Properties of Triangles Ex 15.2 Q12

Answer :

Let each of the two acute angles of the given triangle be x.

We know that the third angle is 90°. (Given)

We also know that the sum of all the three angles of a triangle is equal to 180°.

Which means : $x + x + 90^\circ = 180^\circ$

$\Rightarrow 2x = 180^\circ - 90^\circ$

$\Rightarrow x = \frac{90^\circ}{2}$

$\Rightarrow x = 45^\circ$

Hence, we can conclude that each of the two acute angles is equal to 45°.

Properties of Triangles Ex 15.2 Q13

Answer :

Let the three angles of the given triangle be $\angle a$, $\angle b$ and $\angle c$.

We know : $\angle a > \angle b + \angle c$ .....(i) (Given)

We also know that the sum of all the angles of a triangle is equal to 180°.

$\therefore \angle a + \angle b + \angle c = 180^\circ$

$\Rightarrow \angle b + \angle c = 180^\circ - \angle a$

Putting the value of $\angle b + \angle c$ from equation (i) :

$\angle a > 180^\circ - \angle a$

$\Rightarrow 2\angle a > 180^\circ$

$\Rightarrow \angle a > 90^\circ$

Thus, the angle is more than 90°.

Hence, we can conclude by saying that the given triangle is an obtuse triangle.

Properties of Triangles Ex 15.2 Q14

Answer :

We have to find $\angle FAB + \angle ABC + \angle BCD + \angle CDE + \angle DEF + \angle EFA$ ......(i)

From the figure, we have :

$\angle FAB = \angle FAE + \angle EAD + \angle DAC + \angle CAB$

$\angle BCD = \angle ACB + \angle ACD$

$\angle CDE = \angle ADC + \angle ADE$

$\angle DEF = \angle AED + \angle AEF$

Putting the values of $\angle FAB, \angle BCD, \angle CDE, \angle DEF$ in equation (i) :

$(\angle FAE + \angle EAD + \angle DAC + \angle CAB) + \angle ABC + (\angle ACB + \angle ACD) +$
$(\angle ADC + \angle ADE) + (\angle AED + \angle AEF) + \angle EFA$

$\Rightarrow (\angle ABC + \angle ACB + \angle CAB) + (\angle FAE + \angle AEF + \angle EFA) +$
$(\angle FAE + \angle AEF + \angle EFA) + (\angle ADC + \angle ACD + \angle DAC)$ .....(ii)

We know that the sum of the three angles of a triangle is equal to 180°.

Hence we can say the following :

$\angle ABC + \angle ACB + \angle CAB = 180^\circ$ (angles of $\triangle$ ABC)

$\angle FAE + \angle AEF + \angle EFA = 180^\circ$ (angles of $\triangle$ AFE)

$\angle AED + \angle ADE + \angle EAD = 180^\circ$ (angles of $\triangle$ AED)

$\angle ADC + \angle ACD + \angle DAC = 180^\circ$ (angles of $\triangle$ ADC)

Putting these values in equation (ii) :

$180^\circ + 180^\circ + 180^\circ + 180^\circ$

Hence, the sum of the given angles is 720°

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