O.P.JINDAL SCHOOL SAVITRI NAGAR

Class: IX **Worksheet (2020-21)** **Subject: Maths**

Topic: QUADRILATERALS

QUADRILATERAL

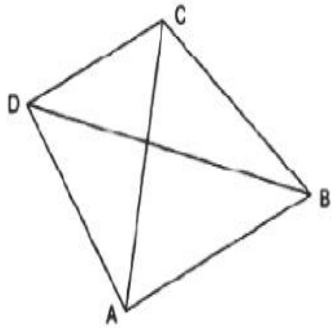
A plane figure bounded by four sides is called a quadrilateral. In the following figure, four line segments AB, BC, CD and DA bound a quadrilateral ABCD.

In the given figure, we have.

(i) The points A, B, C and D are the vertices of quadrilateral ABCD.

(ii) The line segments AB, BC, CD and DA are the sides of quadrilateral ABCD.

(iii)The line segments AC and BD are called the diagonals of quadrilateral ABCD.



Note: (i) Two sides having a common end point are called adjacent sides.

(ii) Two sides having no common end point are called opposite sides.

(iii) Two angles of a quadrilateral having a common arm are called consecutive angles.

(iv) Two angles of a quadrilateral having no common arm are called its opposite angles.

In the given figure,

AB and BC, BC and CD, CD and DA, CD and DA are adjacent sides.

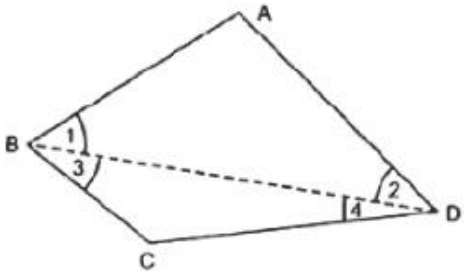
AB and DC, BC and AD are opposite sides.

∠A and ∠B, ∠B and ∠C, ∠C and ∠D, ∠D and ∠A are adjacent angles or consecutive angles.

∠A and ∠C, ∠B and ∠D are opposite angles.

ANGLE SUM PROPERTY OF A QUADRILATERAL

The sum of all the four angles of a quadrilateral is 360°.



PROOF: In quadrilateral ABCD, joining B to D.

Now the quadrilateral forming two triangles

$\therefore$ In ΔABD, we have

$\angle 1 + \angle A + \angle 2 = 180°$ (ASP) ----------(1)

In ΔBCD, we have

$\angle 3 + \angle C + \angle 4 = 180°$ (ASP) ----------(2)

Adding (1) and (2), we get

$[\angle 1 + \angle A + \angle 2] + [\angle 3 + \angle C + \angle 4] = 180° + 180°$

$(\angle 1 + \angle 3) + \angle A + \angle C + (\angle 2 + \angle 4) = 180° + 180°$

$\Rightarrow$ $\angle B + \angle A + \angle C + \angle D = 360°$ [$\because \angle 1 + \angle 3 = \angle B$ and $\angle 2 + \angle 4 = \angle D$]

$\angle A + \angle B + \angle C + \angle D = 360°$

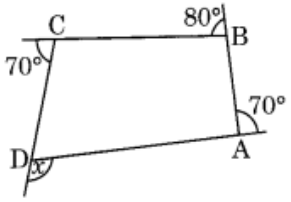
Thus, the sum of four angles of a quadrilateral is 360°.

ASSIGNMENT

Q1. Calculate all the angles of a quadrilateral if they are in the ratio 2 : 5 : 4 : 1.

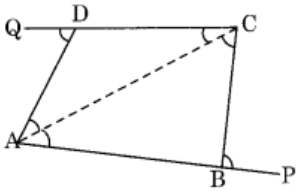
Q2. The angles of a quadrilateral are in the ratio of 2 : 3 : 5 : 8. Find the measure of each angle.

Q3. In the given figure ABCD, find the value of x.



Q4. The sides AB and CD of a quadrilateral ABCD are extended to points P and Q respectively.

Is $\angle ADQ + \angle CBP = \angle A + \angle C$? Give reason.



NOTE: This worksheet is prepared from home.