

CLASS: X. MATH ACTIVITY NO.: 2. AREA OF A CIRCLE.

OBJECTIVE: To obtain the formula for the area of a circle

DESIGN AND OR APPROACH TO THE ACTIVITY:

1) Circumference of a circle and its formula. ($C = 2\pi r$)

2) Formula for the area of a rectangle. ($A = L \times B$)

PROCEDURE: 1) Draw a circle of any radius, say, r units, on a drawing sheet as shown in fig(i). 2) Draw a diameter of the circle and colour one of the halves with green colour and the other half with purple colour. 3) Divide the circle into 16 equal parts (by paper folding method). 4) Take any one part, say, green, out of the above 16 equal parts and further divide this part into 2 equal parts as shown in fig(ii). 5) Paste all the parts of the circle on a white sheet of paper as shown in fig (iii).

RESULT: It is observed that fig (iii) formed by all the parts of the circle looks like a rectangle.

Length of this rectangle = length of arc of a semi-circle of

$$\text{radius } r = \frac{1}{2} \times 2\pi r = \pi r$$

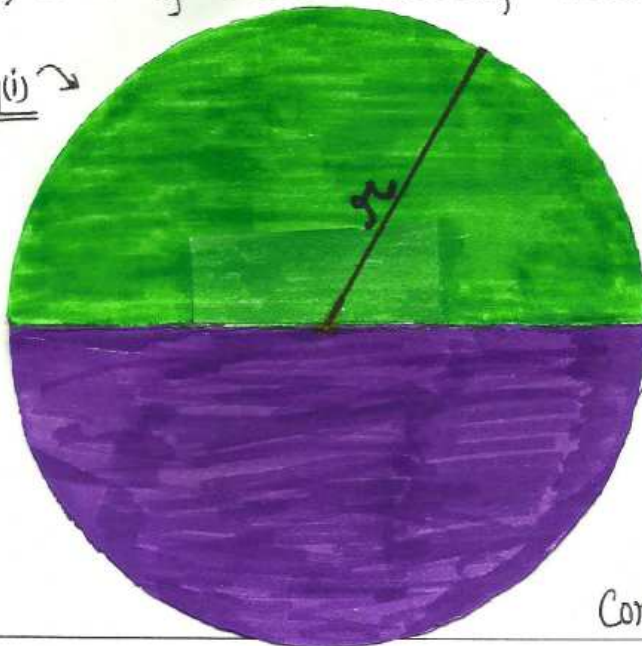
and breadth of the rectangle = radius of the circle = r .

$$\therefore, \text{Area of the rectangle} = L \times B = \pi r \times r = \pi r^2.$$

Since the rectangle is obtained from all the parts of the circle,

$$\therefore, \text{area of circle} = \text{area of rectangle} = \pi r^2.$$

Fig(i) →



Fig(ii) →



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