



Understanding shapes-III special types of quadrilaterals Ex 17.1 Q18

Answer :

We know that the adjacent angles of a parallelogram are supplementary.

Hence, $(3x + 10)^\circ$ and $(3x - 4)^\circ$ are supplementary.

$$(3x + 10)^\circ + (3x - 4)^\circ = 180^\circ$$

$$6x^\circ + 6^\circ = 180^\circ$$

$$6x^\circ = 174^\circ$$

$$x = 29^\circ$$

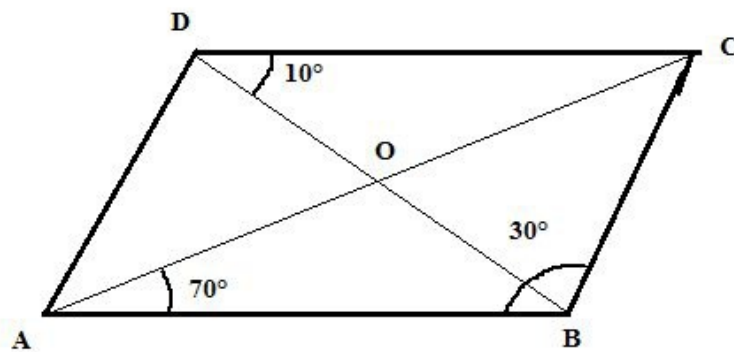
$$\text{First angle} = (3x + 10)^\circ = (3 \times 29^\circ + 10^\circ) = 97^\circ$$

$$\text{Second angle} = (3x - 4)^\circ = 83^\circ$$

Thus, the angles of the parallelogram are 97° , 83° , 97° and 83° .

Understanding shapes-III special types of quadrilaterals Ex 17.1 Q19

Answer :



$$\angle ABC = 30^\circ$$

$$\therefore \angle ADC = 30^\circ \text{ (opposite angle of the parallelogram)}$$

$$\text{and } \angle BDA = \angle ADC - \angle BDC = 30^\circ - 10^\circ = 20^\circ$$

$$\angle BAC = \angle ACD = 70^\circ \text{ (alternate angle)}$$

In $\triangle ABC$:

$$\angle CAB + \angle ABC + \angle BCA = 180^\circ$$

$$70^\circ + 30^\circ + \angle BCA = 180^\circ$$

$$\therefore \angle BCA = 80^\circ$$

$$\angle DAB = \angle DAC + \angle CAB = 70^\circ + 80^\circ = 150^\circ$$

$\angle BCD = 150^\circ$ (opposite angle of *the* parallelogram)

$\angle DCA = \angle CAB = 70^\circ$

In $\triangle DOC$:

$\angle ODC + \angle DOC + \angle OCD = 180$

$10^\circ + 70^\circ + \angle DOC = 180^\circ$

$\therefore \angle DOC = 100^\circ$

$\angle DOC + \angle BOC = 180^\circ$

$\angle BOC = 180^\circ - 100^\circ$

$\angle BOC = 80^\circ$

$\angle AOD = \angle BOC = 80^\circ$ (vertically opposite angles)

$\angle AOB = \angle DOC = 100^\circ$ (vertically opposite angles)

$\angle CAB = 70^\circ$ (given)

$\angle ADB = 20^\circ$

$\angle DBA = \angle BDC = 10^\circ$ (*alternate angle*)

$\angle ADB = \angle DBC = 20^\circ$ (*alternate angle*)

***** END *****