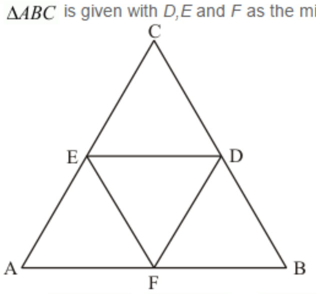
Quadrilaterals Ex 14.4 Q1

Answer :

ΔABC is given with *D*,*E* and *F* as the mid-points of *BC* , *CA* and *AB* respectively as shown below:



Also, $AB = 7cm$, $BC = 8cm$ and $AC = 9cm$.

We need to find the perimeter of ΔDEF

In ΔABC , *E* and *F* are the mid-points of *CA* and *AB* respectively.

Theorem states, the line segment joining the mid-points of any two sides of a triangle is parallel to the third side and equal to half of it.

Therefore, we get:

$$EF = \frac{1}{2} BC$$

$$EF = \frac{1}{2}(8cm)$$

$$EF = 4cm$$

Similarly, we get

$$DE = \frac{1}{2} AB$$

$$DE = \frac{1}{2}(7cm)$$

$$DE = \frac{7}{2} cm$$

And

$$DF = \frac{1}{2} AC$$

$$DF = \frac{1}{2}(9cm)$$

$$DF = \frac{9}{2} cm$$

Perimeter of $\Delta DEF = DE + EF + DF$

$$= 4cm + \frac{7}{2} cm + \frac{9}{2} cm$$

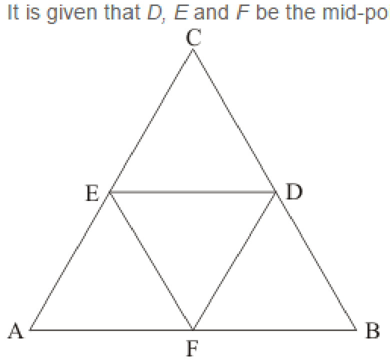
$$= \boxed{12cm}$$

Hence, the perimeter of ΔDEF is $\boxed{12cm}$.

Quadrilaterals Ex 14.4 Q2

Answer :

It is given that *D*, *E* and *F* be the mid-points of *BC* , *CA* and *AB* respectively.



Then,

$DE \parallel AB$, $EF \parallel BC$ and $DF \parallel CA$.

Now, $DE \parallel AB$ and transversal *CB* and *CA* intersect them at *D* and *E* respectively.

Therefore,

$\angle CDE = \angle B$

$\angle CDE = 60^0$ [$\angle B = 60^0$ (Given)]

and $\angle CED = \angle A$

$\angle CED = 50^0$ [$\angle A = 50^0$ (Given)]

Similarly, $EF \parallel BC$

Therefore,

$\angle AEF = \angle C$

$\angle AEF = \angle C$

$\angle AEF = 70^0$ [$\angle C = 70^0$ (Given)]

and $\angle AFE = \angle B$

$\angle AFE = 60^0$ [$\angle B = 60^0$ (Given)]

Similarly, $DF \parallel CA$

Therefore,

$\angle BDF = \angle C$

$\angle BDF = 70^0$ [$\angle C = 70^0$ (Given)] and $\angle BFD = \angle A$

$\angle BFD = 50^0$ [$\angle A = 50^0$ (Given)]

Now *BC* is a straight line.

$$\begin{aligned}\angle BDF + \angle FDE + \angle EDC &= 180^0\\ 70^0 + \angle FDE + 60^0 &= 180^0\\ \angle FDE + 130^0 &= 180^0\\ \angle FDE &= \boxed{50^0}\end{aligned}$$

Similarly, $\angle DEF = \boxed{60^0}$

and $\angle EFD = \boxed{70^0}$

Hence the measure of angles are $\boxed{50^0}$, $\boxed{60^0}$ and $\boxed{70^0}$.

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