

D. Hexagon

1. On a sheet of plain paper, draw a hexagon.
Produce each of its sides in order.
2. With any convenient radius and centres as A, B, C, D, E and F draw arcs to cut the external angles at A, B, C, D, E and F.
3. Shade these six sectors formed using different colours.
4. Cut out the six shaded sectors.
5. Paste the six cut outs as shown in Figure 4b.
What do you observe?

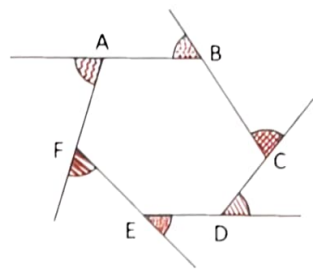


Fig. 4a

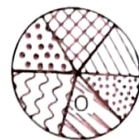


Fig. 4b

Observation: In each case, the sectors representing the exterior angles of the polygon, when placed together make a complete circle. Thus, the sum of the exterior angles of each polygon is 360° .

Result: Hence, it is verified that the sum of measures of the exterior angles of any polygon is 360° .

ACTIVITY 2

Aim: To verify that the sum of interior angles of a quadrilateral is 360° by paper cutting and pasting.

Materials required: Sheet of plain paper, a pencil, a ruler, a pair of compass, colour pencils, glue and a pair of scissors.

Procedure:

1. On a sheet of plain paper, draw any quadrilateral ABCD.
2. With any convenient radius and centres as A, B, C and D, draw four arcs to cut the sides of the quadrilateral ABCD, (as shown in Figure 5a) so as to form four sectors containing $\angle BAD$, $\angle CBA$, $\angle DCB$ and $\angle ADC$ respectively.
3. Shade these four sectors formed, using different colours.
4. Cut out the four shaded sectors.
5. Paste the four cut outs as shown in Figure 5b.
What do you observe?

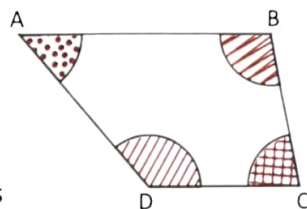


Fig. 5a



Fig. 5b

Observation: All the four sectors representing the four interior angles of the quadrilateral, together form a circle.

Result: The sum of the interior angles of a quadrilateral is 360° .

ACTIVITY 3

Aim: To make a rhombus by paper folding.

Materials required: 2 plain sheets of paper, a pencil and a ruler.

Procedure:

1. Draw a line segment AC of any convenient length, say 8 cm.
2. Fold the paper in such a way that point A falls over point C. Make a crease along the line of fold and then unfold the paper. Draw line PQ along the line of fold.
3. Mark a point B on the line PQ.
4. Now, fold the paper along the line segment AC. Make a second fold along the line passing through the points A and B. Make a crease and then unfold the paper. Draw lines l and m along the lines of fold such that l cuts PQ at B and m cuts PQ at D.
5. Fold the paper along the line passing through B and C. Make a crease and unfold the paper. Draw BC along the line of fold.
6. Now fold the paper along a line passing through C and D. Again make a crease and unfold the paper. Draw CD along the line of fold. A rhombus ABCD is formed.

ACTIVITY 1

Aim: To verify that the sum of the measures of the exterior angles of any polygon is 360° by paper cutting and pasting.

Materials required: 4 sheets of plain paper, a pencil, a ruler, a pair of compass, colour pencils, glue stick and a pair of scissors.

Procedure:

A. Triangle

1. On a sheet of plain paper, draw a $\triangle ABC$. Produce each of its sides in order.
2. With any convenient radius and centres as A, B and C draw arcs to cut the external angles at A, B and C.
3. Shade the three sectors formed using different colours.
4. Cut out the three shaded sectors.
5. Paste the three cut outs together as shown in Figure 1b.

What do you observe?

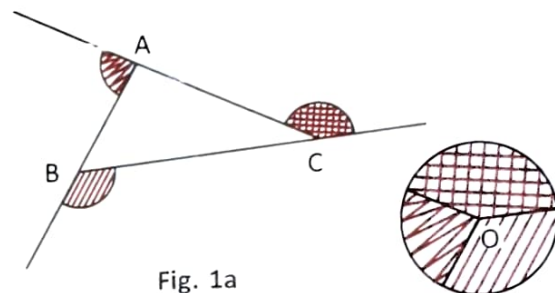


Fig. 1a

Fig. 1b

B. Quadrilateral

1. On a sheet of plain paper, draw a quadrilateral ABCD. Produce each of its sides in order.
2. With any convenient radius and centres as A, B, C and D, draw arcs to cut the external angles at A, B, C and D.
3. Shade the four sectors formed using different colours.
4. Cut out the four shaded sectors.
5. Paste the four cut outs as shown in Figure 2b.

What do you observe?

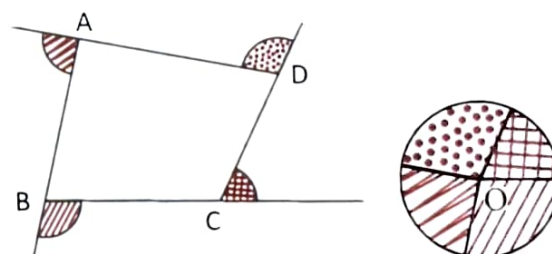


Fig. 2a

Fig. 2b

C. Pentagon

1. On a sheet of plain paper, draw a pentagon ABCDE. Produce each of its sides in order.
2. With any convenient radius and centres as A, B, C, D, E draw arcs to cut the external angles at A, B, C, D and E.
3. Shades these five sectors formed using different colours.
4. Cut out the five shaded sectors.
5. Paste the five cut outs as shown in Figure 3b.

What do you observe?

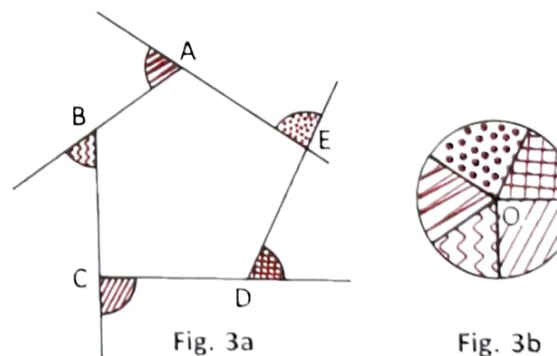


Fig. 3a

Fig. 3b