TRIANGLES

CLASS X (BASIC & STANDARD)

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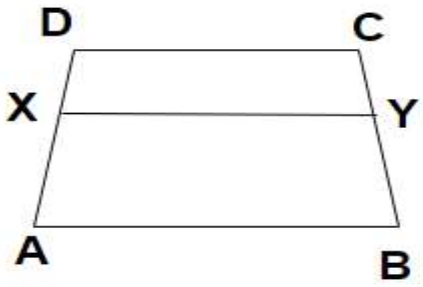
1 Which of the following statements is false? CBSE 2025 AJMER

(A) Two right triangles are always similar.
(B) Two squares are always similar.
(C) Two equilateral triangles are always similar.
(D) Two circles are always similar.

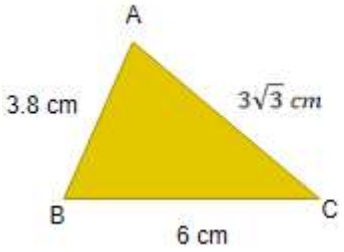
2 In the adjoining figure, ABCD is a trapezium in which $XY \parallel AB \parallel CD$. If $AX = \frac{2}{3}AD$, then $CY:YB =$_____ CBSE 2025 AJMER

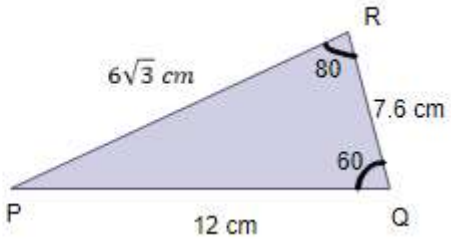


(A) 2: 3 (B) 3: 2
(C) 1: 3 (D) 1: 2

3 ΔABC and ΔPQR are shown in the adjoining figure. $\angle C = is$ _____ CBSE 2025 DELHI

(A) 140° (B) 80° (C) 60° (D) 40°





4 E and F are points on sides AB and AC respectively of a triangle ABC such that $\frac{AE}{EB} = \frac{AF}{FC} = \frac{1}{2}$, which of the following relation is true. CBSE 2025 DELHI

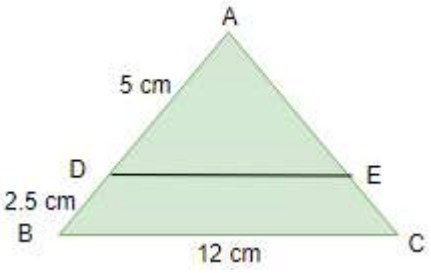
(A) $EF = 2\,BC$ (B) $BC = 2\,EF$
(C) $EF = 3\,BC$ (D) $BC = 3\,EF$

5 If in two triangles ABC and PQR, $\frac{AB}{QR} = \frac{BC}{PR} = \frac{CA}{PQ}$, then

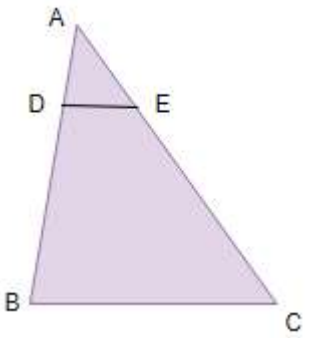
(A) $\Delta PQR \sim \Delta CAB$ (B) $\Delta PQR \sim \Delta ABC$
(C) $\Delta CBA \sim \Delta PQR$ (D) $\Delta BCA \sim \Delta PQR$

6 In the given figure, ΔABC is shown. $DE \parallel BC$. If $AD = 5\ cm, DB = 2.5\ cm$ and $BC = 12cm$ then $DE =$ ____

(A) 10 cm (B) 6 cm
(C) 8 cm (D) 7.5 cm



7 In figure, D and E are points on AB and AC respectively, such that DE || BC. If AD = $\frac{1}{3}$ BD, AE = 4.5 cm, find AC.

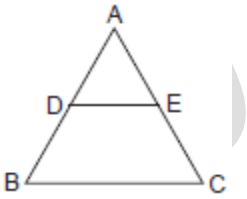


(A) 13.5 cm (B) 9 cm
(C) 18 cm (D) None of this

18 D and E are respectively the points on the sides AB and AC of a triangle ABC such that AD = 2 cm, BD = 3 cm, BC = 7.5 cm and DE ∥ BC. Then, length of DE (in cm) is ____

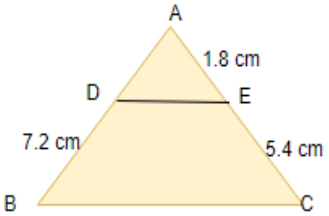
(A) 2.5 (B) 3 (C) 5 (D) 6

9 In the given figure, $\frac{AD}{BD} = \frac{AE}{EC}$ and ∠ ADE = 70°, ∠ BAC = 50°, then angle ∠ BCA =



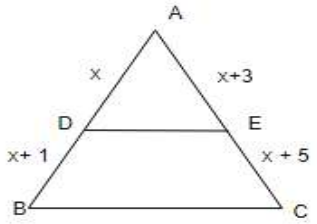
(A) 70° (B) 50° (C) 80° (D) 60°

10 In the given figure, Δ ABC given DE || B.C, Find AD.

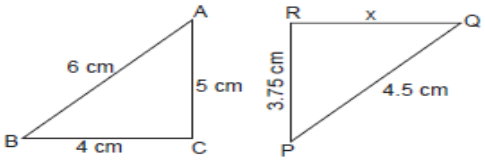


(A) 2.4 (B) 4.2
(C) 2.2 (D) 1.2

11 In Δ $ABC, DE \parallel BC$, find the value of x.

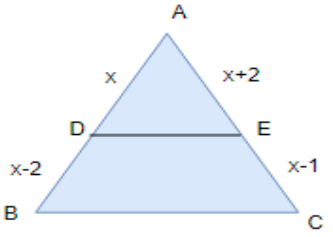


12 In the given figure, if ΔABC ~ ΔPQR The value of x is_____.



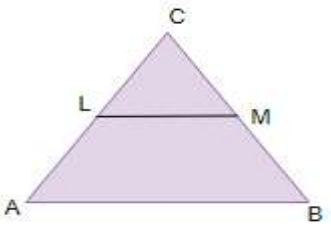
(A) 10 (B) 3.5 (C) 4.5 (D) 3

13 Given that in Δ ABC , $DE \parallel BC$, find the value of x .



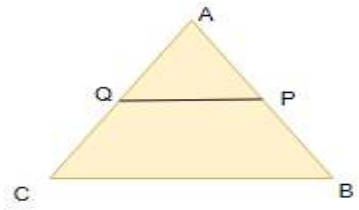
(A) 2 (B) 3 (C) 4 (D) 6

14 In the figure, $LM \parallel AB$. If $AL = x - 3, AC = 2x, BM = x - 2$
$BC = 2x + 3$, find the length of AC



A) 9 (B) 11 (C) 18 (D) 6

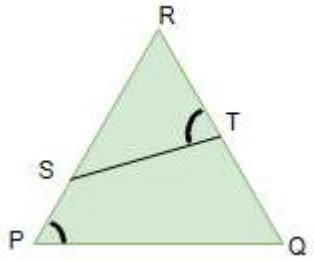
15 In the fig., P and Q are points on the sides AB and AC respectively of ΔABC such that AP = 3.5 cm, PB = 7 cm, AQ = 3 cm and QC = 6 cm. I f PQ = 4.5 cm, find BC.



16 In the figure, $\angle P = \angle RTS$. Which one of the following is true?

(A) $\Delta RPQ \cong \Delta RTS$ (B) $\Delta RQP \cong \Delta RTS$

(C) $\Delta RPQ \cong \Delta RST$ (D) $\Delta PQR \cong \Delta RTS$



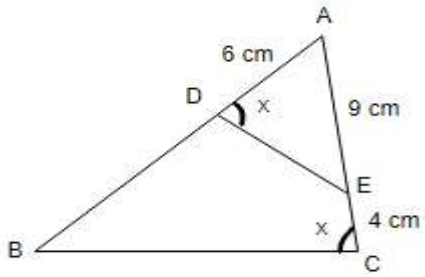
17 In triangles ABC and DEF, $\frac{AB}{DE} = \frac{BC}{FD}$, then they will be similar, when

(A) ∠ B = ∠ E (B) ∠ A = ∠ D (C) ∠ B = ∠ D (D) ∠ A = ∠ F

18 In the given figure, $AD = 6\ cm, AE = 9\ cm$ and $= 4\ cm$, then value of $2BD =$ _____.

(A) 9 cm (B) 18 cm

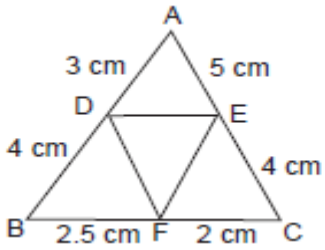
(C) 27 cm (D) 36 cm



19 In given figure, AD = 3 cm, AE = 5 cm, BD = 4 cm, CE = 4 cm, CF = 2 cm, BF = 2.5 cm, then

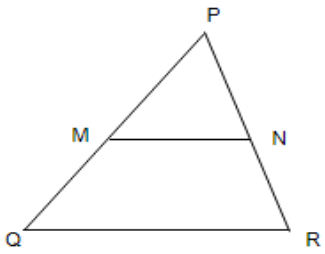
(A) DE || BC (B) DF || AC

(C) EF || AB (D) none of these



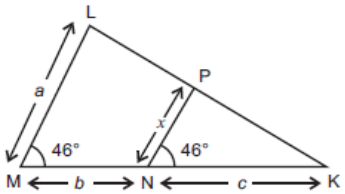
20 In the given figure, MN || QR and PM = 3 cm, MQ = 4 cm, PN = 6 cm, PR = x cm, then x = _____.

(A) 6 (B) 8 (C) 14 (D) 4

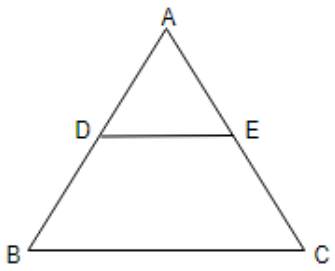


21 The perimeter of two similar triangles ABC and LMN are 60 cm and 48 cm respectively. If LM = 8 cm, then what is the length of AB ?

22 In fig. ∠ M = ∠ N = 46°, express *x* in terms of *a*, *b* and *c*, where *a*, *b* and *c* are lengths of LM, MN and NK respectively

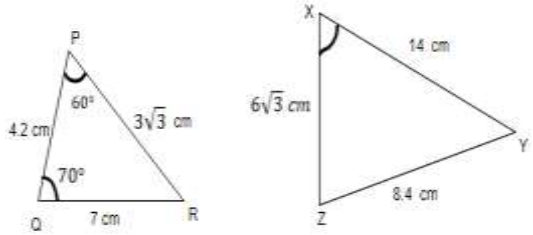


23 In ΔABC , DE || BC. If $\frac{AD}{DB} = \frac{3}{5}$, $AC = 5.6\ cm$ then AE =___



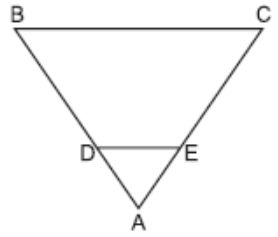
A) 3.5 cm B) 2.1 cm
C) 3 cm D) 4 cm

24 In the given figure, find the measure of $\angle X$.

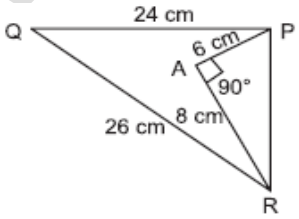


A) 70° B) 60°
C) 40° D) 50°

25 In figure, DE || BC in ΔABC such that BC = 8 cm, AB = 6 cm and DA = 1.5 cm. Find DE

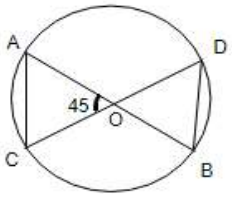


26 In the fig., PQ = 24 cm, QR = 26 cm, ∠ PAR = 90°, PA = 6 cm and AR = 8 cm. Find ∠ QPR.

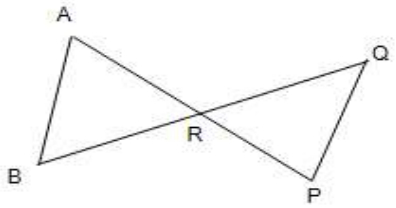


27 O is the point of intersection of two chords AB and CD such that OB = OD, then triangles OAC and ODB are_____.

A) equilateral but not similar B) isosceles but not similar
C) equilateral and similar D) isosceles and similar



28 In the figure $\Delta ABR \sim \Delta PQR$,If PQ= 30 cm, AR = 45 cm, AP = 72 cm and QR = 42 cm the BR = _____

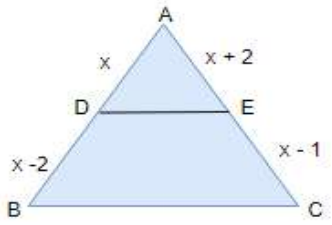


(A) 27 cm (B) 70 cm
(C) 45 cm (D) 42 cm

29 In Δ ABC, D and E are points on the sides AB and AC respectively, such that DE || BC. If $AD = x$, $DB = x - 2, AE = x + 2$ and $EC = x - 1$, the value of *x* is _____.

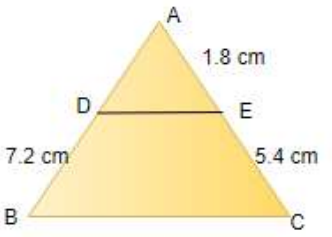
(A) 1 (B) 2 (C) 3 (D) 4

30 In ΔABC, D and E are points on the sides AB and AC respectively, such that DE || BC. If $D = x, DB = x - 2,$ $AE = x + 2$ *and* $EC = x - 1$, Find the value of *x*.



(A) 1 (B) 2
(C) 3 (D) 4

31 In the given figure, DE || BC, Find AD.



32 If in triangles ABC and DEF, $\frac{AB}{DE} = \frac{BC}{FD}$, then they will be similar, when _____
(A) $\angle B = \angle E$ (B) $\angle A = \angle D$ (C) $\angle B = \angle D$ (D) $\angle A = \angle F$

33 If Δ ABC and Δ DEF are similar triangles such that ∠ A = 57° and ∠ E = 83°. Find ∠ C.

34 The perimeters of two similar triangles are 25 cm and 15 cm respectively. If one side of first triangle is 9 cm., what is the corresponding side of the other triangle ?

35 The lengths of the diagonals of a rhombus are 30 cm and 40 cm. Find the side of the rhombus.
(A) 10 (B) 20 (C) 25 (D) 15

36 If D is a point on the side BC of a triangle ABC, such that $\angle ADC = \angle BAC$. then $CA^2 = CB \times$ _____
(A) CD (B) CB (C) AC (D) AB

37 In Δ ABC, D and E are points on the sides AB and AC respectively, such that DE || BC. If AD = *x*, DB = *x* – 2, AE = *x* + 2 and EC = *x* – 1, the value of *x* is _____.
(A) 4 (B) 3 (C) 2 (D) 1

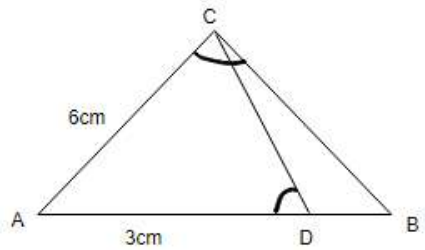
38 The sides of two similar triangles are in the ratio 4 : 7 . The ratio of their perimeters is ___ (CBSE 2023)
(A) 4:7 (B) 12: 21 (C) 16: 49 (D) 7:4

39 If ΔABC and Δ DEF are similar triangles such that ∠ A = 57° and ∠ E = 83°. Then ∠ C = _____
A) 40° B) 57° C) 83° D) 50°

40 In Δ ABC , D and E are points on the sides AB and AC respectively, such that DE ‖ BC. If AD = x , DB = $x - 2$,AE = $x + 2$ and EC = $x - 1$ then $x =$ _____
(A) 2 (B) 3 (C) 4 (D) 6

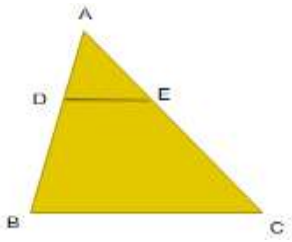
41 In Δ ABC , D and E are points on the sides AB and AC respectively, such that DE ‖ BC.
$\frac{AD}{DB} = \frac{4}{13}$ *and* $AC = 20.4\ cm,$ find AE.
(A) 2.2 (B) 4.8 (C) 4.6 (D) 2.4

42 In the figure ∠ ACB = ∠CDA , AC = 6 cm and AD = 3 cm, then AB = _____



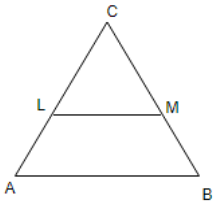
(A) 12 (B) 24 (C) 6 (D) 8

43 In the figure, AD = 6 cm, DB = 9 cm, AE = 8 cm and EC = 12 cm and $\angle ADE = 48°$, find $\angle ABC =$ ___



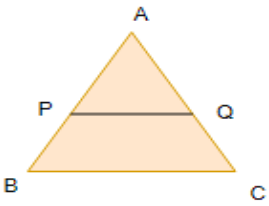
(A) 48° (B) 52° (C) 44°
(D) 58°

44 In the figure , $LM \parallel AB$. If$AL = x - 3, AC = 2x, BM = x - 2$ $BC = 2x + 3$, find the value of x.



(A) 10 (B) 9 (C) 6 (D) 8

45 In Δ ABC , $PQ \parallel BC$, if $AP = 4x - 3, PB = 3x - 1$, $AQ = 8x - 7, QC = 5x - 3$. Find x.



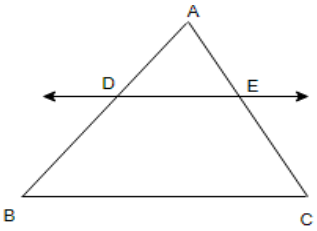
(A) 1 and $\frac{1}{2}$ (B) -1 and 1
(C)1 and $-\frac{1}{2}$ (D) $-\frac{1}{2}$ and $\frac{1}{2}$

46 AD and PS are medians of triangles ABC and PQR respectively such that $\Delta ABD \sim \Delta PQS$. Prove that $\Delta ABC \sim \Delta PQR$.

47 In Δ ABC, D and E are points on the sides AB and AC respectively, such that DE || BC. If AD = *x*, DB = *x* – 2, AE = *x* + 2 and EC = *x* – 1, the value of *x* is _____.

(A) 3 (B) 4 (C) 6 (D) 8

48 In ΔABC , DE || BC. If $\frac{AD}{DB} = \frac{3}{5}$, $AC = 5.6\ cm$ then AE =_____

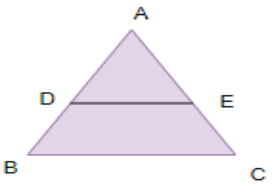


(A) 3.5 cm (B) 2.1 cm
(C) 3 cm (D) 4 cm

49 If in two triangles $ABC\ and\ PQR$, $\frac{AB}{QR} = \frac{BC}{PR} = \frac{CA}{PQ}$, then

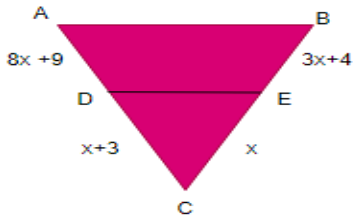
(A) $\Delta PQR \sim \Delta CAB$ (B) $\Delta PQR \sim \Delta ABC$
(C) $\Delta CBA \sim \Delta PQR$ (D) $\Delta BCA \sim \Delta PQR$

50 In the given figure, $\frac{AD}{BD} = \frac{AE}{EC}$ and ∠ ADE = 70°, ∠BAC = 50°, then ∠BCA =

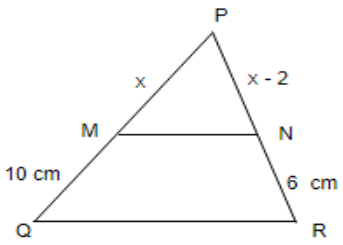


(A) 70° (B) 50° (C) 80° (D) 60°

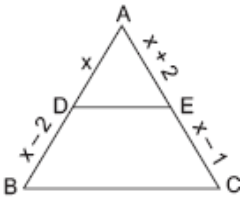
51 In the figure, given DE || AB , then the value of x = _____.



52 In the given figure, MN || QR. If PM = x cm, MQ = 10 cm, PN = (x – 2) cm, NR = 6 cm, then find the value of x.

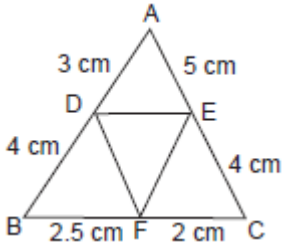


53 In Δ ABC, D and E are points on the sides AB and AC respectively, such that DE || BC. If AD = *x*, DB = *x* – 2, AE = *x* + 2 and EC = *x* – 1, Find the value of *x*.

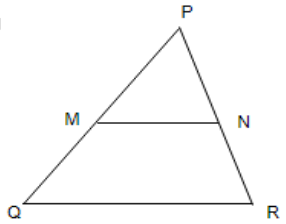


54 If D is a point on the side BC of a triangle ABC, such that $\angle ADC = \angle BAC$. Show that $CA^2 = CB.CD$

55 In given figure, AD = 3 cm, AE = 5 cm, BD = 4 cm, CE = 4 cm, CF = 2 cm, BF = 2.5 cm, then
(A) DE || BC (B) DF || AC (C) EF || AB (D) none of these



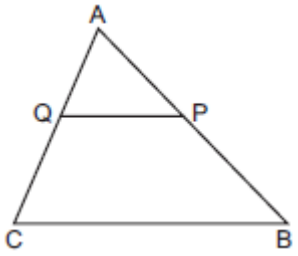
56 In the given figure, MN || QR and PM = 3 cm, MQ = 4 cm, PN = 6 cm, PR = x cm, then x = _____.



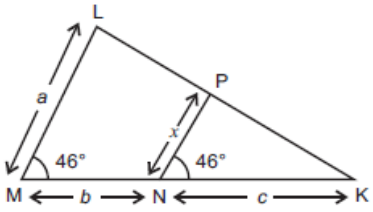
57 If $\Delta ABC \sim \Delta EDF$ and ΔABC *is not similar to* ΔDEF, then which of the following is not true?
(A) $BC.EF = AC.FD$ (B) $AB.EF = AC.DE$
(C) $BC.DE = AB.EF$ (D) $BC.DE = AB.FD$

58 In two triangles DEF *and* $PQR, \angle D = \angle Q$ *and* $\angle R = \angle E$, then which of the following is not true?
A) $\frac{EF}{PR} = \frac{DF}{PQ}$ B) $\frac{DF}{PR} = \frac{EF}{QP}$ C) $\frac{DE}{QR} = \frac{DF}{PQ}$ D) $\frac{EF}{RP} = \frac{DE}{QR}$

59 In the fig., P and Q are points on the sides AB and AC respectively of ΔABC such that AP = 3.5 cm, PB = 7 cm, AQ = 3 cm and QC = 6 cm. I f PQ = 4.5 cm, find BC.



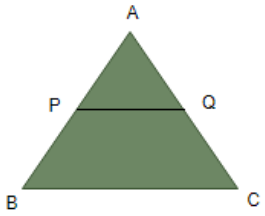
60 In fig. ∠ M = ∠ N = 46°, express *x* in terms of *a*, *b* and *c*, where *a*, *b* and *c* are lengths of LM, MN and NK respectively.



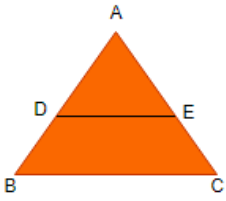
61 A vertical stick 12 m long casts a shadow 8 m long on the ground. At the same time a tower casts the

shadow 40 m long on the ground. Determine the height of the tower.

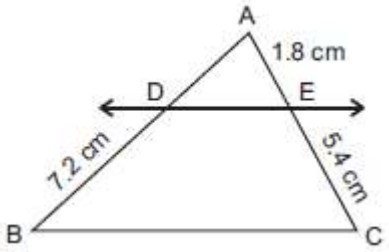
62 In the fig., P and Q are points on the sides AB and AC respectively of ΔABC such that $AP = xcm\,, PB = 10\ cm$ $AQ = (x-2)cm, QC = 6\ cm\ then\ x = ?$



63 In Δ ABC, D and E are points on sides AB and AC respectively such that $DE \,||\, BC$ and $AD : DB$ = 3 : 1. If $EA = 6.6\ cm$ then find AC.

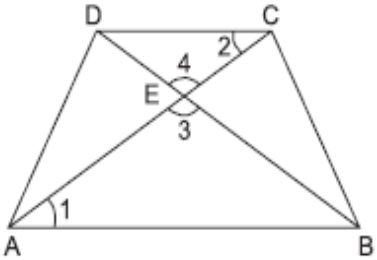


64 In the given figure, DE || B.C. Find AD.

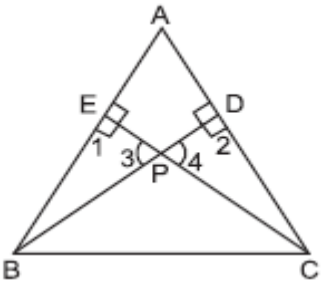


65 The perimeters of two similar triangles are 25 cm and 15 cm respectively. If one side of first triangle is 9 cm., what is the corresponding side of the other triangle ?

66 If one diagonal of a trapezium divides the other diagonal in the ratio 1 : 3. Prove that one of the parallel sides is three times the other.



67 In the given figure, considering triangles BEP and CPD, prove that BP × PD = EP × PC.

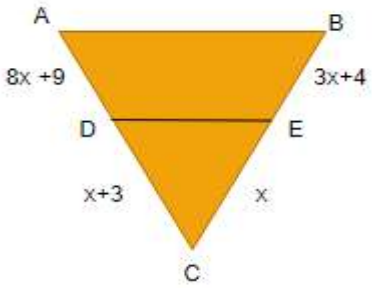


68 In the given figure, ABC is a triangle in which AB = AC, D and E are points on the sides AB and AC respectively, such that AD = AE. Show that the points B, C, E and D are concyclic

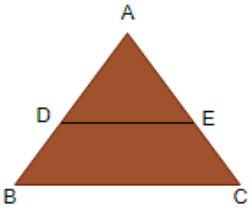
69 In ΔABC, D and E are points on the sides AB and AC respectively, such that DE || BC. If AD = *x*, DB = *x* – 2, AE = *x* + 2 and EC = *x* – 1, Find the value of *x*.

70 If D and E are respectively the points on the side AB and AC of a triangle ABC such that AD = 6 cm, BD = 9 cm, AE = 8 cm and EC = 12 cm, then show that DE || BC.

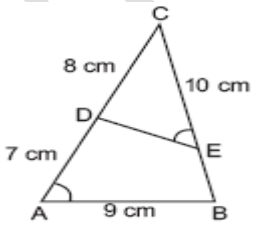
71 What value(s) of *x* will make DE || AB in the given figure?



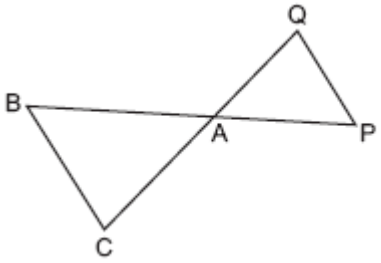
72 In figure, D and E are points on AB and AC respectively, such that DE || BC. If AD = $\frac{1}{3}$ BD, AE = 4.5 cm, find AC.



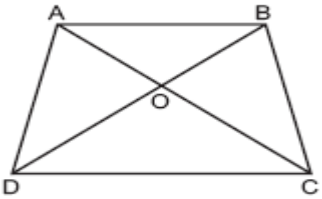
73 In the figure, if ∠ A = ∠ CED, AB = 9 cm, AD = 7 cm, CD = 8 cm and CE = 10 cm. Find DE.



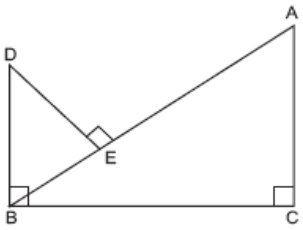
74 In the given figure, ΔACB ~ ΔAQP. If BC = 8 cm, PQ = 4 cm, BA = 6.5 cm. AQ = 2.8 cm, find CA and PA.



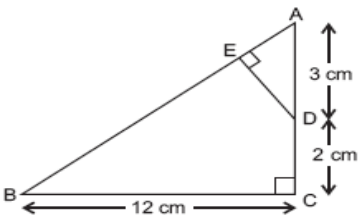
75 In the given figure , $\frac{AO}{OC} = \frac{BO}{OD} = \frac{1}{2}$ and AB = 4 cm. Find the value of DC.



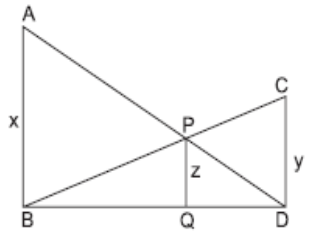
76 In fig., DB ⊥ BC, DE ⊥ AB and AC ⊥ BC. Prove that $\frac{BE}{DE} = \frac{AC}{BC}$



77 In figure, Δ ABC is right angled at C and DE ⊥ AB. Prove that ΔABC ~ ΔADE and hence find the lengths of AE and DE.



78 In figure AB || PQ || CD, AB = x units, CD = y units and PQ = z units, prove that $\frac{1}{x}+\frac{1}{y}=\frac{1}{z}$



79 Match the Following :

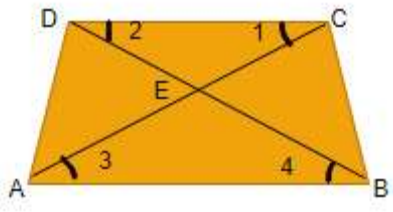
1. In $\Delta ABC \text{ and } \Delta PQR$ $\frac{AB}{PQ}=\frac{AC}{PR}, \angle A = \angle P \Rightarrow \Delta ABC \sim \Delta PQR$	SSS similarity
2. In $\Delta ABC \text{ and } \Delta PQR$ $\angle A = \angle P, \angle B = \angle Q \Rightarrow \Delta ABC \sim \Delta PQR$	SAS similarity
3. In $\Delta ABC \text{ and } \Delta PQR$ $\frac{AB}{PQ}=\frac{AC}{PR}=\frac{BC}{QR} \Rightarrow \Delta ABC \sim \Delta PQR$	Basic Proportionality Theorem (BPT)
4. In $\Delta ABC \;\; DE \parallel BC$ $\Rightarrow \frac{AD}{BD}=\frac{AE}{CE}$	AAA similarity
5. In $\Delta ABC \;\; DE \parallel BC \Rightarrow$ $\frac{AB}{DB}=\frac{AC}{EC}$	

80 D and E are respectively the points on the sides AB and AC of a $\Delta\, ABC$ (fig2) such that $AB = 5.6cm, AD = 1.4\ cm,\ \ AC = 7.2\ cm \text{ and } AE = 1.8\ cm,\ \text{show that } DE \parallel BC$

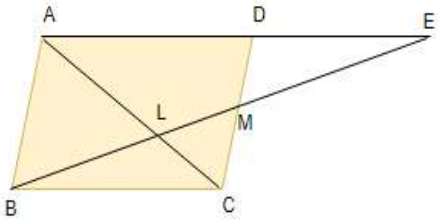
If a line is drawn parallel to one side of a triangle, intersecting the other two sides distinct points then it divides the two sides in the same ratio, prove it.

Also state the converse of the above statement. CBSE 2025 AJMER

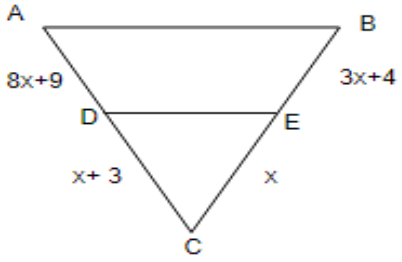
81 In fig $\angle 1 = \angle 3, \angle 2 = \angle 4$, DE = 4, CE = x + 1, AE = 2x + 4; BE = 4x – 2. Find x.



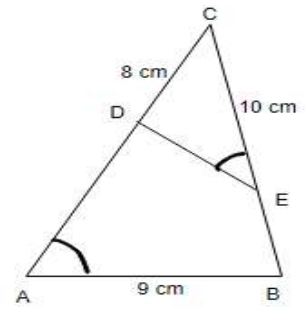
82 In figure, M is mid-point of side CD of a parallelogram ABCD. The line BM is drawn intersecting AC at L and AD produced at E. Prove that $EL = 2BL$.



83 What value(s) of x will make DE || AB in the given figure?



84 b) In the figure, if $\angle A = \angle CED, AB = 9\ cm, AD = 7\ cm,$
$CD = 8\ cm\ and\ CE = 10\ cm$. Find DE.



85 In the figure, $PQ \parallel XY \parallel SR$. Show that $\frac{PX}{XS} = \frac{QY}{YR}$