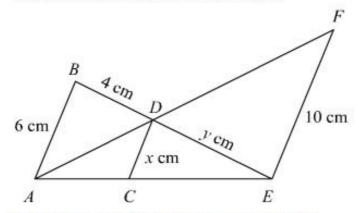


Triangles Ex 4.5 Q17

Answer:

It is given that $AB \parallel CD \parallel EF$.

AB = 6 cm, CD = x cm and EF = 10 cm



We have to calculate the values of x and y.

In $\triangle ADB$ and $\triangle DEF$, we have

$$\angle ADB = \angle EDF$$

 $\angle ADB = \angle EDF$ (Vertically opposite angles)

$$\Rightarrow \angle ABD = \angle DEF$$

 $\Rightarrow \angle ABD = \angle DEF$ (Alternate interior angles)

So $\triangle ADB \sim \triangle DEF$

$$\frac{EF}{AB} = \frac{OE}{OB}$$

$$\frac{10\text{cm}}{6\text{cm}} = \frac{y}{4\text{cm}}$$

$$6\text{cm} \times y = 40\text{cm}$$

$$y = \frac{40 \text{cm}}{6 \text{cm}}$$

$$y = 6.67$$
cm

Similarly in $\triangle ABE$ we have

$$\frac{OC}{AB} = \frac{OE}{OB}$$

$$\frac{4}{6.7}$$
 cm = $\frac{x}{6}$ cm

$$6.7 \text{cm} \times x = 6 \text{cm} \times 4 \text{cm}$$

$$x = \frac{24}{6.7}$$
 cm

$$x = 3.78$$
cm

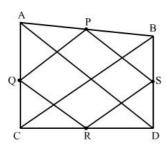
Hence x = 3.78cm and y = 6.67cm

Triangles Ex 4.5 Q18

Answer:

Given:

ABCD is quadrilateral in which AD = BC and P, Q, R, S are the mid points of AB, AC, CD, BD respectively.



To Prove:

PQRS is a rhombus.

Proof:

In \triangle ABC, P and Q are the midpoints of the sides AB and AC respectively.

By the Mid point theorem, we get

PQ || BC and PQ =
$$\frac{1}{2}$$
BC

...(1)

In $\Delta \text{ADC},\, \text{Q}$ and R are the midpoints of the sides AC and DC respectively.

By the Mid point theorem, we get QR || AD and QR =
$$\frac{1}{2}$$
AD = $\frac{1}{2}$ BC (Since AD = BC) ...(2)

RS || BC and RS =
$$\frac{1}{2}$$
BC ...(3)

In Δ BAD, we have

PS || AD and PS =
$$\frac{1}{2}$$
AD = $\frac{1}{2}$ BC (Since AD = BC) ...(4)

From the equations (1), (2), (3), (4), we get

Thus, PQRS is a rhombus.

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