Exercise 16A

Q1

Answer :

It is given that $ABCD$ is a parallelogram in which $\angle A$ is equal to 110°.
Sum of *the* adjacent angles of a parallelogram is 180°.

$\therefore \angle A + \angle B = 180^\circ$
$\Rightarrow 110^\circ + \angle B = 180^\circ$
$\Rightarrow \angle B = (180^\circ - 110^\circ)$
$\Rightarrow \angle B = 70^\circ$
$\therefore \angle B = 70^\circ$

Also, $\angle B + \angle C = 180^\circ$
$\Rightarrow 70^\circ + \angle C = 180^\circ$
$\Rightarrow \angle C = (180^\circ - 70^\circ)$
$\Rightarrow \angle C = 110^\circ$
$\therefore \angle C = 110^\circ$
Further, $\angle C + \angle D = 180^\circ$
$\Rightarrow 110^\circ + \angle D = 180^\circ$
$\Rightarrow \angle D = (180^\circ - 110^\circ)$
$\Rightarrow \angle D = 70^\circ$
$\therefore \angle D = 70^\circ$

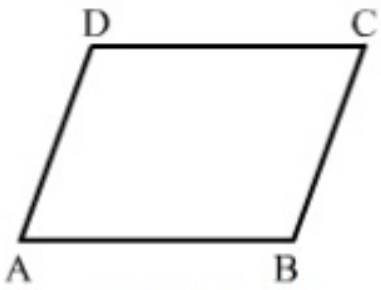
Q2

Answer :

Let the required angle be x°.
As the adjacent angles are equal, we have :
$x + x = 180$ (since the sum of adjacent angles of a parallelogram is 180°)
$\Rightarrow 2x = 180$
$\Rightarrow x = \frac{180}{2}$
$\Rightarrow x = 90^\circ$
Hence, the measure of each of the angles is 90°.

Q3

Answer :



Let $ABCD$ be the parallelogram.
Then, $\angle A$ and $\angle B$ are its adjacent angles.
Let $\angle A = (4x)^\circ$
$\angle B = (5x)^\circ$

$\therefore \angle A + \angle B = 180^\circ$ [since sum of the adjacent angles of a parallelogram is 180°]

$\Rightarrow 4x + 5x = 180$

$\Rightarrow 9x = 180$

$\Rightarrow x = \frac{180}{9}$

$\Rightarrow x = 20$

$\therefore \angle A = (4 \times 20)^\circ = 80^\circ$

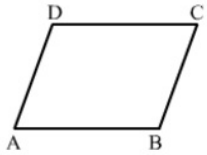
$\angle B = (5 \times 20)^\circ = 100^\circ$

Opposite angles of parallelogram are equal.

$\therefore \angle C = \angle A = 80^\circ$

$\angle D = \angle B = 100^\circ$

Q4



Let $ABCD$ be a parallelogram.

Let $\angle A = (3x - 4)^\circ$

$\angle B = (3x + 16)^\circ$

$\therefore \angle A + \angle B = 180^\circ$ [since the sum of adjacent angles of a parallelogram is 180°]

$\Rightarrow 3x - 4 + 3x + 16 = 180$

$\Rightarrow 3x - 4 + 3x + 16 = 180$

$\Rightarrow 6x + 12 = 180$

$\Rightarrow 6x = 168$

$\Rightarrow x = \frac{168}{6}$

$\Rightarrow x = 28$

$\therefore \angle A = (3 \times 28 - 4)^\circ$

$= (84 - 4)^\circ$

$= 80^\circ$

$\angle B = ((3 \times 28) + 16)^\circ$

$= (84 + 16)^\circ$

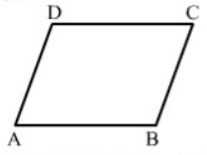
$= 100^\circ$

The opposite angles of a paralleleogram are equal.

$\therefore \angle C = \angle A = 80^\circ$

$\angle D = \angle B = 100^\circ$

Q5



Let $ABCD$ be a parallelogram and let the sum of its opposite angles be 130°.

$\angle A + \angle C = 130^\circ$

********** END **********