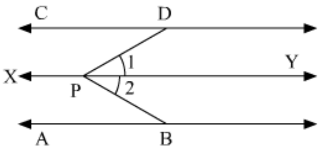
Lines and Angles Ex 8.4 Q11

Answer :

The given figure is:



It is give that $AB \parallel CD$

Let us draw a line XY passing through point *P* and parallel to AB and CD.

We have $XY \parallel CD$, thus, $\angle CDP$ and $\angle 1$ are alternate interior opposite angles. Therefore,

$\angle 1 = \angle CDP$ (i)

Similarly, we have $XY \parallel AB$, thus, $\angle ABP$ and $\angle 2$ are alternate interior opposite angles. Therefore,

$\angle 2 = \angle ABP$ (ii)

On adding (i) and (ii):

$\angle 1 + \angle 2 = \angle CDP + \angle ABP$

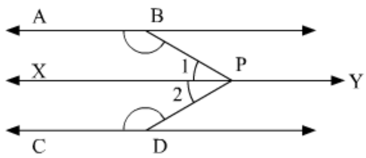
$\boxed{\angle DPB = \angle CDP + \angle ABP}$

Hence proved.

Lines and Angles Ex 8.4 Q12

Answer :

The given figure is as follows:



It is give that $AB \parallel CD$

Let us draw a line XY passing through point *P* and parallel to AB and CD.

We have $XY \parallel CD$, thus, $\angle CDP$ and $\angle 2$ are consecutive interior angles. Therefore,

$\angle 2 + \angle CDP = 180^0$ (i)

Similarly, we have $XY \parallel AB$, thus, $\angle ABP$ and $\angle 1$ are consecutive interior angles. Therefore,

$\angle 1 + \angle ABP = 180^0$ (ii)

On adding equation (i) and (ii), we get:

$\angle 2 + \angle CDP + \angle 1 + \angle ABP = 180^0 + 180^0$

$(\angle 2 + \angle 1) + \angle CDP + \angle ABP = 360^0$

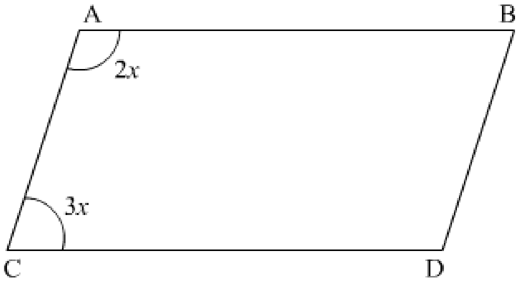
$\boxed{\angle ABP + \angle BPD + \angle CDP = 360^0}$

Hence proved .

Lines and Angles Ex 8.4 Q13

Answer :

The parallelogram can be drawn as follows:



It is given that

$\angle A : \angle C = 2:3$

Therefore, let:

$\angle A = 2x$

and $\angle C = 3x$

We know that opposite angles of a parallelogram are equal.

Therefore,

$\angle A = \angle D$

$\angle D = 2x$

Similarly

$\angle B = 3x$

Also, if $AB \parallel CD$, then sum of consecutive interior angles is equal to 180^0.

Therefore,

$$\angle A + \angle C = 180^0$$
$$2x + 3x = 180^0$$
$$5x = 180^0$$
$$x = \frac{180^0}{5}$$
$$x = 36^o$$

We have

$$\angle A = 2x$$
$$\angle A = 2(36^0)$$
$$\angle A = \boxed{72^0}$$

Also,

$$\angle C = 3x$$
$$\angle C = 3(36^0)$$
$$\angle C = \boxed{108^0}$$

Similarly,

$$\angle D = \boxed{72^0}$$

And

$$\angle B = \boxed{108^0}$$

Hence, the four angles of the parallelogram are as follows:

$\angle A = \boxed{72^0}$, $\angle B = \boxed{108^0}$, $\angle C = \boxed{72^0}$ and $\angle D = \boxed{108^0}$.

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