

# Triangle (X), Part-1

15. If a line is drawn parallel to one side of a triangle it divides the other two sides proportionally. Prove it. Use the above to solve the following.

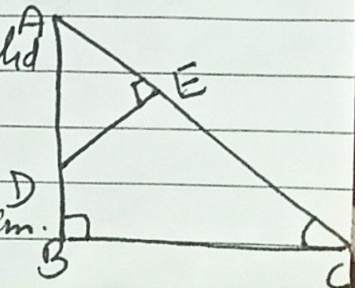
In  $\triangle ABC$ ,  $DE \parallel BC$  and  $\frac{AD}{DB} = \frac{3}{5}$ , if  $AC = 4.8$  find  $AE$

Ans: 1.8 cm.

15. Through the mid-point  $M$  of the <sup>side</sup>  $CD$  of a parallelogram  $ABCD$ , the line  $BM$  is drawn intersecting  $AC$  in  $L$  and  $AD$  produced in  $E$ .

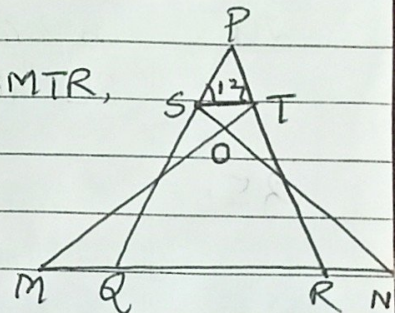
Prove that  $EL = 2BL$

16. In the given figure,  $ABC$  is a right-angled triangle at  $B$  and  $D$  is a point on  $AB$  such that  $AD = 5$  cm. If  $DE \perp AC$ , such that  $AE = 4$  cm,  $EC = 6$  cm and  $BC = 6$  cm. Find  $DE$ .



Ans:  $DE = 3$  cm.

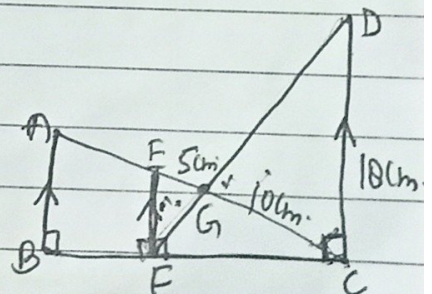
17. In the figure, if  $\angle 1 = \angle 2$  and  $\triangle NSQ \cong \triangle MTR$ , then prove that  $\triangle PTS \sim \triangle PRQ$



18. Given  $\triangle ABC \sim \triangle XYZ$ ,  $\angle A = 50^\circ$ ,  $\angle X = (2x + 5y)^\circ$ ,  $\angle Z = (5x + y)^\circ$  and  $\angle B = (102 - x)^\circ$ , find  $\angle Z = \underline{\hspace{2cm}}$ . Ans:  $\angle Z = 33^\circ$

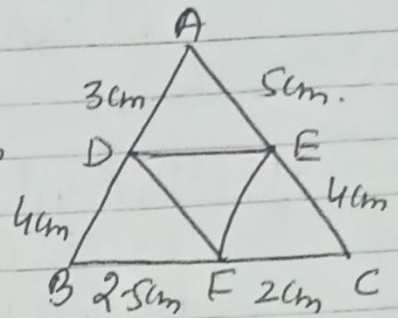
19. Through the mid-point  $M$  of the side  $CD$  of a parallelogram  $ABCD$ , the line  $BM$  is drawn, intersecting  $AC$  in  $L$  and  $AD$  produced in  $E$ . Prove that  $EL = 2BL$

20. In figure,  $AB$ ,  $EF$  and  $CD$  are parallel lines. Given that  $EG = 5$  cm,  $GC = 10$  cm and  $DC = 18$  cm. Find the length of  $EF$



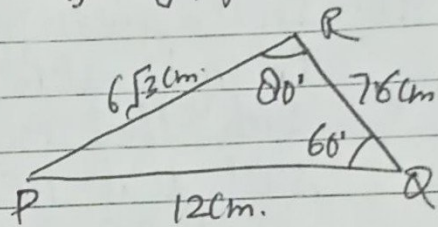
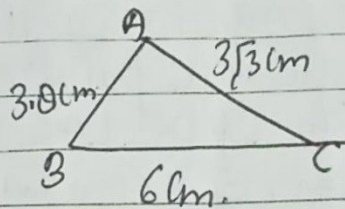
21. X and y are points on the sides AB and AC respectively of a  $\triangle ABC$  such that  $\frac{AX}{AB} = \frac{1}{4}$ ,  $AY = 2\text{cm}$  and  $YC = 6\text{cm}$ . Find whether  $XY \parallel BC$  or not.

22. In the given figure,  $AD = 3\text{cm}$ ,  $AE = 5\text{cm}$ ,  $BD = 4\text{cm}$ ,  $CE = 4\text{cm}$ ,  $CF = 2\text{cm}$ ,  $BF = 2.5\text{cm}$ . Find the pair of parallel lines and hence their lengths.



Ans  $EF = \frac{20}{9}\text{cm}$ .

23.  $\triangle ABC$  and  $\triangle PQR$  are shown in the adjoining figure. The measure of  $\angle C$ .



Ans  $40^\circ$ .

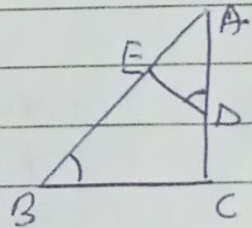
24. In parallelogram ABCD, side AD is produced to a point E and BE intersects CD at F. Prove that  $\triangle ABE \sim \triangle CFB$ .

25. D is a point on the side BC of  $\triangle ABC$  such that  $\angle ADC = \angle BAC$ . Show that  $CA^2 = CB \times CD$ .

26. In  $\triangle ABC$ , if  $\angle ADE = \angle B$  then prove that  $\triangle ADE \sim \triangle ABC$ . Also if  $AD = 7.6\text{cm}$

$AE = 7.2\text{cm}$ ,  $BE = 4.2\text{cm}$  and  $BC = 8.4\text{cm}$  find DE

Ans  $5.6\text{cm}$ .



27. In the given figure  $\angle AFE = \angle AEF$  and E is the mid point of CA. Prove that  $\frac{BD}{CD} = \frac{BF}{CE}$

