Areas of Parallelograms and Triangles Ex 15.2 Q4

Answer :

Given: Here in the question it is given that

(1) ABCD is a Parallelogram

To Prove :

(1) Area of $\Delta ADC = \frac{1}{2}\left(area\ of\ \|^{gm}\ ABCD\right)$

(2) Area of $\Delta BCD = \frac{1}{2}\left(area\ of\ \|^{gm}\ ABCD\right)$

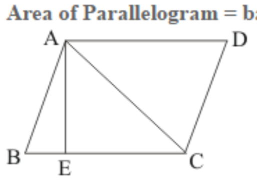
(3) Area of $\Delta ABC = \frac{1}{2}\left(area\ of\ \|^{gm}\ ABCD\right)$

(4) Area of $\Delta ABD = \frac{1}{2}\left(area\ of\ \|^{gm}\ ABCD\right)$

Construction: Draw $AE \perp CD$

Calculation: We know that formula for calculating the

Area of Parallelogram = base × height



Area of paralleogram ABCD = BC × AE (Taking base as BC and Height as AE ……(1)

We know that formula for calculating the

$$\text{Area of } \Delta = \frac{1}{2} \text{base} \times \text{ height}$$

$$\text{Area of } \Delta \text{ADC} = \frac{1}{2} \text{Base} \times \text{Height}$$

$$= \frac{1}{2} \text{AD} \times \text{ AE (AD is the base of } \Delta\text{ADC and AE is the height of } \Delta\text{ADC)}$$

$$= \frac{1}{2} \text{Area of Parallelogram ABCD (from equation1)}$$

$$\boxed{\text{Area of } \Delta\text{ADC} = \frac{1}{2}\left(\text{area of} \,||\, ^{gm}\text{ABCD}\right)}$$

Hence we get the result $\boxed{\text{Area of } \Delta\text{ADC} = \frac{1}{2}\left(\text{area of} \,||\, ^{gm}\text{ABCD}\right)}$

Similarly we can show that

(2) Area of $\Delta\text{BCD} = \frac{1}{2}\left(\text{area of} \,||\, ^{gm}\text{ABCD}\right)$

(3) Area of $\Delta\text{ABC} = \frac{1}{2}\left(\text{area of} \,||\, ^{gm}\text{ABCD}\right)$

(4) Area of $\Delta\text{ABD} = \frac{1}{2}\left(\text{area of} \,||\, ^{gm}\text{ABCD}\right)$

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