CHAPTER-8
QUADRILATERALS

HANDOUT:MODULE-2

In module -2 , numericals from Exercise 8.1 is solved.

Here we are using the properties of parallelogram , properties of different quadrilaterals, concepts based on congruence of triangles.

Students are expected to follow certain steps while solving the questions based on geometry that is they have to write the following:

GIVEN:

TO PROVE:

CONSTRUCTION(IF ANY)

DIAGRAM: (rough figure with construction)

PROOF:

Question.1 Three angles of a quadrilateral are equal and the fourth angle is equal to 144°. Find each of the equal angles of the quadrilateral.

Solution.

Let each equal angle of given quadrilateral be x

Therefore , $x + x + x + 144° = 360°$

$3x = 360° - 144°$

$3x = 216°$

$x = 72°$

Each equal angle is equal to 72°

EXERCISE 8.1

1. The angles of quadrilateral are in the ratio 3 : 5 : 9 : 13. Find all the angles of the quadrilateral.

   SOLUTION:

   Algebraic Method different from the method used in the ppt

   Let the common factor be x

   Therefore the angles of the quadrilateral are 3x, 5x, 9x and 13x

   By angle sum property , we have

   $3x + 5x + 9x + 13x = 360°$

   $30x = 360°$

   $x = \frac{360°}{30} = 12$

   angle 1 = 3x = 3 x 12 = 36°

   angle 2 = 5x = 5 x 12 = 60°

   angle 3 = 9x = 9 x 12 = 108°

   angle 4 = 13x = 13 x 12 = 156°

EXAMPLE-1
Show that each angle of a rectangle is a right angle.

Solution : Let us recall what a rectangle is. A rectangle is a parallelogram in which one angle is a right angle.
Let ABCD be a rectangle in which $\angle A = 90°$.

To show that : $\angle B = \angle C = \angle D = 90°$

AD || BC and AB is a transversal

So, $\angle A + \angle B = 180°$ (Interior angles on the same side of the transversal)

But, $\angle A = 90°$

So, $\angle B = 180° - \angle A = 180° - 90° = 90°$

$\angle C = \angle A$ and $\angle D = \angle B$ (Opposite angles of the parallellogram)
So, $\angle C = 90°$ and $\angle D = 90°$.

Therefore, each of the angles of a rectangle is a right angle.