EduSahara™ Assignment

Name : Problems on Proportionality

Chapter : Similarity

Grade : ICSE Grade IX

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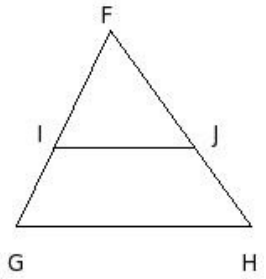
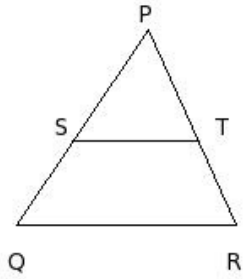
1. In the given figure, $IJ \parallel GH$. If $\frac{FI}{IG} = \frac{3}{2}$ and $FH = 14.7$ cm, find FJ



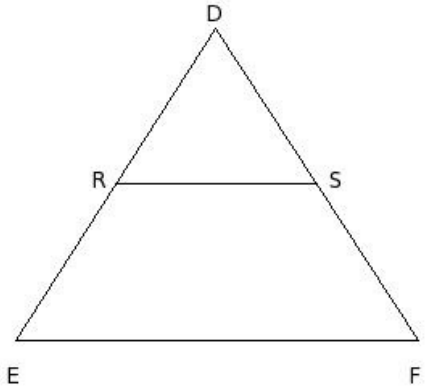
(i) 9.82 cm (ii) 6.82 cm (iii) 7.82 cm (iv) 8.82 cm (v) 10.82 cm

2. In the given figure, $ST \parallel QR$.
If $PS = 8.29$ cm, $PQ = 14.5$ cm and $PR = 13.3$ cm, find PT



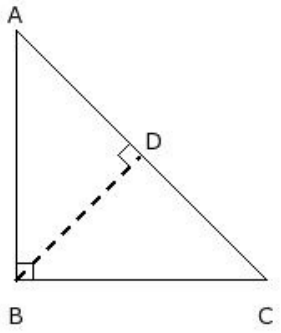
(i) 9.60 cm (ii) 6.60 cm (iii) 5.60 cm (iv) 8.60 cm (v) 7.60 cm

3. In the given figure, RS ∥ EF and DE = 23 cm, RS = 15 cm and EF = 25 cm, find DR



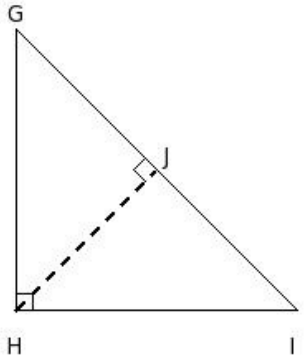
(i) 12.8 cm (ii) 15.8 cm (iii) 11.8 cm (iv) 14.8 cm (v) 13.8 cm

4. In the given figure, △ABC is isosceles right-angled at B and BD ⊥ CA. ∠A =



(i) ∠C (ii) ∠F (iii) ∠B (iv) ∠E (v) ∠D

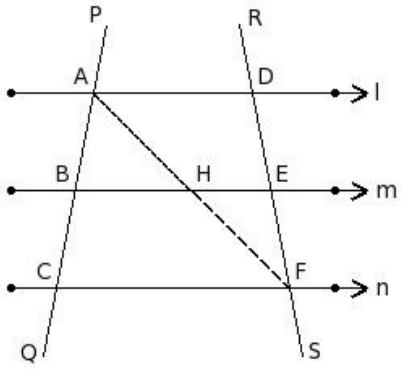
5. In the given figure, △GHI is isosceles right-angled at H and HJ ⊥ IG. ∠IJH =



(i) ∠JGH (ii) ∠JHI (iii) ∠HIJ (iv) ∠GHJ (v) ∠HJG

In the given figure, three lines l , m and n are such that l ∥ m ∥ n.

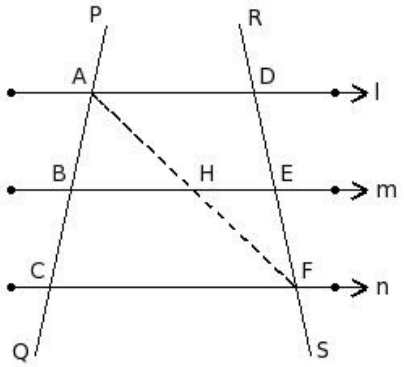
6. Two transversals PQ and RS intersect them at the points A , B , C and D , E , F respectively.
△FEH ~



(i) △ACF (ii) △ABH (iii) △DCF (iv) △FDA (v) △DAE

In the given figure, three lines l , m and n are such that l ∥ m ∥ n.

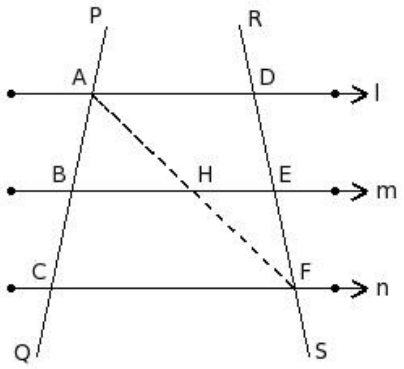
7. Two transversals PQ and RS intersect them at the points A , B , C and D , E , F respectively.
∠HFE =



(i) ∠FEH (ii) ∠FAC (iii) ∠HAB (iv) ∠AFD (v) ∠FDA

In the given figure, three lines l , m and n are such that l ∥ m ∥ n.

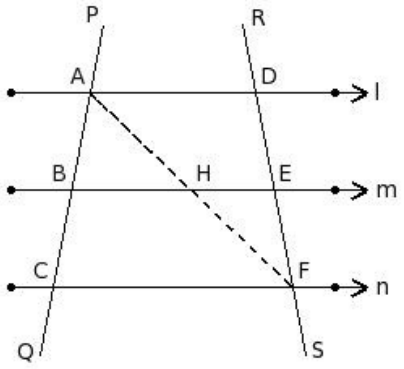
8. Two transversals PQ and RS intersect them at the points A , B , C and D , E , F respectively.
∠FDA =



(i) ∠FEH (ii) ∠DAF (iii) ∠EHF (iv) ∠ABH (v) ∠ACF

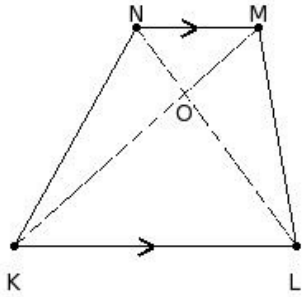
In the given figure, three lines l , m and n are such that l ∥ m ∥ n.

9. Two transversals PQ and RS intersect them at the points A , B , C and D , E , F respectively.
∠CFA =



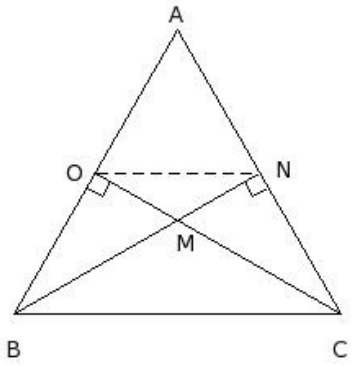
(i) ∠AFD (ii) ∠EHF (iii) ∠HFE (iv) ∠DAF (v) ∠BHA

10. In the given figure, KLMN is a trapezium in which
KL ∥ MN and the diagonals LN and KM intersect at O .
If $OK = (6x+9)$ cm, $LO = (6x+18)$ cm, $OM = (2x+18)$ cm and
$NO = (3x+1)$ cm, find the value of x



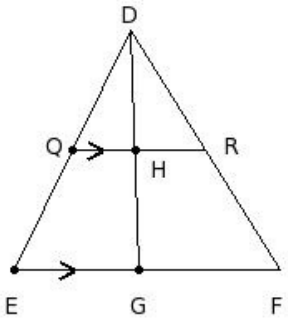
(i) $(21, -3)$ (ii) $((\frac{-1}{2}), 23)$ (iii) $(24, (\frac{-5}{2}))$ (iv) $(21, (\frac{-5}{2}))$ (v) $(22, (\frac{-9}{4}))$

11. In the given figure, the altitudes NB and CO of △ABC meet at M. ∠CMB =



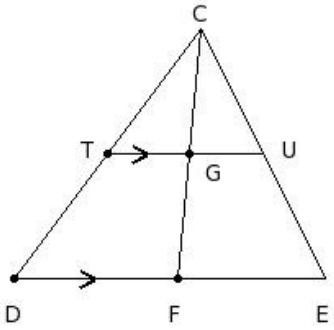
(i) ∠BCM (ii) ∠OMN (iii) ∠MNO (iv) ∠NOM (v) ∠MBC

12. In the given figure, QR ∥ EF , and median DG bisects QR.
If DE = 16 cm, DQ = 8 cm and DH = 8 cm, DG =



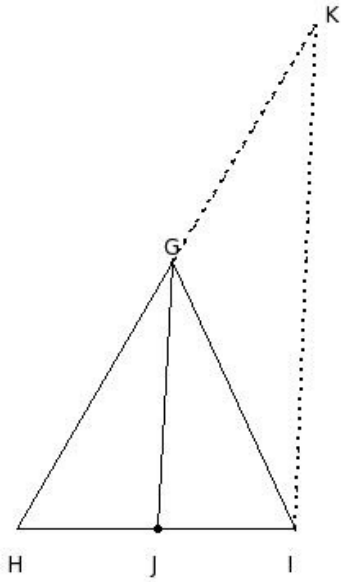
(i) 15.00 cm (ii) 17.00 cm (iii) 16.00 cm (iv) 14.00 cm (v) 18.00 cm

13. In the given figure, TU ∥ DE , and median CF bisects TU.
If CF = 15.3 cm, CE = 17 cm and CG = 7.65 cm, UE =



(i) 6.50 cm (ii) 9.50 cm (iii) 8.50 cm (iv) 10.50 cm (v) 7.50 cm

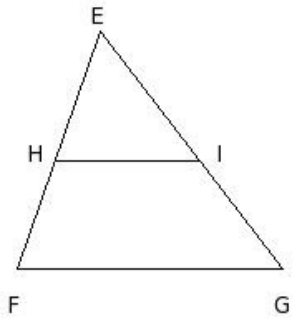
14. In the given figure, △GHI is a triangle in which GJ is the internal bisector of ∠G and IK ∥ JG meeting HG produced at K . ∠JGH =



(i) ∠HJG (ii) ∠GJI (iii) ∠KGI (iv) ∠JIG (v) ∠IKG

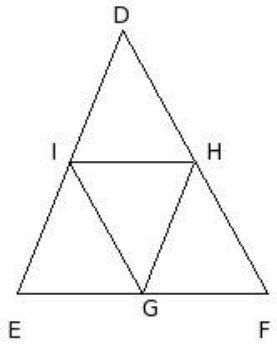
15. In the given figure, H and I are points on the sides EF and EG respectively of △EFG.For which of the following cases, HI ∥ FG

a) EF = 15 cm, HF = 6.82 cm, EG = 18 cm and EI = 9.82 cm
b) EF = 15 cm, EH = 10.18 cm, EG = 18 cm and IG = 8.18 cm
c) EH = 8.18 cm, HF = 6.82 cm, EI = 9.82 cm and IG = 8.18 cm
d) EF = 15 cm, HF = 6.82 cm, EI = 11.82 cm and EG = 18 cm



(i) {b,d,a} (ii) {b,a} (iii) {d,c} (iv) {b,c,a} (v) {a,c}

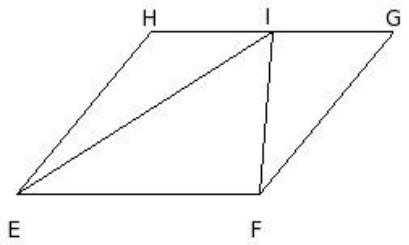
16. In the given figure, the area of the △DEF is x sq.cm. G,H,I are the mid-points of the sides EF , FD and DE respectively. The area of the △GHI is



(i) $\frac{2}{3}$ of area of △DEF (ii) $\frac{3}{4}$ of area of △DEF (iii) $\frac{1}{2}$ of area of △DEF (iv) $\frac{1}{3}$ of area of △DEF

(v) $\frac{1}{4}$ of area of △DEF

17. In the given figure, the parallelogram EFGH and the triangle △IEF are on the same bases and between the same parallels.
The area of the △IEF is x sq.cm. The area of the parallelogram is



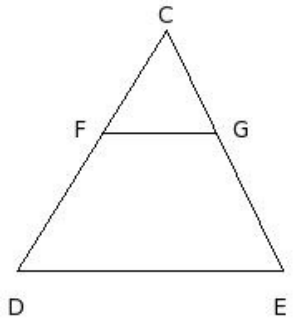
(i) twice the area of the triangle (ii) $\frac{5}{4}$ the area of the triangle (iii) thrice the area of the triangle

(iv) $\frac{4}{3}$ the area of the triangle (v) $\frac{3}{2}$ the area of the triangle

18. If the ratio of the bases of two triangles is F : G and the ratio of the corresponding heights is H : I , the ratio of their areas in the same order is

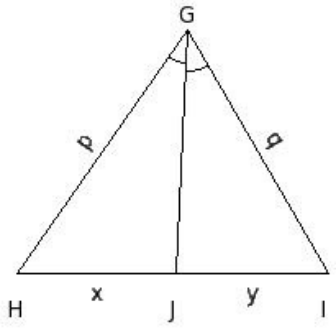
(i) GH : FI (ii) FH : GI (iii) FG : HI (iv) HI : FG (v) FI : GH

19. In the given △CDE, FG ∥ DE. If CF : FD = 7.29 cm : 9.71 cm and CE = 16 cm, GE =



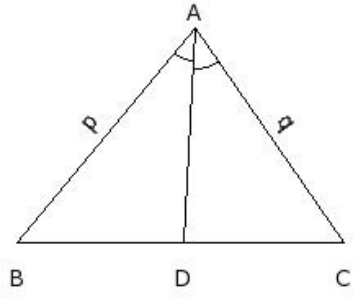
(i) 10.14 cm (ii) 9.14 cm (iii) 8.14 cm (iv) 11.14 cm (v) 7.14 cm

20. In the given figure, given ∠JGH = ∠IGJ, x : y = 9.77 cm : 9.23 cm and p = 18 cm, find q =



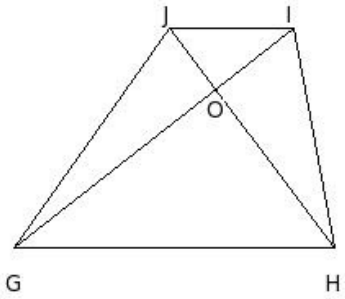
(i) 18.00 cm (ii) 17.00 cm (iii) 16.00 cm (iv) 19.00 cm (v) 15.00 cm

21. In the given figure, given ∠DAB = ∠CAD, p = 10.3 cm, q = 9.7 cm and BC = 20 cm, find BD =



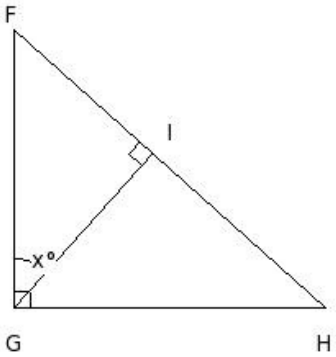
(i) 12.30 cm (ii) 11.30 cm (iii) 10.30 cm (iv) 9.30 cm (v) 8.30 cm

22. In the given figure, GHIJ is a trapezium where OG = 13 cm , OH = 13 cm and OJ = 4 cm . Find OI =



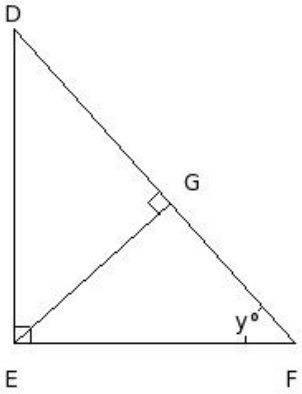
(i) 2 cm (ii) 5 cm (iii) 3 cm (iv) 6 cm (v) 4 cm

23. In the given figure, ∠IFG = 48.58°, find the value of x =



(i) 40.42° (ii) 39.42° (iii) 43.42° (iv) 42.42° (v) 41.42°

24. In the given figure, ∠GEF = 41.82°, find the value of y =



(i) 47.18° (ii) 48.18° (iii) 50.18° (iv) 46.18° (v) 49.18°

25. In the given figure, △GHI is right-angled at H. Also, HJ ⊥ GI. Which of the following are true?

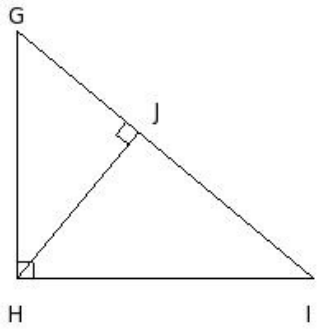
a) $GH^2 = GI.GJ$

b) $HJ^2 = GJ.JI$

c) $GH^2 = IG.IJ$

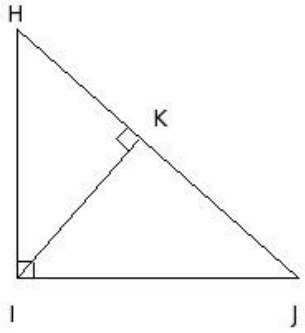
d) $HI^2 = GI.GJ$

e) $HI^2 = IG.IJ$



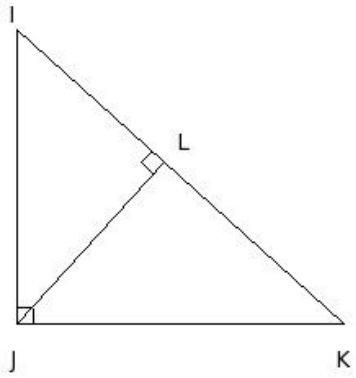
(i) {c,a} (ii) {c,a,b} (iii) {c,d,e} (iv) {d,b} (v) {a,b,e}

26. In the given figure, △HIJ is right-angled at I. Also, IK ⊥ HJ. If HI = 15 cm, IK = 11.25 cm, then find IJ.



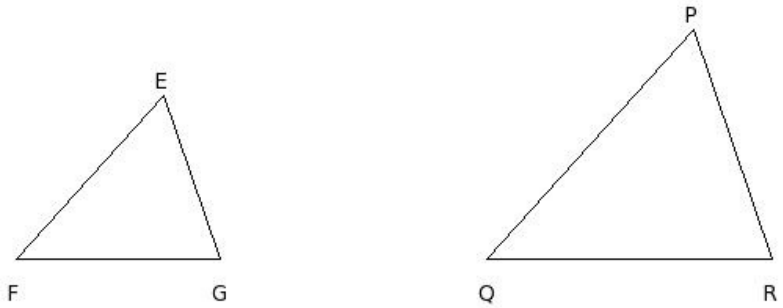
(i) 19.00 cm (ii) 18.00 cm (iii) 15.00 cm (iv) 16.00 cm (v) 17.00 cm

27. In the given figure, △IJK is right-angled at J. Also, JL ⊥ IK. If LK = 14.8 cm, JL = 13.38 cm, then find IL.



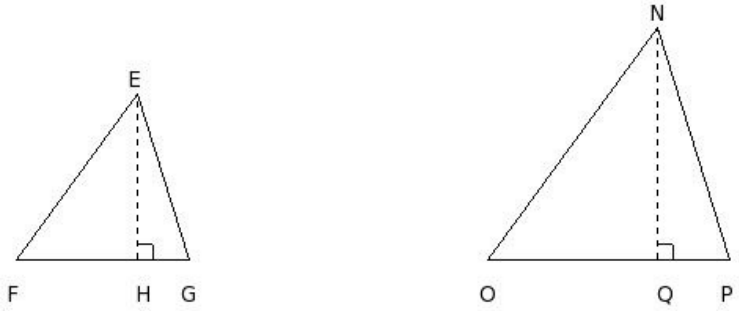
(i) 11.10 cm (ii) 14.10 cm (iii) 10.10 cm (iv) 13.10 cm (v) 12.10 cm

28. In the given figure, $\triangle EFG \sim \triangle PQR$ and EF = 14 cm, PQ = 19.6 cm.
If the area of the $\triangle PQR = 132.35$ sq.cm, find the area of the $\triangle EFG$



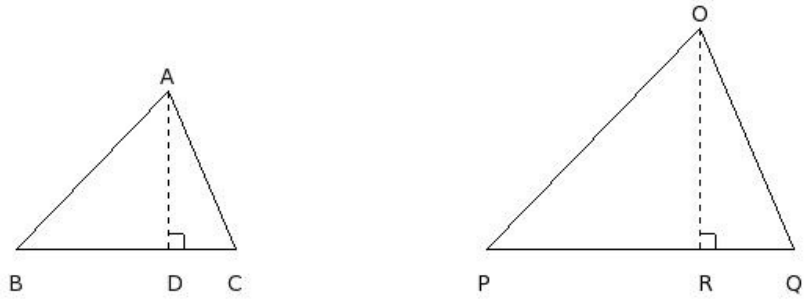
(i) 65.53 sq.cm (ii) 66.53 sq.cm (iii) 69.53 sq.cm (iv) 68.53 sq.cm (v) 67.53 sq.cm

29. In the given figure, $\triangle EFG \sim \triangle NOP$ and FG = 11 cm , OP = 15.4 cm and
$EH = 10.49$ cm, find the area of the $\triangle NOP$



(i) 114.06 sq.cm (ii) 112.06 sq.cm (iii) 115.06 sq.cm (iv) 113.06 sq.cm (v) 111.06 sq.cm

30. In the given figure, $\triangle ABC$ & $\triangle OPQ$ are similar triangles. If the ratio of the heights AD : OR = 10 : 14, then the ratio of their areas is



(i) 100 sq.cm : 196 sq.cm (ii) 101 sq.cm : 196 sq.cm (iii) 100 sq.cm : 193 sq.cm (iv) 100 sq.cm : 199 sq.cm

(v) 99 sq.cm : 196 sq.cm

31. In the given figure, points H , I and J are the mid-points of sides FG, GE and EF of △EFG. Which of the following are true?

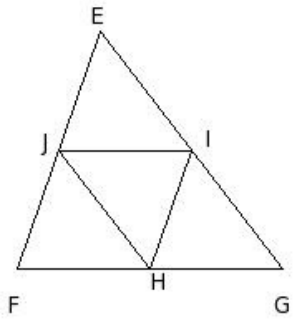
a) Area of △EFG = 4 times area of △HIJ

b) Area of trapezium FGIJ is $\frac{1}{4}$ the area of △EFG

c) All four small triangles have equal areas

d) Area of trapezium FGIJ is thrice the area of △EJI

e) Area of △EFG = $\frac{1}{3}$ area of △HIJ

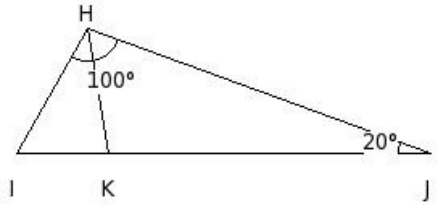


(i) {b,e,d} (ii) {a,c,d} (iii) {b,a} (iv) {e,c} (v) {b,a,c}

32. The perimeters of two similar triangles are 34 cm and 20 cm respectively. If one side of the first triangle is 15 cm, find the length of the corresponding side of the second triangle.

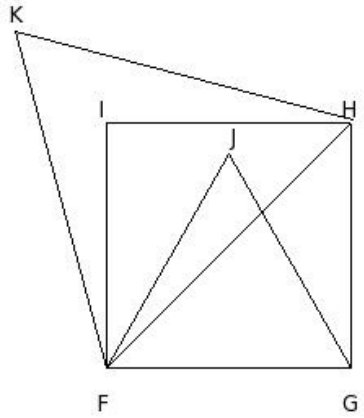
(i) 10.82 cm (ii) 9.82 cm (iii) 8.82 cm (iv) 7.82 cm (v) 6.82 cm

33. In the given figure, K is a point on side IJ of △HIJ such that ∠JHI = ∠HKJ = 100° , ∠KJH = 20°. Find ∠JHK



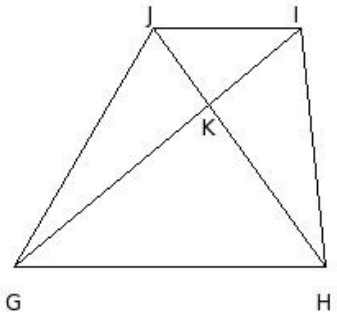
(i) 60° (ii) 61° (iii) 62° (iv) 59° (v) 58°

34. FGHI is a square and △FGJ is an equilateral triangle. Also, △FHK is an equilateral triangle. If area of △FGJ is 'a' sq.units, then the area of △FHK is



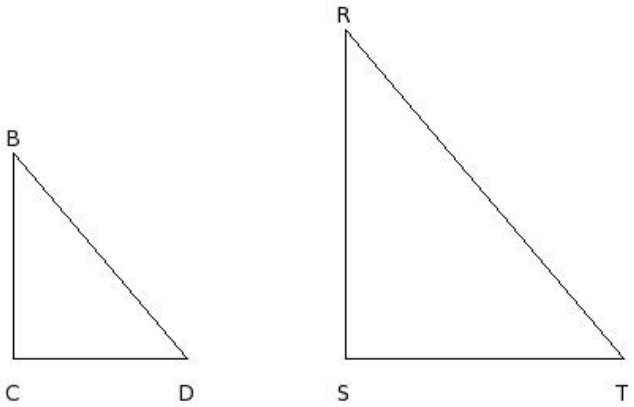
(i) $\frac{1}{2}\sqrt{3}$ a sq.units (ii) $\sqrt{3}$ a sq.units (iii) a^2 sq.units (iv) $\frac{1}{2}$ a sq.units (v) 2a sq.units

35. GHIJ is a cyclic trapezium. Diagonals HJ and GI intersect at K. If JG = 17 cm, find HI



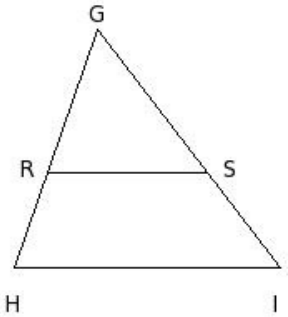
(i) 17 cm (ii) 16 cm (iii) 19 cm (iv) 18 cm (v) 15 cm

A vertical stick 13 m long casts a shadow of 11 m long on the ground.
36. At the same time, a tower casts the shadow 88 m long on the ground.
Find the height of the tower.



(i) 104 m (ii) 105 m (iii) 102 m (iv) 103 m (v) 106 m

In the given figure, $\triangle GHI$, RS ∥ HI such that
37. area of $\triangle GRS$ = area of RSIH. Find $\frac{GR}{GH}$



(i) $\frac{1}{2}\sqrt{2}$ (ii) 1 (iii) $\frac{1}{2}\sqrt{4}$ (iv) $\frac{1}{2}\sqrt{2}$ (v) $\frac{1}{2}\sqrt{\frac{1}{2}}$

38. In the given figure, $\triangle EGF$ is right-angled at G, $GH \perp EF$.
$EF = c, GF = a, EG = b$ and $GH = p$. Which of the following are true?

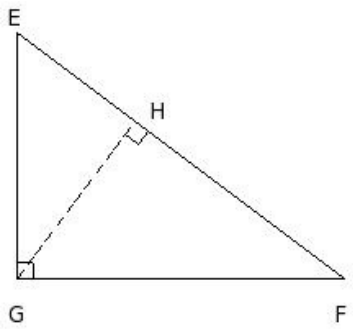
a) $a^2 + b^2 = c^2$

b) $\frac{1}{a^2} + \frac{1}{b^2} = \frac{1}{p^2}$

c) $\frac{1}{a^2} + \frac{1}{b^2} = \frac{1}{c^2} + \frac{1}{p^2}$

d) $\frac{1}{a^2} + \frac{1}{b^2} + \frac{1}{c^2} = \frac{1}{p^2}$

e) $ab = pc$

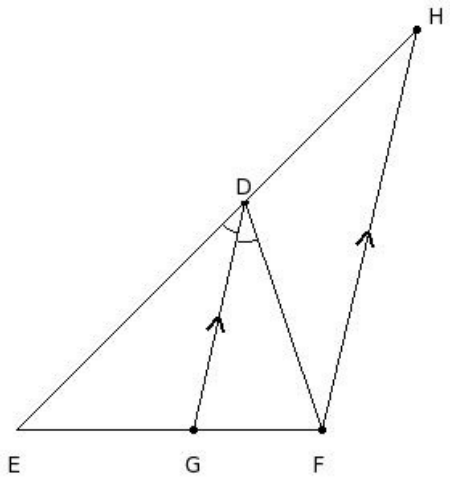


(i) {c,d,e} (ii) {a,b,e} (iii) {c,a,b} (iv) {c,a} (v) {d,b}

39. In an equilateral triangle ABC, the side BC is trisected at D. Then

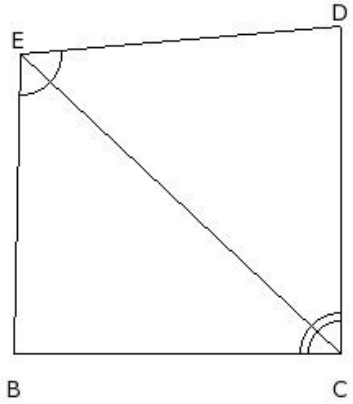
(i) $7\ AD^2 = 9\ AB^2$ (ii) $3\ AD^2 = 7\ AB^2$ (iii) $7\ AD^2 = 3\ AB^2$ (iv) $9\ AD^2 = 7\ AB^2$

40. In the given figure, $\angle GDE = \angle FDG$ and $DG \parallel HF$ and DE = 20 cm, EG = 11 cm and GF = 8 cm. Find DH



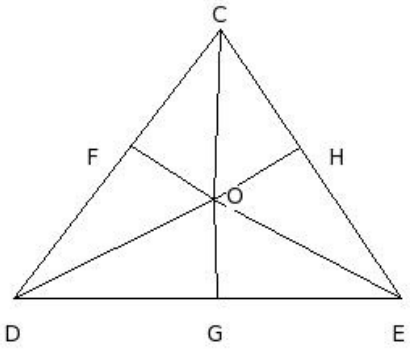
(i) 15.55 cm (ii) 12.55 cm (iii) 16.55 cm (iv) 14.55 cm (v) 13.55 cm

41. In the given figure, CE is the angular bisector of $\angle C$ & $\angle E$
$BC = 20$ cm, $CD = 20$ cm and $DE = 20$ cm. Find EB



(i) 22.00 cm (ii) 20.00 cm (iii) 18.00 cm (iv) 21.00 cm (v) 19.00 cm

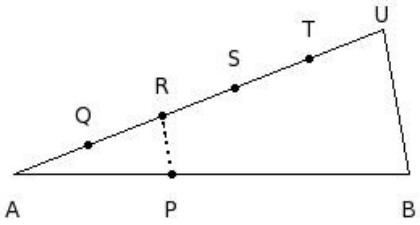
42. In the given figure, CDE is a triangle and 'O' is a point inside $\triangle$CDE. The angular bisector of $\angle$DOC, $\angle$EOD & $\angle$COE meet CD, DE & EC at F, G & H respectively . Then



(i) CF . DG . EH = FD . GE . HC (ii) CF . DG . EH = FG . GH . HF (iii) CF . DG . EH = OF . OG . OH

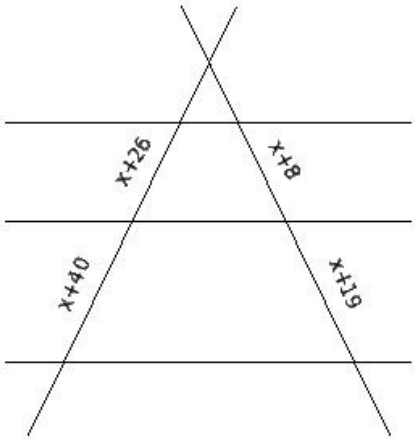
(iv) CF . DG . EH = OC . OD . OE (v) CF . DG . EH = CD . DE . EC

43. In the given figure, if A, Q, R, S, T, U are equidistant and RP ∥ UB and AB = 25 cm. Find AP



(i) 9.00 cm (ii) 12.00 cm (iii) 11.00 cm (iv) 10.00 cm (v) 8.00 cm

44. From the given figure and values, find x

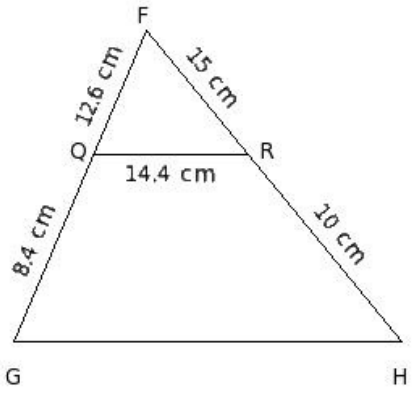


(i) (61,58) (ii) (60,60) (iii) (59,59) (iv) (58,57) (v) (58,58)

45. The ratio of the bases of two triangles ABC and DEF is $8:10$.
If the triangles are equal in area, then the ratio of their heights is

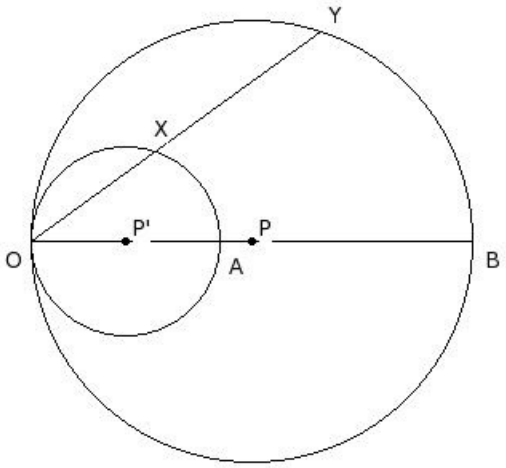
(i) $10:8$ (ii) $8:13$ (iii) $9:10$ (iv) $8:8$ (v) $7:10$

46. If the measures are as shown in the given figure, find GH



(i) 25.0 cm (ii) 26.0 cm (iii) 23.0 cm (iv) 24.0 cm (v) 22.0 cm

47. In the given figure, the two circles touch each other internally.
Diameter OB passes through the centre of the smaller circle.
OX = 10 cm , OY = 22 cm and radius of the inner circle is 5.9 cm .
Find the radius of the outer circle.



(i) 10.98 cm (ii) 14.98 cm (iii) 11.98 cm (iv) 12.98 cm (v) 13.98 cm

Assignment Key

1) (iv)	2) (v)	3) (v)	4) (i)	5) (v)	6) (iv)
7) (iv)	8) (i)	9) (v)	10) (iv)	11) (ii)	12) (iii)
13) (iii)	14) (v)	15) (v)	16) (v)	17) (i)	18) (ii)
19) (ii)	20) (ii)	21) (iii)	22) (v)	23) (v)	24) (ii)
25) (v)	26) (v)	27) (v)	28) (v)	29) (iv)	30) (i)
31) (ii)	32) (iii)	33) (i)	34) (v)	35) (i)	36) (i)
37) (i)	38) (ii)	39) (iv)	40) (iv)	41) (ii)	42) (i)
43) (iv)	44) (v)	45) (i)	46) (iv)	47) (iv)	

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