UDAAN

2025

Triangles

Mathematics | Lecture - 01

By – Ritik Sir

Topics *to be covered*

1. Basic Proportionality Theorem **(Thales Theorem)**
2. Converse of Basic Proportionality Theorem

Date

A) 6-8 (60%)

B) 9-12 (20%)

C) 12-15 (10%)

D) Is very bad. (10%)

A) 6 (54%)

B) 7 (14%)

C) 8 (26%)

A) 12:00 (40%)

B) 2:00 (20%)

C) 3:00

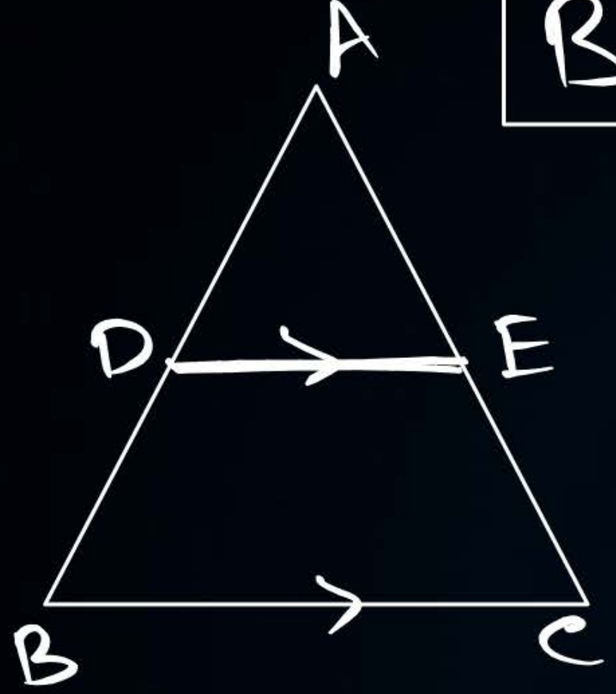
D) 4:00

WORK HARD
DREAM BIG
NEVER GIVE UP !!

Basic Proportionality theorem.

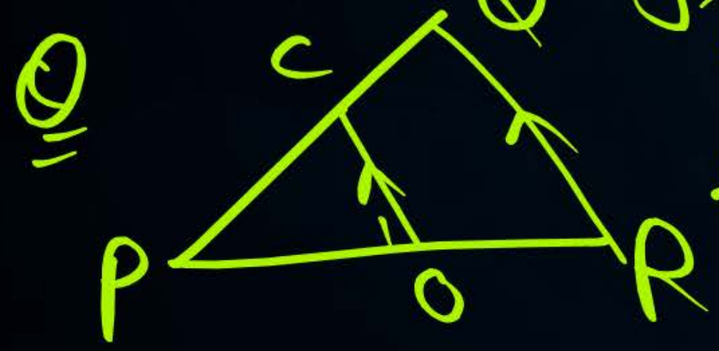
(Thale's theorem)

(Thala7 ❤)



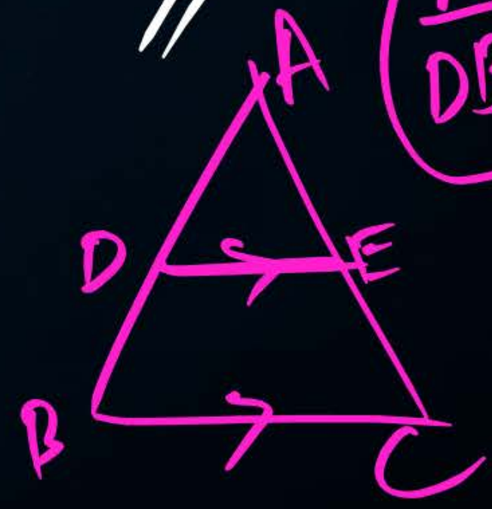
If (Agar) $DE \parallel BC$

then, (toh) $\frac{AD}{DB} = \frac{AE}{EC}$



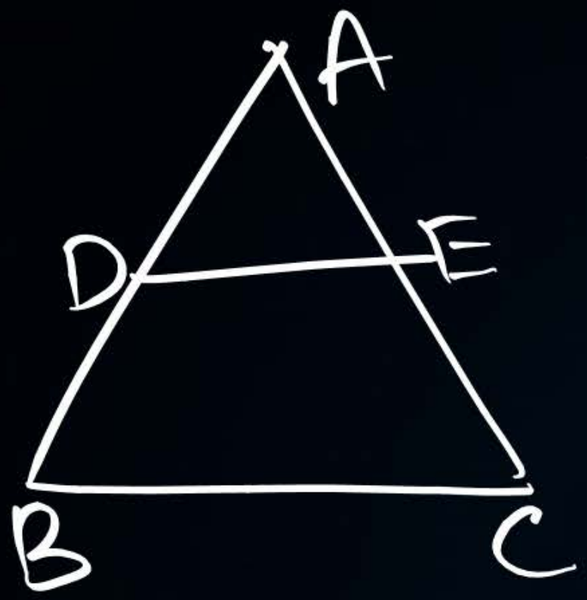
If, $OC \parallel RQ$

then, $\frac{PO}{OR} = \frac{PC}{CQ}$



$\frac{AD}{DB} = \frac{EC}{AE}$

False



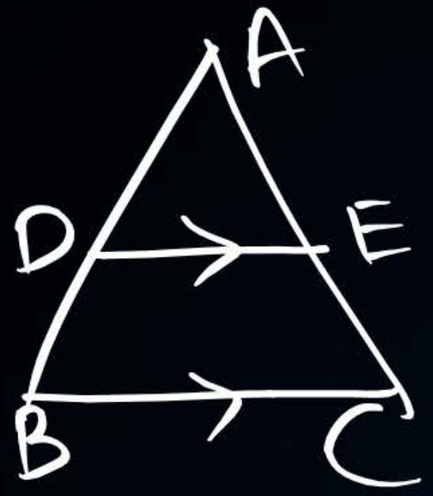
$DE \parallel BC$

(1) $\frac{AD}{DB} = \frac{AE}{EC}$

(2) $\frac{AD}{AB} = \frac{AE}{AC}$

(3) $\frac{DB}{AB} = \frac{EC}{AC}$

B.P.T



To prove: $\frac{AD}{AB} = \frac{AE}{AC}$

Since $DE \parallel BC$

By B.P.T

$$\frac{AD}{DB} = \frac{AE}{EC}$$

$$\frac{DB}{AD} = \frac{EC}{AE}$$

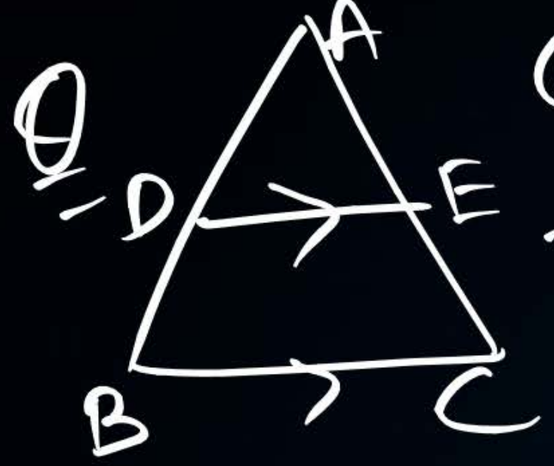
$$\frac{DB}{AD} + 1 = \frac{EC}{AE} + 1$$

Add (1) both sides.

$$\frac{DB+AD}{AD} = \frac{EC+AE}{AE}$$

$$\frac{AB}{AD} = \frac{AC}{AE}$$

$$\frac{AD}{AB} = \frac{AE}{AC}$$



G: $DE \parallel BC$

To P: $\frac{DB}{AB} = \frac{EC}{AC}$

Since $DE \parallel BC$

$\therefore$ By B.P.T

$$\frac{AD}{DB} = \frac{AE}{EC}$$

$$\frac{AD}{DB} + 1 = \frac{AE}{EC} + \frac{1}{1}$$

$$\frac{AD+DB}{DB} = \frac{AE+EC}{EC}$$

$$\frac{AB}{DB} = \frac{AC}{EC}$$

$$\frac{DB}{AB} = \frac{EC}{AC}$$

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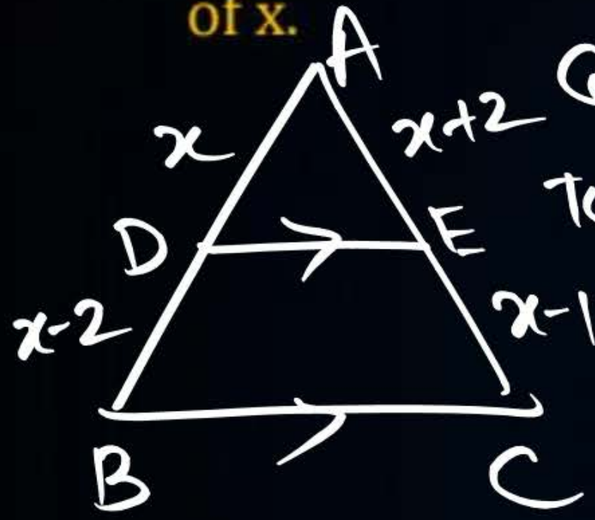
Topic : BPT

#Q. In fig. DE || BC. If AD = x, DB = x – 2, AE = x + 2 and EC = x – 1, find the value of x.



G: DE || BC

To find: x

Sol: DE || BC

By Thale's theorem-.

$$\frac{AD}{DB} = \frac{AE}{EC}$$

$$\frac{x}{x-2} = \frac{x+2}{x-1}$$

$$x(x-1) = (x-2)(x+2)$$

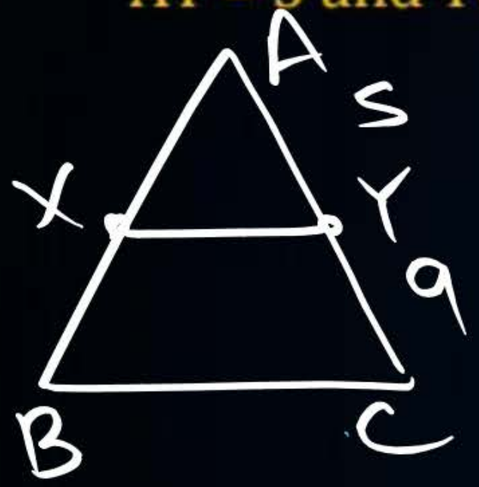
$$x^2 - x = x^2 - 4$$

$$x = 4$$

Topic : BPT

#Q. In ΔABC, if X and Y are points on AB and AC respectively such that $\frac{AX}{XB} = \frac{3}{4}$, AY = 5 and YC = 9, then state whether XY and BC parallel or not.

[CBSE Term – 1, 2015, 2016]



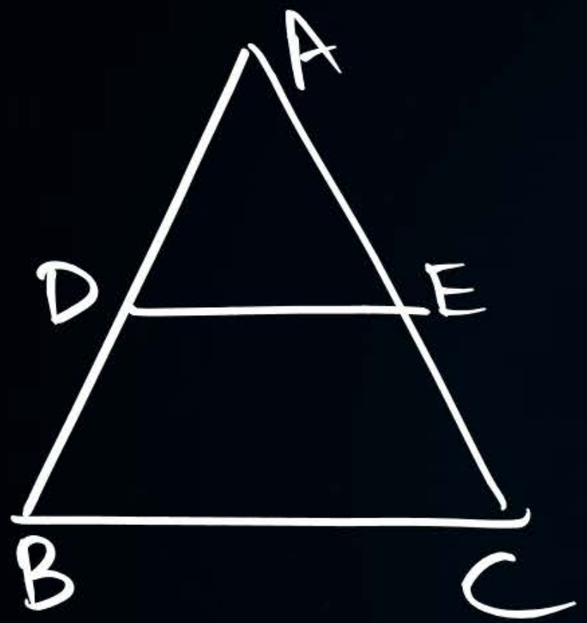
$\frac{AX}{XB} = 3/4$

$\frac{AY}{YC} = \frac{5}{9}$

$\frac{AX}{XB} \neq \frac{AY}{YC}$

not parallel

Converse of B.P.T



If, (Aqaa) $\frac{AD}{DB} = \frac{AE}{EC}$

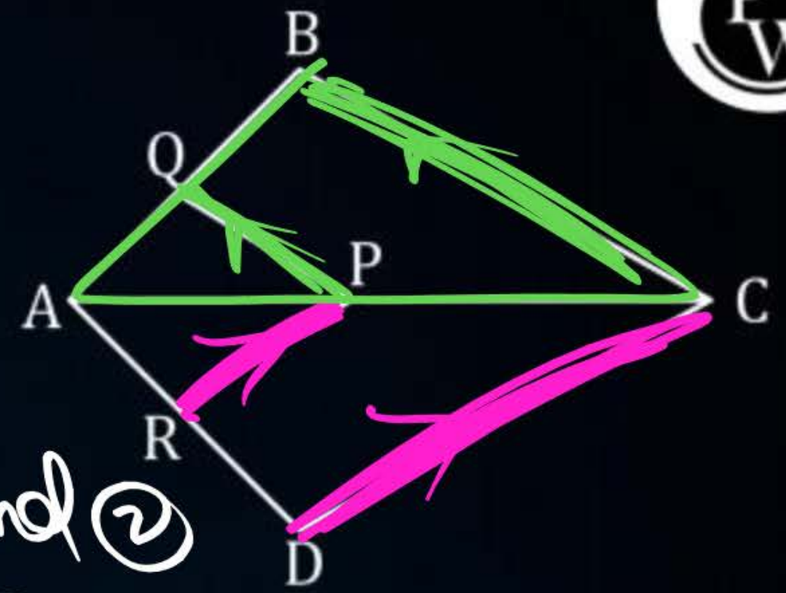
then, (toh) DE || BC

Topic : BPT

#Q. In fig. PQ || BC and PR || CD. Prove that

(i) $\frac{AR}{AD} = \frac{AQ}{AB}$

(ii) $\frac{QB}{AQ} = \frac{DR}{AR}$ ①



PQ || BC

PR || CD

By BPT

$\frac{AP}{AC} = \frac{AQ}{AB}$ ①

$\frac{AR}{AD} = \frac{AP}{AC}$ ②

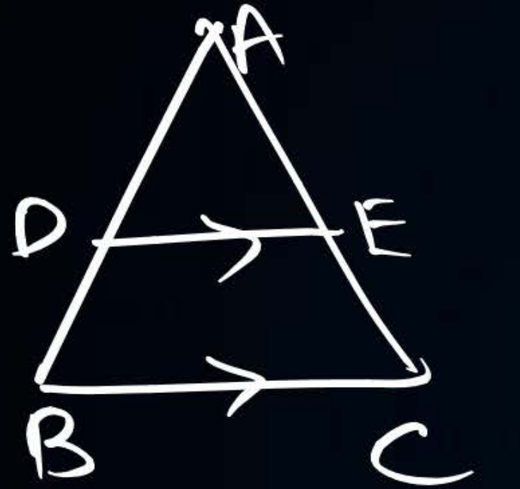
From ① and ②

$\frac{AR}{AD} = \frac{AQ}{AB}$

Topic : BPT

#Q. In fig. DE || BC and CD || EF. Prove that $AD^2 = AB \times AF$.

[CBSE 2007]

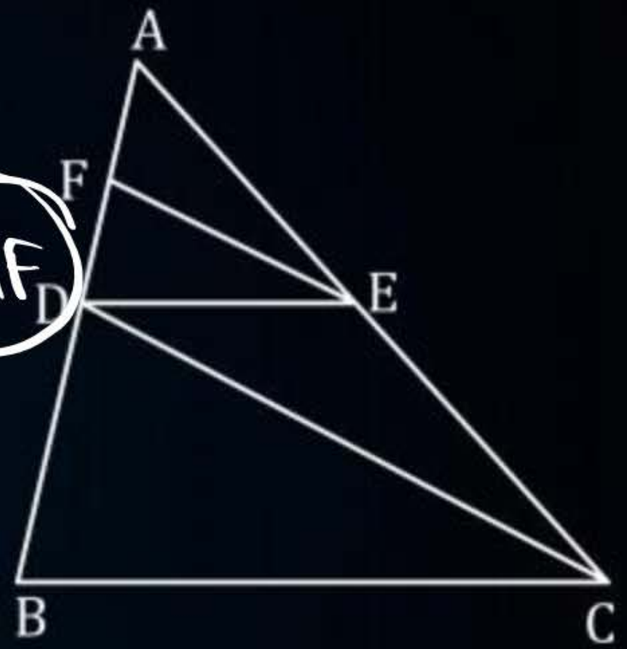


$\frac{AD}{AB} = \frac{AE}{AC}$ ①

$\frac{AF}{AD} = \frac{AE}{AC}$ ②

$\therefore \frac{AD}{AB} = \frac{AF}{AD}$

$AD^2 = AB \times AF$

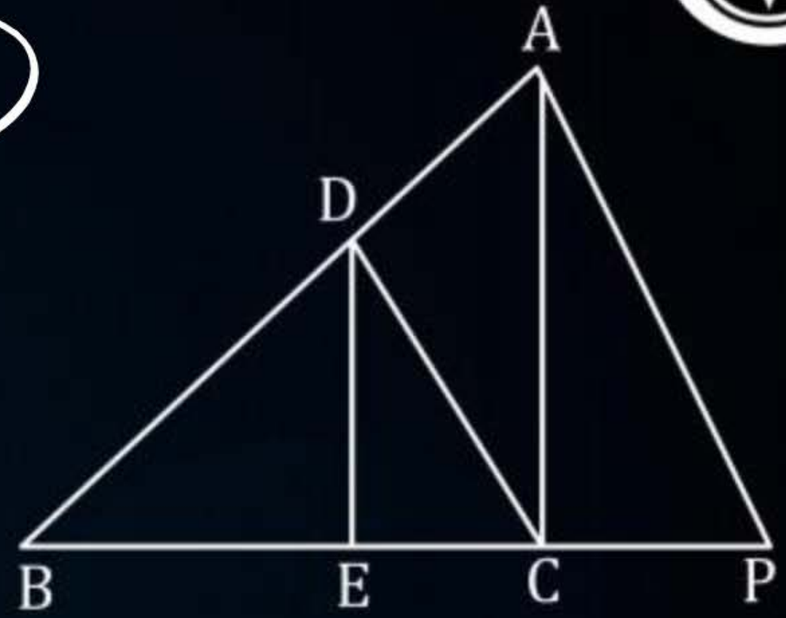


Topic : BPT

#Q. DE || AC and DC || AP, prove that $\frac{BE}{EC} = \frac{BC}{CP}$

Hw

I will be ∴ you.



Homework

DPP → today

next class wait.

THANK YOU