

Topic : Opposite angles of a cyclic quadrilateral.

Objective : To verify that the opposite angles of a cyclic quadrilateral are supplementary.

Pre-acquired knowledge :

- Cyclic quadrilateral and its properties.
- Supplementary angles.

Materials required : Colour box, sketch pens, a pair of scissors, glue, geometry box and a tracing paper.

Procedure :

- Draw a circle with a convenient radius.
- In the circle, draw a quadrilateral so that all the four vertices of the quadrilateral lie on the circle. Name the angles and colour them as shown in Fig. 11.1.

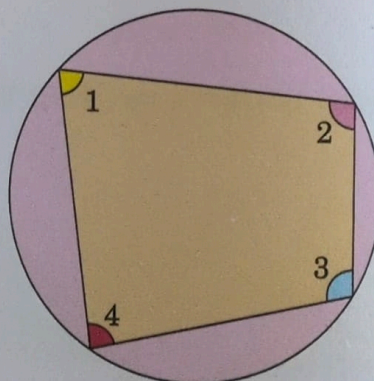


Figure 11.1

• Make cut-outs of the angles using tracing paper and colour them as shown in Fig. 11.2.

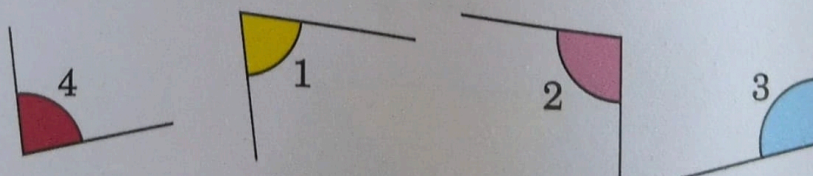


Figure 11.2

• Draw two lines, l and m on a sheet of paper.

- Paste the cut-outs of the opposite angles $\angle 1$ and $\angle 3$ adjacent to each other on the line l . Similarly, paste $\angle 2$ and $\angle 4$ to make straight angles as shown in Fig. 11.3.

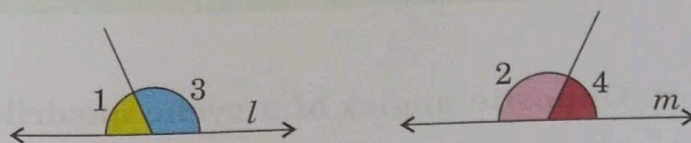


Figure 11.3

Observation : We have seen that cut outs of $\angle 1$ and $\angle 3$ exactly cover one side of the straight line at a point. It follows that $\angle 1 + \angle 3 = 180^\circ$.

Similarly, $\angle 2 + \angle 4 = 180^\circ$.

Result : The sum of each pair of the opposite angles of a cyclic quadrilateral is supplementary.



Figure 11.1

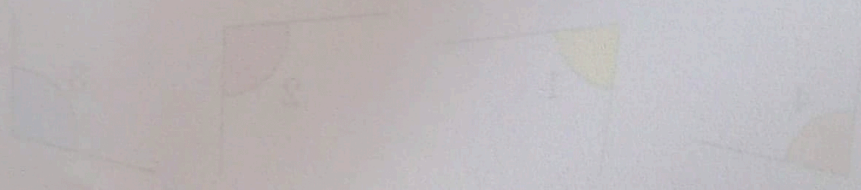


Figure 11.2