Topic

Basic Proportionality Theorem for Triangle

Objective

To verify the basic proportionality theorem by using parallel lines board, triangle cut outs.

Basic Proportionality Theorem

If a line is drawn parallel to one side of a triangle, to intersect the other two sides at distinct points, the other two sides are divided in the same ratio.

Previous Knowledge Required

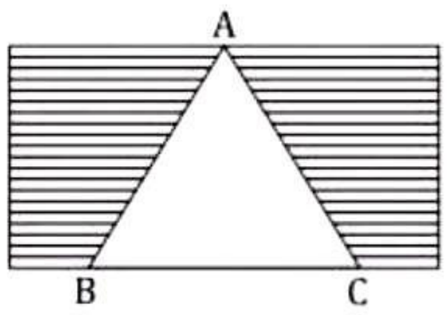
1. Statement of Basic Proportionality theorem.
2. Drawing a line parallel to a given line which passes through a given point.

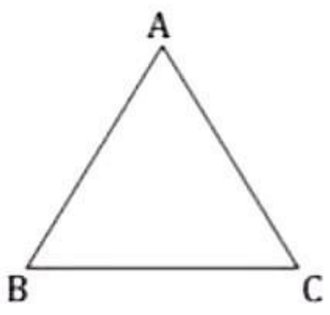
Material Required

White chart paper, colored papers, geometry box, sketch pens, fevicol, a pair of scissors, ruled paper sheet (or Parallel line board).

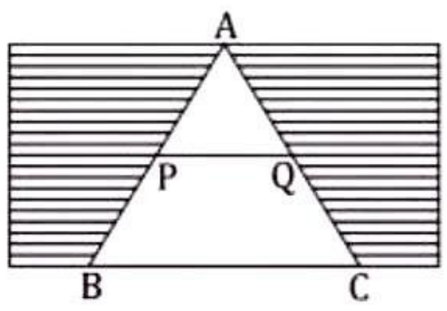
Procedure

1. Cut an acute-angled triangle say ABC from coloured paper.
2. Paste the ΔABC on ruled sheet such that the base of the triangle coincides the ruled line.





3. Mark two points P and Q on AB and AC such that PQ || BC.



4. Using a ruler measure the length of AP, PB, AQ and QC.
5. Repeat the same for the right-angled triangle and obtuse-angled triangle.
6. Now complete the following observation table.

Observation

Triangle ABC	Length of the segment				$\frac{AP}{PB}$	$\frac{AQ}{QC}$	Equal / Not equal
	AP	PB	AQ	QC			
Acute							
Obtuse							
Right							

Result

In each set of triangles, we verified that $\frac{AP}{PB} = \frac{AQ}{QC}$

Learning Outcome

Students will observe that in all three triangles the Basic Proportionality theorem is verified.

Activity time

1. Find x if DE | | BC [See Fig. (i)]

2. Is PQ | | AB? [See Fig. (ii)]

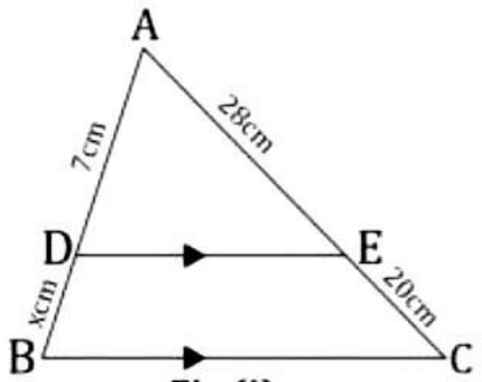


Fig.(i)

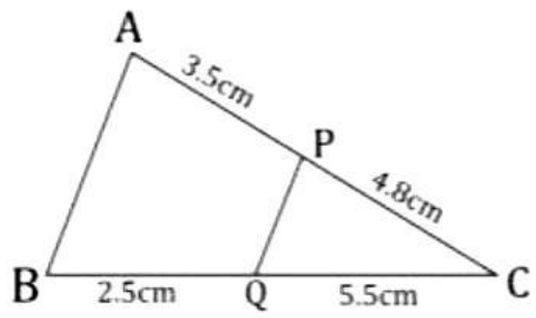


Fig.(ii)

3. Find x if PQ | | BC [See Fig. (iii)]

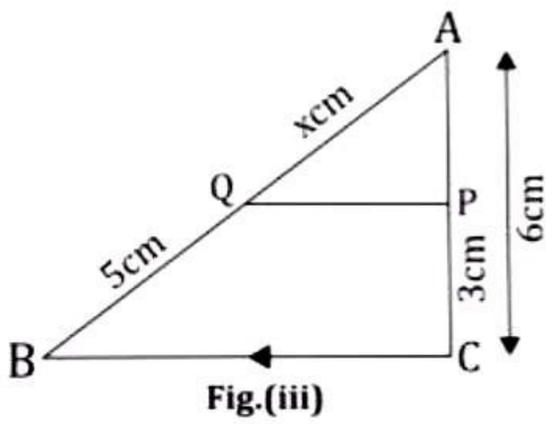


Fig.(iii)

VIVA VOCE

Q 1. Is there any other name for B.P.T. (Basic Proportionality Theorem)?

Ans. Yes, Thales Theorem.

Q 2. Name the mathematician who gave B.P.T.

Ans. Greek mathematician Thales

Q 3. What is the statement of B.P.T.?

Ans. If a line is drawn parallel to one side of a triangle to intersect the other two sides at distinct points, the other two sides are divided in the same ratio.

Q 4. What is the converse of B.P.T.?

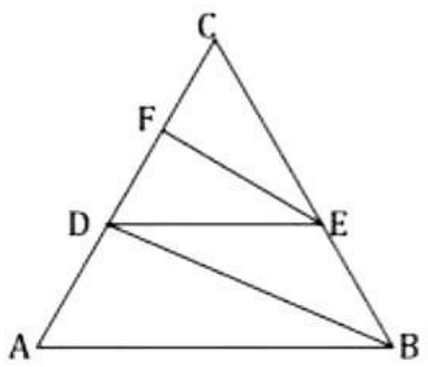
Ans. If a line divides any two sides of a triangle in the same ratio, the line is parallel to the third side of the triangle.

Q 5. Is the B.P.T. applicable for a scalene triangle?

Ans. Yes

MULTIPLE CHOICE QUESTIONS

Q 1. In the given Fig., AB || DE and BD || EF. Find the correct relation.

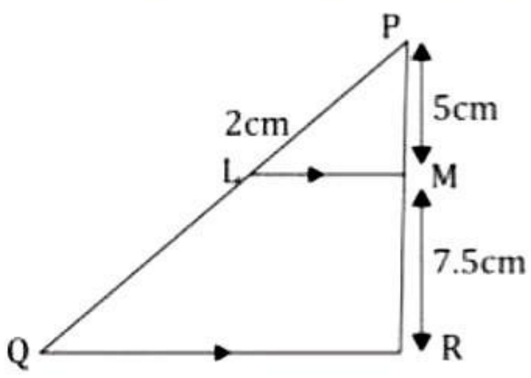


(a) $DC^2 = CF \times AC$ (b) $CF^2 = DC \times AC$ (c) $AC^2 = DC \times CF$ (d) None of these

Q 2. In ΔABC, if DE || BC, AD = 3.2, DB = 1.6, AE = x and EC = 2.1, then x is:

(a) 4.2 (b) 3.2 (c) 1.6 (d) 4.8

Q 3. In the given Fig., LM || QR. Find LQ.

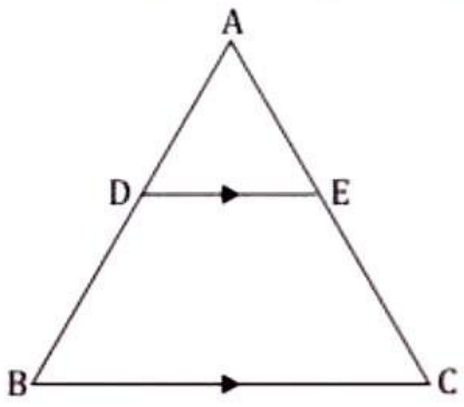


(a) 3.1 cm (b) 2.5 cm (c) 3 cm (d) None of these

Q 4. $\triangle ABC \sim \triangle PQR, \angle B = 50^\circ$ and $\angle C = 70^\circ$ then $\angle P$ is equal to:

(a) 50° (b) 60° (c) 40° (d) 70°

Q 5. In the given Fig., DE || BC. If $\frac{AE}{AC} = \frac{2}{5}$ and AB = 15 cm, find AD.



(a) 6 cm (b) 5 cm (c) 4 cm (d) 7 cm

Answer Key

1.(a)	2.(a)	3.(c)	4.(b)	5.(a)