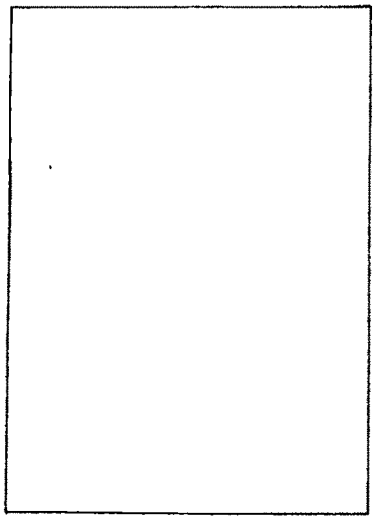
iii) Baroda city. ( )

iv) Your classroom. ( )

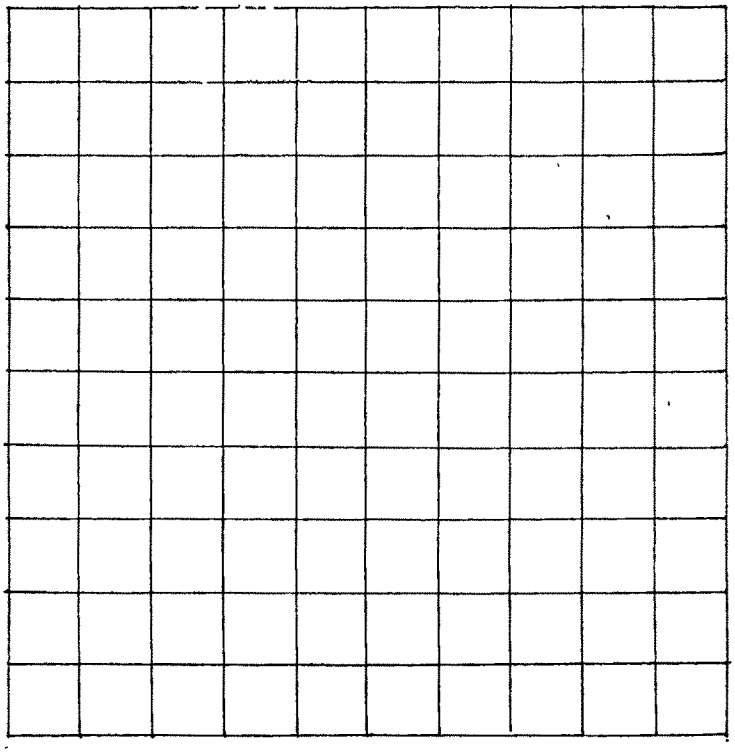
v) Surat city. ( )

vi) Your calender ( )

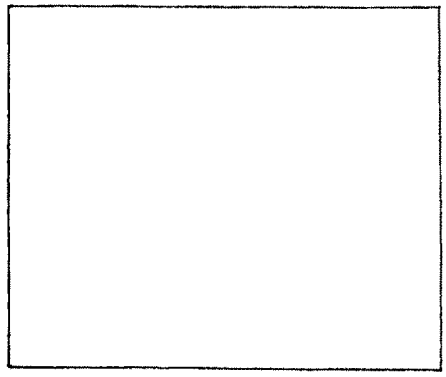
8. Measure the area of this rectangle with the help of a square of one square centimetre area and report the area using square centimetre as the unit of measurement of area.



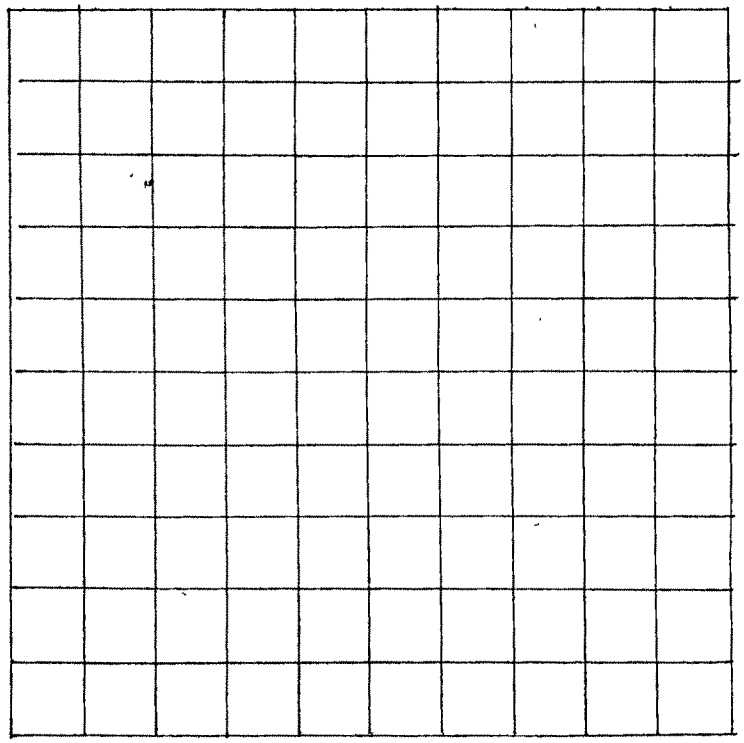
9. Measure the area of the regular card (given in the envelope) with the help of this graph paper having squares of one sq.cm. area and report the area using square centimetre as the unit of measurement of area.



10. Measure the area of this rectangle with the help of a measuring scale and report the area using square centimetre as the unit of measurement of area.



11. Measure the area of the irregular card (given in the envelope) with the help of this graph paper having squares of one sq.cm. area and report the area using square centimetre as the unit of measurement of area.



2.4 REMEDIAL INSTRUCTION

2.4.1 Instructional Objective.1.

Concept of Area

(i) Flash Card

Two painters were asked to paint a door each. Both of them painted well. But the shopkeeper wanted to know which of the two, painted faster. So he asked them

to start painting at the same time and stopped them after 10 minutes. He then measured the total surface painted by each of the painters. This measurement of the surface is termed the area. So the shopkeeper measured the areas painted by the painters and then compared them.

(ii) Oral Verbal Elaboration

Raju wants to buy a plot. There are two plots available. Both of them are equally good and cost the same. Raju decides to buy the larger of the two. So he measures the surface occupied by each of these plots. In other words, he finds the area of each of the plots and then compares them. He chooses the one which has more area.

(iii) P.L.M. (Deviated form)

Section A

Ravi wanted to buy a picture that would fit exactly on his study table. For this, he measured the surface of the table top, or in other words he found the area of his table top and bought a picture of the same area.

Turn to Section B

Section B

Tick mark (✓) the examples where area is used.

1. Ravi measures the size of the envelope ( )
2. In the cinema house, the seats are arranged one above the other. ( )
3. Most of our classrooms have the same size blackboards. ( )
4. Both these cloths are of the same size. ( )

(iv) Do it Yourself

Take out the two cards placed in the envelope. Which of these cards is bigger?

To find out for sure which of them is bigger, take the small square present in the envelope. Find out how many such squares are present in each of the cards. Compare the total number of squares of both the cards. The one that has more number of squares is larger. Here we are actually measuring the amount of space these cards are occupying with the help of the square. In other words, we are measuring the areas. So, in order to know which card is bigger we measure and compare their areas.

2.4.2 Instructional Objective.2.

Discrimination between areas according to size

Visual Perceptual Exercises

Section A

a. Look at these figures.

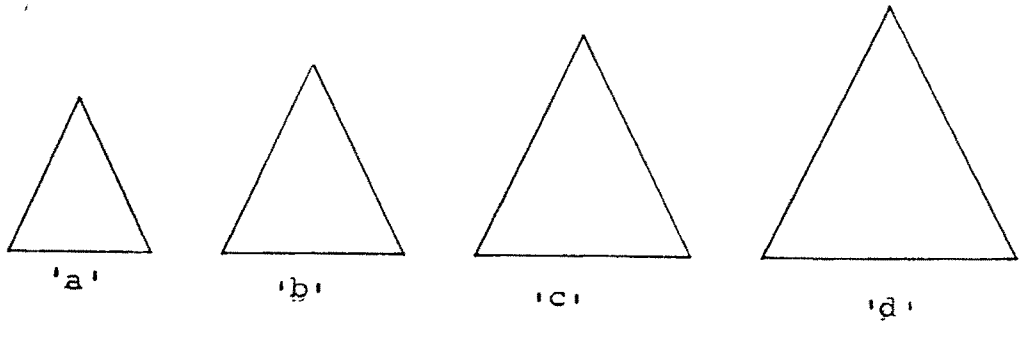


Figure 'a' is smaller than figure 'b'.
Figure 'b' is smaller than figure 'c'.
Figure 'c' is smaller than figure 'd'.
Thus figure 'a' has the smallest area and figure 'd' has the largest area.

b. Look at these figures

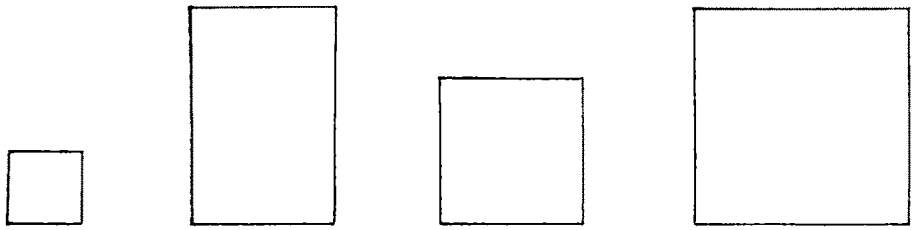


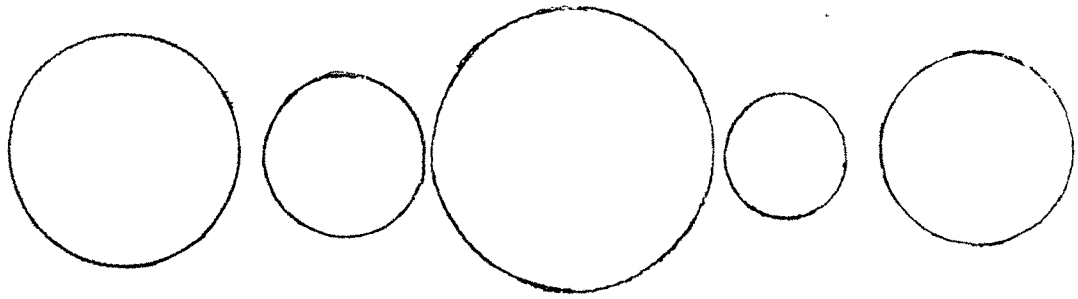
Figure 'a' has the smallest area.
Figure 'd' has the largest area.
Figure 'c' has larger area than Figure 'a'.
Figure 'b' has larger area than Figure 'c'.
Figure 'd' has larger area than Figure 'b'.
Thus if we arrange them in a sequence from the smallest to the largest, the sequence will follow this pattern.

Figure 'a' ⟶ Figure 'c' ⟶ Figure 'b' ⟶ Figure 'd'

Turn to Section B

Section B

Number these figures from 1 → 5 according to their increase in size.



( ) ( ) ( ) ( ) ( )

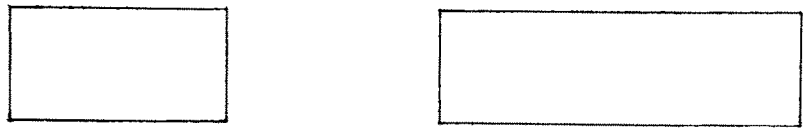
2.4.3 Instructional Objective.3

Discrimination between areas according to size

Visual Perceptual Exercises

Section A

a. Look at these two figures.



'A' 'B'

Figure 'B' is larger in area compared to figure 'A'.

b. Look at these two figures.

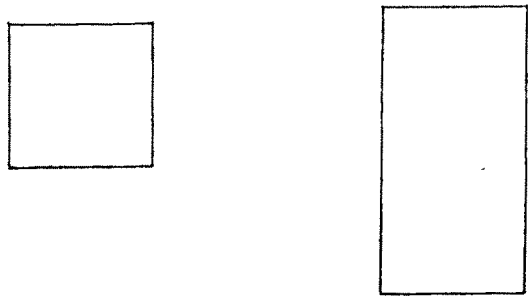


Figure 'B' is larger in area compared to figure 'A'.

c. Look at these two figures

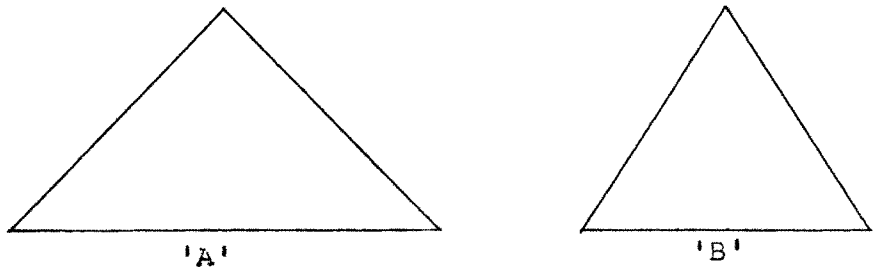


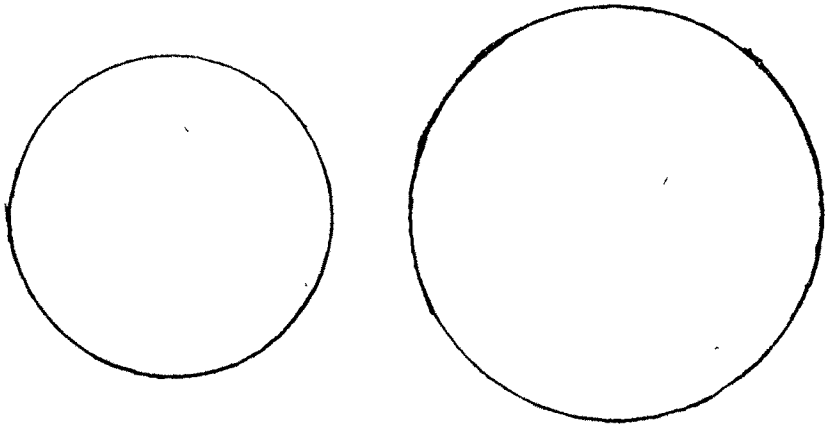
Figure 'A' is larger in area compared to figure B.

Turn to Section B

Section B

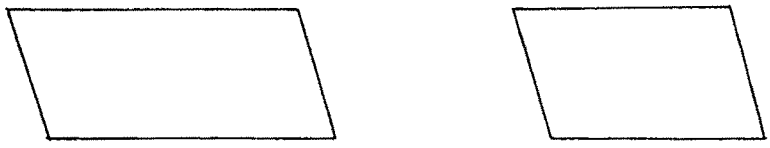
Of the two figures given, tick mark (_/) the one which is bigger in size.

(1)



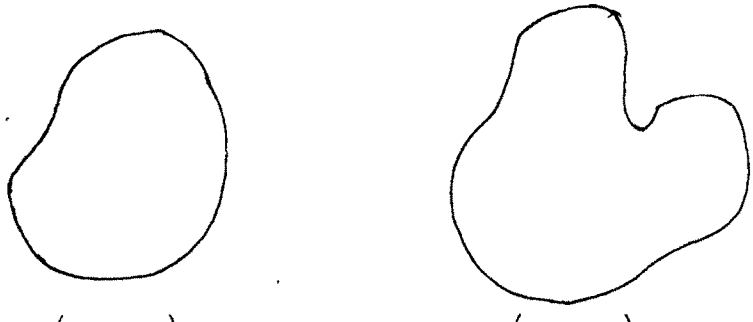
( ) ( )

(2)



( ) ( )

(3)



( ) ( )

2.4.4 Instructional Objective.4

Conservation of Area

Teaching-learning Activities

1. Two identical rectangular sheets of green cardboards were shown to the pupils. They were told to imagine them to be fields with grass for cows to eat. A model of a cow and a farmer was introduced in each field. The pupils were then asked if each cow had the same amount of grass to eat. After pupils recognised that both the cows had the same amount of grass to eat, they were told that one farmer had decided to build a house on his farm - a model of a house was placed on one farm. Now the pupils were asked if the two cows had the same amount of grass to eat. After the pupils recognised that the cow in the field with the house had less grass to eat than that in the field without the house, an identical model of the house was placed in the second field in the same location as that of the first field. Now the pupils were asked if both the cows had the same amount of grass to eat. The pupils recognised that both the cows had the same amount of grass to eat. Now one of the models of the houses was located in the centre of the field while the other model of the house was placed in the corner of the other field. The pupils were asked whether both the cows had the same amount of grass to eat. If they were unable to answer, the houses were interchanged. The pupils then realised that both the cows got the same amount of grass to eat. Now another identical house was placed in each of the fields but in one field it was adjacent to the former house whereas in the other it was located randomly in the field. The pupils were asked which of the cows got more grass to eat. The pupils recognised that both the cows had the same amount of grass to eat. Thus the pupils were able to recognise that when equal areas are taken off from equal areas the remaining areas will be equal.

2. The teacher (investigator) showed 12 squares of equal size to the pupils. She took six squares and made a rectangle whose width is the sum of the length of the two squares and whose length is the sum of the length of the three squares. She made a similar type of rectangle with the other six squares. She asked the pupils whether the rectangles were of equal area. After the pupils recognised that the rectangles were equal in size. She transferred the top right-hand square of one of the rectangles to the top of the top left-hand square which gave a pyramid made up of three squares in the bottom row, two in the second and one in the top. The pupils were asked whether this figure had the same area as the other rectangle which was left intact.

2.4.5 Instructional Objective.5

Units of measurement of area

(i) Flash Card

Some of the units of measurement of area are square millimetre, square centimetre, square metre and square kilometre.

(ii) Oral Verbal Elaboration

Teacher (investigator) explains as follows

"Area is the measurement of the size of a surface shape. Units of measurement are used to express this size so as to make it more convenient for communicating the standard size. Depending on the size of the shape, the units of measurement are chosen. Some of the units of measurement are square millimetre, square centimetre, square metre and square kilometre."

(iii) P.L.M. (Deviated form)

Section A

The units of measurement of area are square millimetre, square centimetre, square metre and square kilometre.

Fill in the blanks :

1. The units of measurement of area are _____, square centimetre, square metre and square kilometre.
2. The units of measurement of area are _____, square centimetre, square millimetre and square kilometre.
3. The units of measurement of area are square millimetre, square kilometre, square metre and _____.
4. The units of measurement of area are square millimetre, square centimetre, square metre and _____.
5. The units of measurement of area are _____, square metre, square kilometre and _____.
6. The units of measurement of area are square millimetre, _____, square kilometre and _____.
7. The units of measurement of area are square centimetre, square millimetre, _____ and _____.
8. The units of measurement of area are square centimetre, _____, square kilometre and _____.

Turn to Section B

Section B

Name the units of measurement of area.

_____

_____

2.4.6 Instructional Objective.6

Units of measurement of area

(i) Flash Card

The square kilometre is larger than square metre. The square metre is larger than square centimetre. The square centimetre is larger than square millimetre. Therefore, square kilometre is larger than square metre, square centimetre and square millimetre. The square metre is larger than square centimetre and square metre but smaller than the square kilometre. The square centimetre is larger than square millimetre but smaller than the square kilometre and square metre. The square millimetre is smaller than the square kilometre, square metre and the square centimetre.

(ii) Oral Verbal Elaboration

Teacher explains as follows. "As is the case for the units of measurement of length, where the kilometre is larger than a metre, a metre is larger than a centimetre and a centimetre is larger than a millimetre, so also for the units of measurement of area, the square kilometre is larger than square metre, the square metre is larger than square centimetre and square centimetre is larger than square millimetre."

(iii) P.L.M. (Deviated form)

Section A

The square kilometre is larger than square centimetre, square metre is larger than square centimetre and square centimetre is larger than square millimetre.

Turn to Section B

Section B

Tick mark (_/) those responses which seem appropriate to the statement.

1. Sq.km. is larger than

   (a) sq.m. ( ) (b) Sq.cm. ( )
   (c) Sq.mm.( )

2. Sq.cm. is larger than

   (a) Sq.m. ( ) (b) Sq.km. ( )
   (c) Sq.mm.( )

3. Sq.m. is larger than

   (a) Sq.cm.( ) (b) Sq.km. ( )
   (c) Sq.mm.( )

4. Sq.mm. is smaller than

   (a) Sq.cm.( ) (b) Sq.km. ( )
   (c) Sq.m. ( )

2.4.7 Instructional Objective.7

Units of measurement of area

(i) Oral Verbal Elaboration

The area of Kishore's farm is

a) 4 sq.km.
b) 4,000,000 sq.m.
c) 40,000,000,000 sq.cm.
d) 4,000,000,000,000 sq.mm.

From the above measurements, we can observe that for big areas, it is convenient to use sq.km. as unit of measurement because it expresses the area in minimum digits. If we use sq.mm. as unit of measurement it becomes difficult to write as well as remember all the digits correctly. Similarly, if the measurement is in sq.m. or sq.cm. it requires more digits.

The area of our playground is

a) 50 sq.m.
b) 1/20,000 sq.km.
c) 5,00,000 sq.cm.
d) 50,000,000 sq.mm.

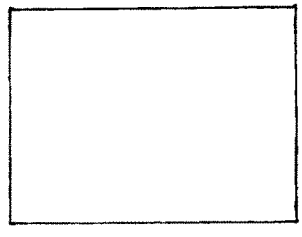
From the above measurements, we can observe that for measurements which are smaller than a sq.km., sq.m. would be most suitable unit because it expresses the area in minimum digits. If we use sq.km. as the unit, it becomes difficult to express it in fractions of sq.kilometre because the playground is much smaller than a sq.km. It is also difficult to express the area of the playground in sq.mm. and sq.cm.

Similarly, for things smaller than a sq.m., we should use sq.cm. as the unit and for things smaller than sq.cm. we should use sq.mm. as the unit of measurement.

(ii) P.L.M. (Deviated form)

1. Section A

Measure the area of this rectangle drawn. Express it in sq.cm. and sq.mm.



Its area is _____ sq.cm.
Its area is _____ sq.mm.

Which of these, sq.cm. or sq.mm. is convenient and appropriate to express this area?

_____

_____

_____

It is more convenient and appropriate to express its area in sq.cm.

Turn to Section B

Section B

Measure the area of the card given and express it in sq.cm. and sq.mm.

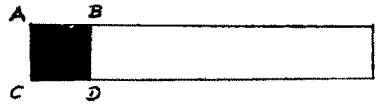
The area of the card is _____sq.cm.

The area of the card is _____sq.mm.

Which of these, sq.cm. or sq.mm. is convenient and appropriate to express this area?

2. Section A

Measure the area within ABCD. Using which of these units - sq.cm., sq.mm., sq.m. will you express the area within ABCD.



Its area is _____

The area of ABCD should be expressed in sq.mm.

Turn to Section B

Section B

The area of an object was found to be lesser than one sq.cm. Among these units of measurement of area - sq. mm., sq.cm., sq.m., and sq.km. which is the most appropriate to express its area?

3. Section A

Measure the area of this classroom. Express it in sq.mm., sq.cm., and sq.m. respectively.

Its area is _____sq.mm.

Its area is _____sq.cm.

Its area is _____sq.m.

Which of these sq.mm., sq.cm., or sq.m. is convenient and more appropriate to express the area of this classroom?

Turn to Section B

Section B

Measure the area marked on the ground. Express it in sq.mm., sq.cm., and sq.m. respectively.

Its area is _____sq.mm.

Its area is _____sq.cm.

Its area is _____sq.m.

Which of these sq.cm., sq.mm. or sq.m. do you find more convenient and appropriate to express this area?

---

4. Section A

Of the following units - Sq.mm./S .cm./Sq.m./Sq.km., which is the most convenient and appropriate unit to express the area of Surat.

Of these units, sq.km. is the most convenient and appropriate unit to express this area.

Turn to Section B

Section B

Of the following units - sq.mm., sq.cm.,, sq.m., sq.km., which is the most convenient and appropriate unit to express the area of Bombay.

_____is the most convenient and appropriate unit to express this area.

2.4.8/9/10/11 Instructional Objective 8,9,10 & 11

Abbreviations of the units of measurement of area

P.L.M. (Deviated form)

Section A

The square millimetre can be expressed in the abbreviated form (short form) as sq.mm.

Thus square millimetre = sq.mm.

The square centimetre can be expressed in the abbreviated form (short form) as sq.cm.

Thus square centimetre = sq.cm.

The square metre can be expressed in the abbreviated form (short form) as sq.m.

Thus square metre = sq.m.

The square kilometre can be expressed in the abbreviated form (short form) as sq.km.

Thus square kilometre = sq.km.

Turn to Section B

Section B

The abbreviated form of square millimetre is _____

The abbreviated form of square centimetre is _____

The abbreviated form of square metre is _____

The abbreviated form of square kilometre is _____

Turn to Section C

Section C

The full form of sq.mm. is _____

The full form of sq.cm. is _____

The full form of sq.m. is _____

The full form of sq.km. is _____

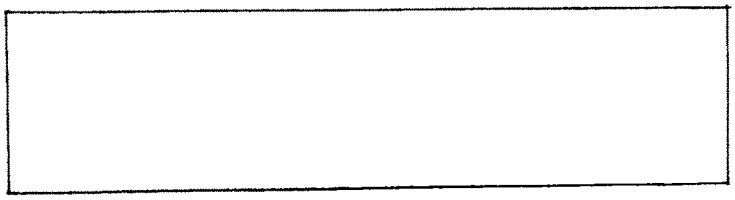
2.5 ENRICHMENT ACTIVITIES

1. Which of the two shapes is larger?

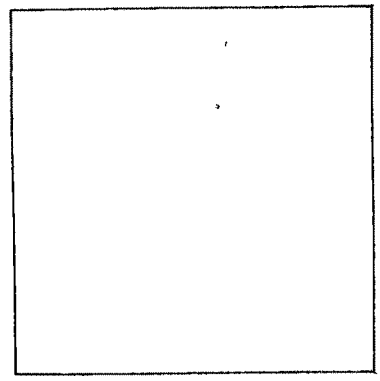
How did you find out?

2. a. Mr. Ramesh has a square-shaped garden. It is 200 metres on each side. Among the two pictures shown below which of them shows Mr. Ramesh's garden.

b. Mr. Desai has a garden which is 100 metres on one side and 400 metres on the other side. Among the two pictures shown below which of them shows Mr. Desai's garden.



'A'



'B'

Both men have decided to put fences around the gardens to keep the goats from eating their vegetables.

c. How many metres of fencing will Mr. Ramesh need to buy to go around his garden?

d. How many metres of fencing will Mr. Desai need to buy to go around his garden?

e. Which of the two gardens - Mr. Ramesh's or Mr. Desai's is larger ?

3. Among the following figures, tick mark (_/) those that have similar areas to figure A.

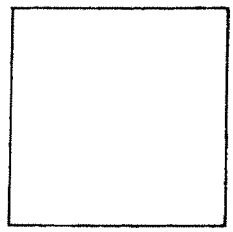
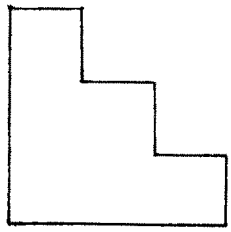
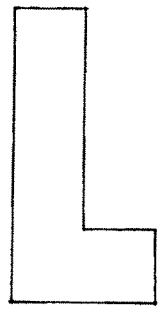


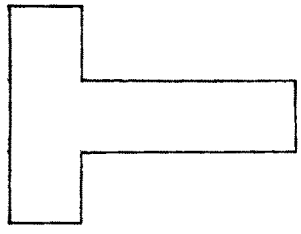
Fig. 'A'



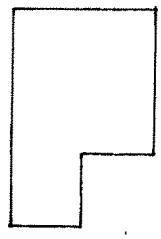
( )



( )



( )



( )

Reading Material

The measure of the surface occupied by an object is called area. Area is used to know how large a city is, how much space a picture occupies, how large the screen is, etc. The knowledge of area helps to divide places, objects, fields according to the required size.

When measuring area, we are actually measuring the number of squares present in it. We have standard sizes of squares that are used for measuring areas. The most common and convenient units used for measuring areas are sq.km., sq.cm., sq.m., and sq.mm. They are the standard units of measurement of area. The sq.km. is 1000000 times bigger than a sq.m. The sq.m. is 10000 times bigger than a sq.cm. and sq.cm. is 100 times bigger than a sq.mm.

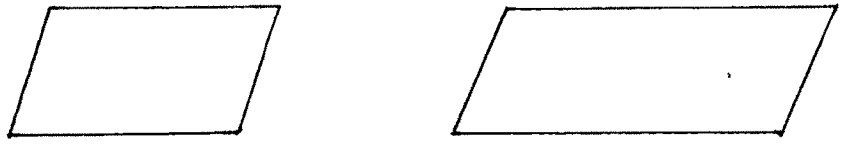
2.6 FINAL TEST

1. Tick mark (✓) the correct answer

   In order to find out how large your playground is, you will measure its

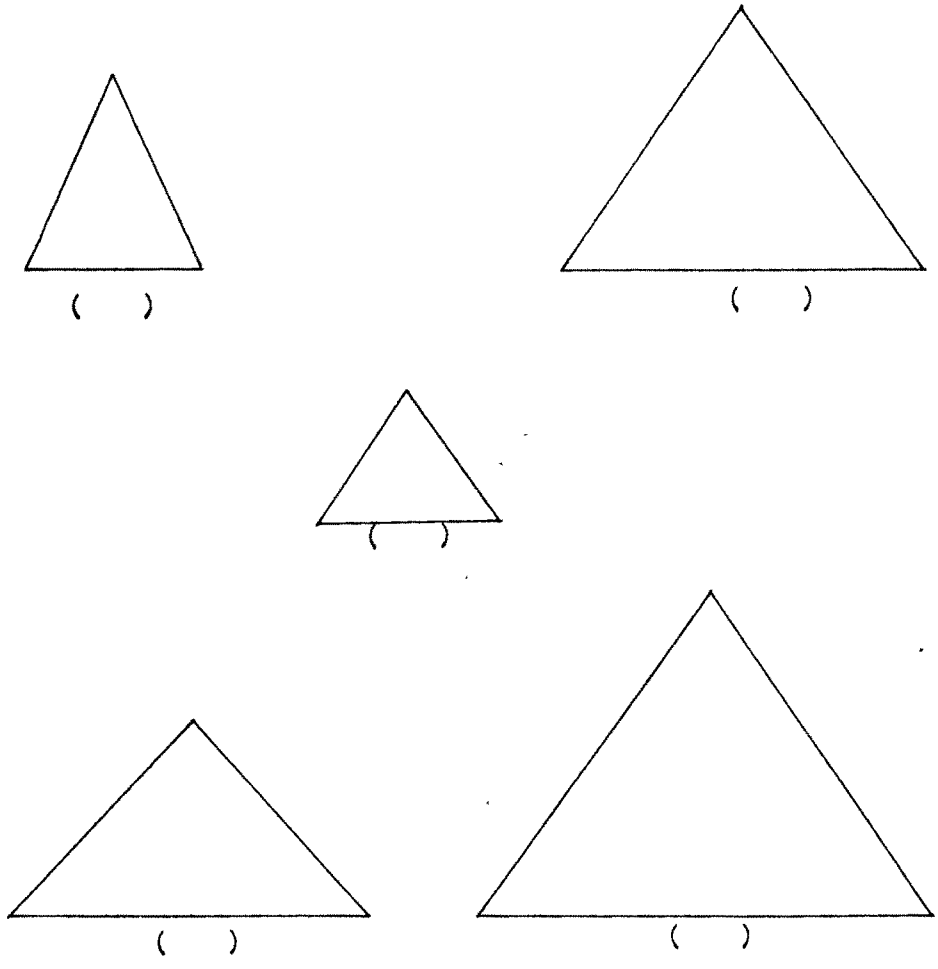
   a. Breadth ( )
   b. Length ( )
   c. Area ( )

2. Suppose 'A' and 'B' are two playgrounds, which of them will take longer to sweep?

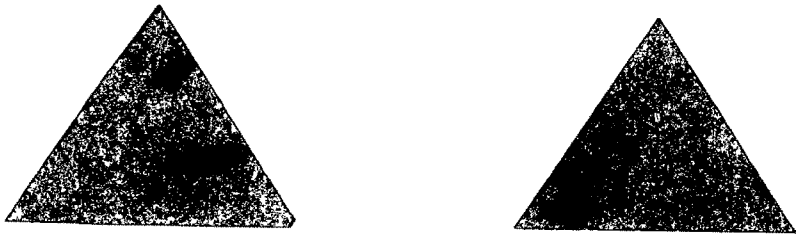


'A' 'B'

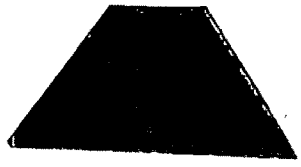
3. Number the following areas in a sequence from 1 to 5 from the smallest to the largest area.

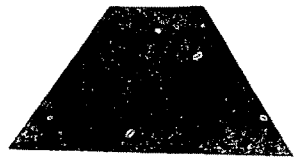


4.*a)* Look at these two areas. Are they of equal area?

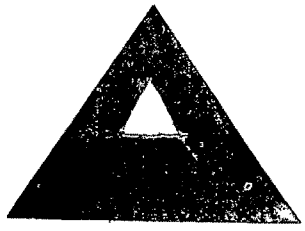


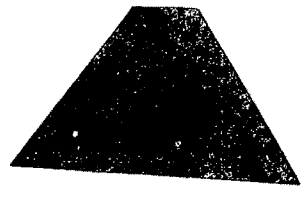
b. Look at these two areas. A portion from each of them has been cut off. Now are they of equal area?





c. Look at these two areas. A portion of each has been cut off from different regions. Are they still of equal area?





5. Name the four units of measurement of area.

_____

_____

_____

_____

6. Name the four units of measurement of area in an ascending order (smallest to the largest) according to their increase in size.

_____

_____

_____

_____

7. Write your answer in the bracket given below. Among the following units.

a. Sq.mm. b. sq.cm. c. sq.m. d. sq.km.

which is the most appropriate unit you will use to measure.

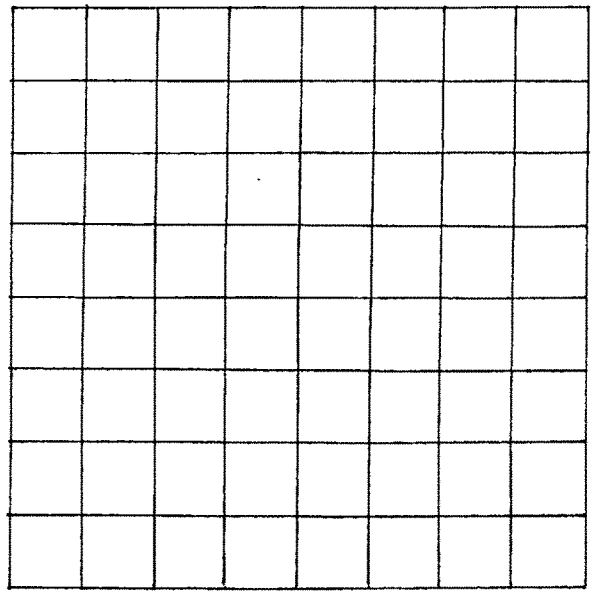
i)	Bombay City	( )
ii)	Your Science yogi book	( )
iii)	Your school staffroom	( )
iv)	Your handkerchief	( )
v)	Compus box	( )
vi)	Area covered by your sharpener	( )

8. Measure the area of this rectangular card labelled 9, (enclosed in the envelope), with the help of a square of one square centimetre area and report the area using square centimetre as unit of measurement of area.

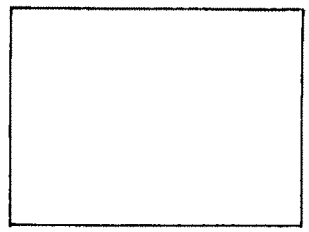
_____

_____

9. Measure the area of the regular card labelled 10, (given in the envelope), with the help of this graph paper having squares of one sq.cm. area and report the area using square centimetre as the unit of measurement of area.



10. Measure the area of this rectangle with the help of a measuring scale and report the area using square centimetre as unit of measurement of area.



11. Measure the area of the irregular card (given in the envelope) with the help of this graph paper having squares of one sq.cm. area and report the area using square centimetre as the unit of measurement of area.