TOPIC: DEDUCING THE FORMULA FOR AREA OFA CIRCLE

OBJECTIVE:

- To understand the concept of a radius and a circle
- To use the formula of circumference of a circle
- To apply the knowledge of area of rectilinear figures

PRIOR KNOWLEDGE:

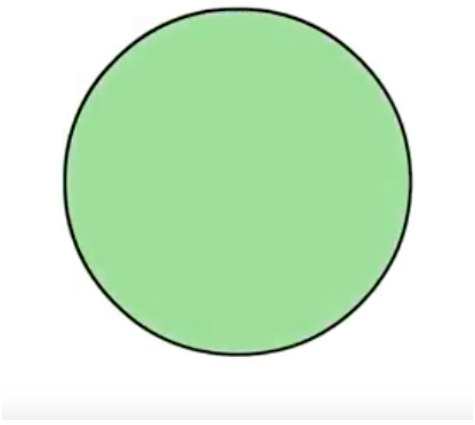
- Rectangle
- Circle
- Area
- What is π?

MATERIALS REQUIRED:

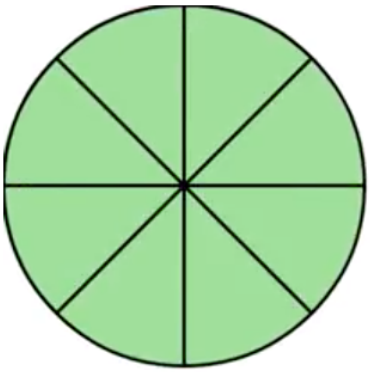
1. Geometry box
2. Practical workbook
3. Coloured chart paper – Any of yellow, green or blue.
4. Scissors
5. Plastic ruler
6. Sketch pen
7. Adhesives or glue sticks
8. Tracing papers – 2

PROCEDURE:

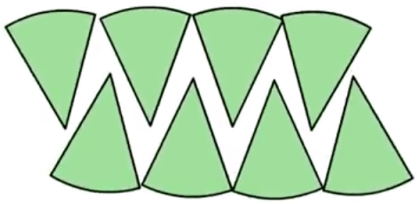
1. Draw a circle of 7 cm radius on a green coloured chart paper. Use black sketch pen for drawing.
2. Cut out the circle.
3. Make 4 to 5 such circles.

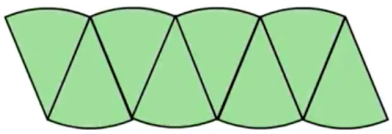


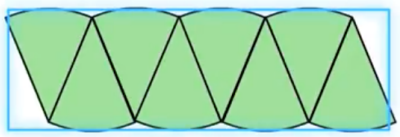
4. Now divide one circle into 8 sectors as shown by drawing straight lines with sketch pen.



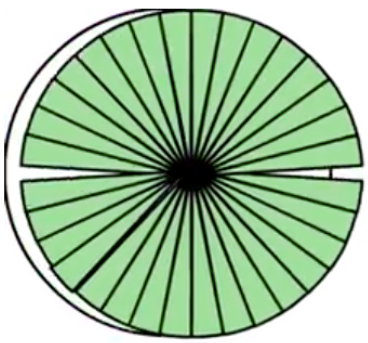
5. On arranging the sectors as shown, we get a figure which is closed to being called as a rectangle.

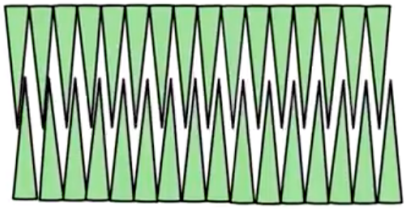


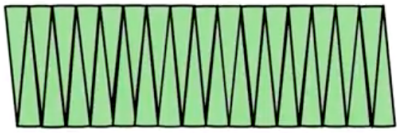




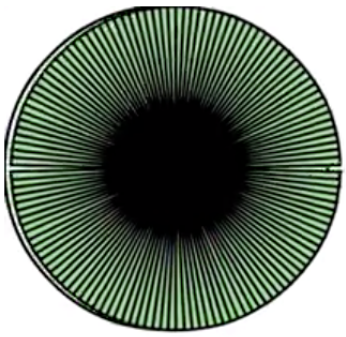
6. Now take one more circle, which you have already cut and divide into 16 sectors as shown and arrange accordingly. We still find another figure very close to be called a rectangle.

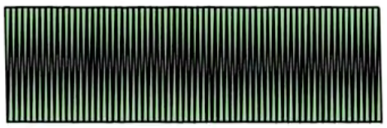




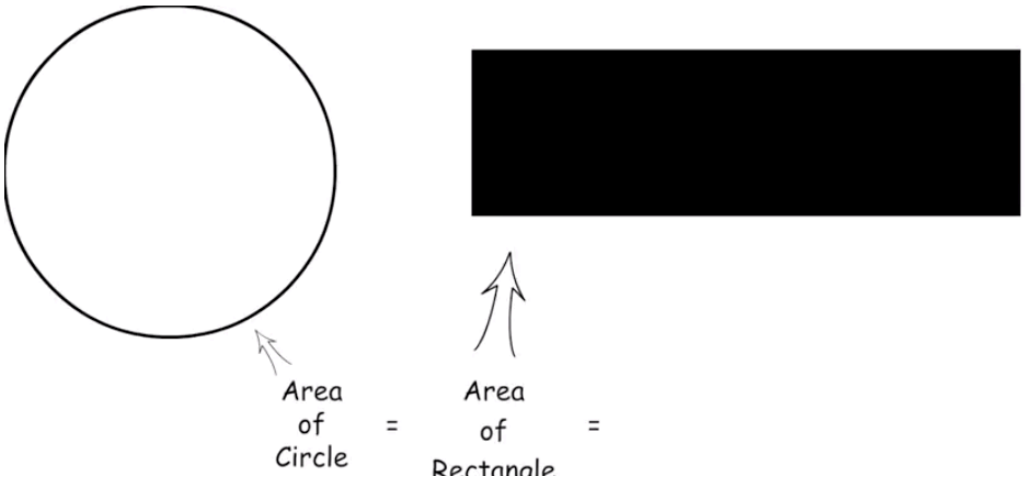


7. So if we can go on dividing the circles into 20, 24, 28, 32 sectors, we get the structure almost similar to a rectangle. If we go on dividing the entire circle into infinitesimally small sectors we will get the final arrangement as a rectangle.

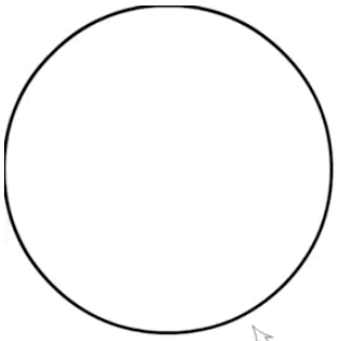




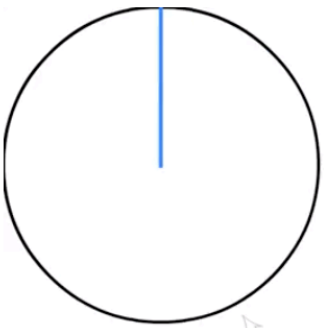
8. So, we can deduce:



9. And:



Area of Circle = Area of Rectangle = Base x Height



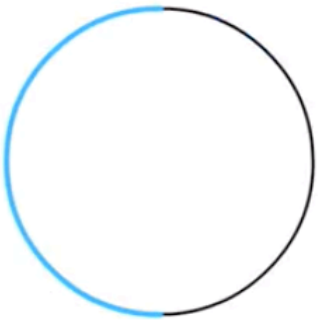
Height = Radius

Area of Circle = Area of Rectangle = Base x

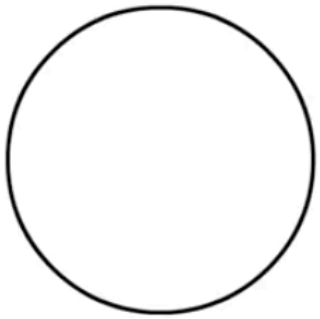
Base

Area of Circle = Area of Rectangle = x Radius

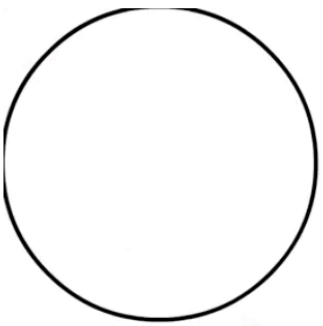
Base



$\text{Base} = \frac{1}{2}$ Circumference



$\text{Base} = \frac{2\pi r}{2}$



Area of Circle = Area of Rectangle = πr^2