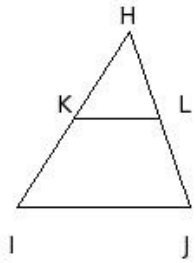
EduSahara™ Assignment

Name : Problems on Proportionality

Chapter : Similarity

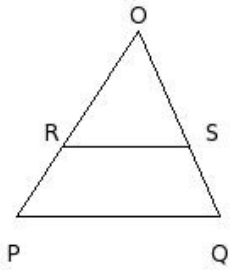
Grade : ICSE Grade IX

1. In the given figure, $KL \parallel IJ$. If $\frac{HK}{KI} = \frac{1}{1}$ and $HJ = 11.3$ cm, find HL



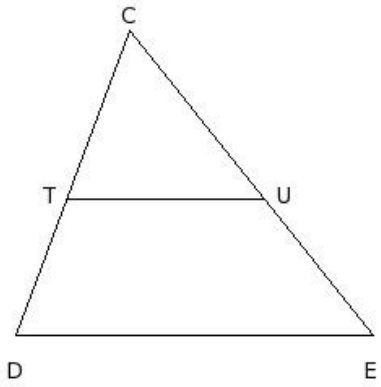
(i) 4.65 cm (ii) 6.65 cm (iii) 5.65 cm (iv) 3.65 cm (v) 7.65 cm

2. In the given figure, $RS \parallel PQ$.
If $OR = 8.38$ cm, $OP = 13.4$ cm and $OQ = 12.4$ cm, find OS



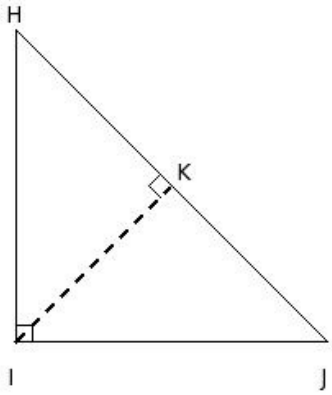
(i) 5.75 cm (ii) 8.75 cm (iii) 7.75 cm (iv) 9.75 cm (v) 6.75 cm

3. In the given figure, TU ∥ DE and CE = 24 cm, TU = 13.2 cm and DE = 22 cm, find CU



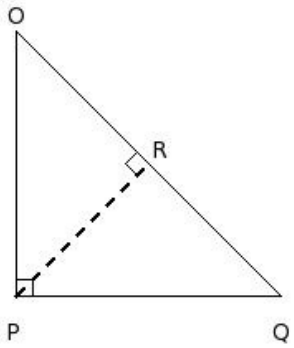
(i) 15.4 cm (ii) 13.4 cm (iii) 12.4 cm (iv) 14.4 cm (v) 16.4 cm

4. In the given figure, △HIJ is isosceles right-angled at I and IK ⊥ JH. ∠I =



(i) ∠M (ii) ∠L (iii) ∠J (iv) ∠H (v) ∠K

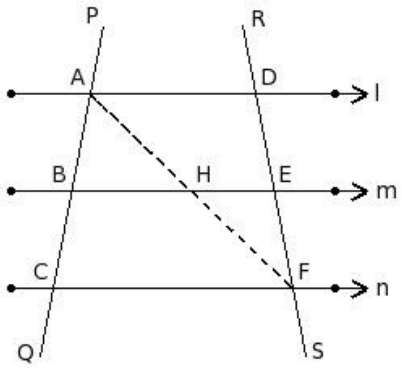
5. In the given figure, △OPQ is isosceles right-angled at P and PR ⊥ QO. ∠QRP =



(i) ∠OPQ (ii) ∠PQR (iii) ∠ROP (iv) ∠OPR (v) ∠RPQ

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

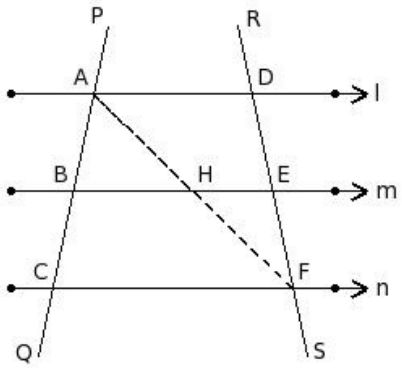
6. Two transversals PQ and RS intersect them at the points A , B , C and D , E , F respectively.
△FDA ~



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

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

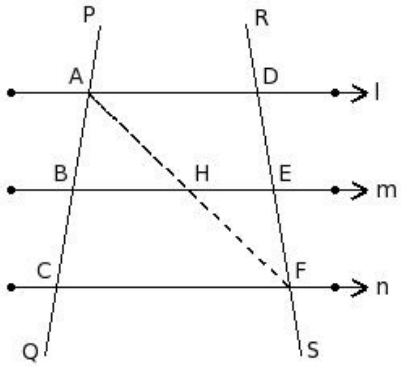
7. Two transversals PQ and RS intersect them at the points A , B , C and D , E , F respectively.
∠HAB =



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

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

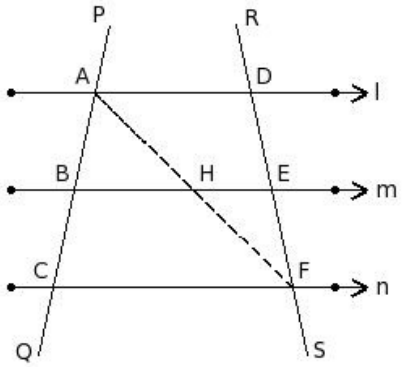
8. Two transversals PQ and RS intersect them at the points A , B , C and D , E , F respectively.
∠ABH =



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

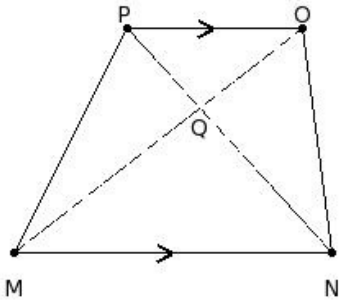
In the given figure, three lines l , m and n are such that l ∥ m ∥ n.

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



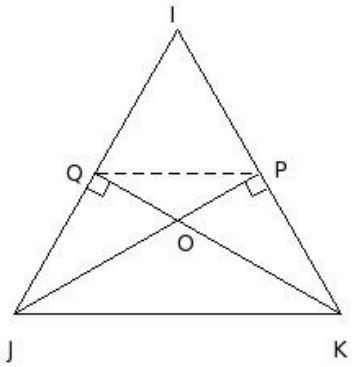
(i) ∠HFE (ii) ∠CFA (iii) ∠AFD (iv) ∠DAF (v) ∠BHA

10. In the given figure, MNOP is a trapezium in which
MN ∥ OP and the diagonals NP and MO intersect at Q.
If $QM = (2x+32)$ cm, $NQ = (3x+6)$ cm, $QO = (x+16)$ cm and
$PQ = (x+22)$ cm, find the value of x



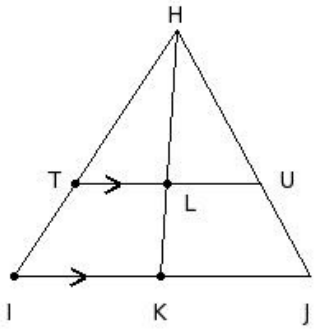
(i) (-13,38) (ii) (40,-14) (iii) (-16,37) (iv) (-16,38) (v) (-15,39)

11. In the given figure, the altitudes PJ and KQ of △IJK meet at O. ∠POK =



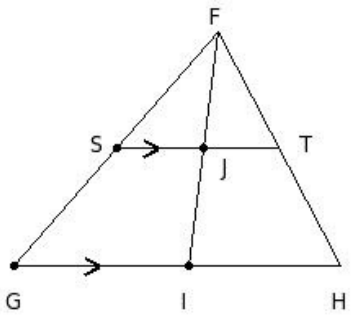
(i) ∠QJO (ii) ∠OKP (iii) ∠JOQ (iv) ∠KPO (v) ∠OQJ

12. In the given figure, TU ∥ IJ , and median HK bisects TU.
If HI = 18 cm, HK = 17.9 cm and HT = 11.25 cm, TI =



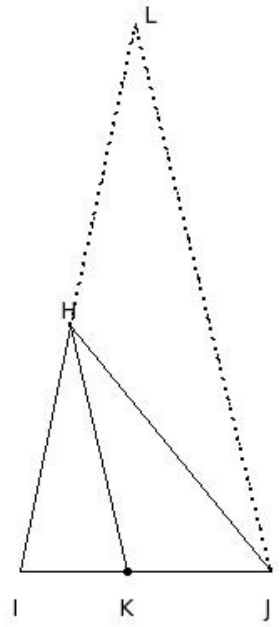
(i) 7.75 cm (ii) 8.75 cm (iii) 5.75 cm (iv) 6.75 cm (v) 4.75 cm

13. In the given figure, ST ∥ GH , and median FI bisects ST.
If FH = 16 cm, FJ = 7.2 cm and FT = 8 cm, FI =



(i) 15.40 cm (ii) 12.40 cm (iii) 16.40 cm (iv) 14.40 cm (v) 13.40 cm

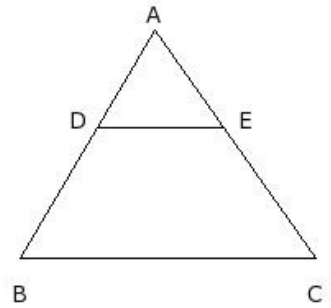
14. In the given figure, △HIJ is a triangle in which HK is the internal bisector of ∠H and JL ∥ KH meeting IH produced at L . ∠JHK =



(i) ∠IKH (ii) ∠HKJ (iii) ∠KJH (iv) ∠JLH (v) ∠LHJ

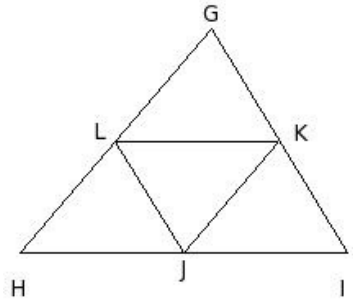
15. In the given figure, D and E are points on the sides AB and AC respectively of △ABC.For which of the following cases, DE ∥ BC

a) AB = 16 cm, DB = 9.14 cm, AE = 9.29 cm and AC = 17 cm
b) AB = 16 cm, AD = 8.86 cm, AC = 17 cm and EC = 9.71 cm
c) AB = 16 cm, DB = 9.14 cm, AC = 17 cm and AE = 7.29 cm
d) AD = 6.86 cm, DB = 9.14 cm, AE = 7.29 cm and EC = 9.71 cm



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

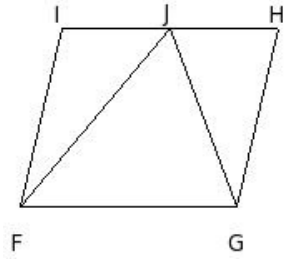
16. In the given figure, the area of the △GHI is x sq.cm. J,K,L are the mid-points of the sides HI , IG and GH respectively. The area of the △JKL is



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

(v) $\frac{1}{4}$ of area of △GHI

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



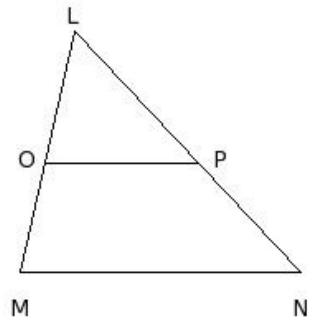
(i) thrice the area of the triangle (ii) $\frac{5}{4}$ the area of the triangle (iii) $\frac{4}{3}$ the area of the triangle

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

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

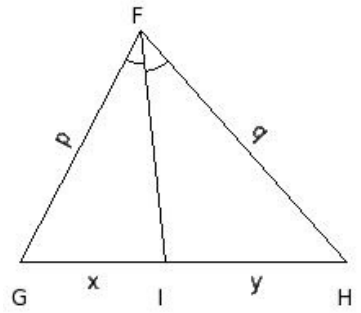
(i) EF : GH (ii) EG : FH (iii) GH : EF (iv) EH : FG (v) FG : EH

19. In the given △LMN, OP ∥ MN. If LO : OM = 8.18 cm : 6.82 cm and LN = 20 cm, LP =



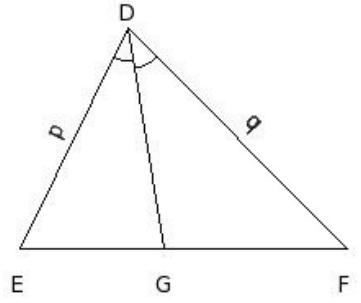
(i) 12.91 cm (ii) 10.91 cm (iii) 8.91 cm (iv) 11.91 cm (v) 9.91 cm

20. In the given figure, given ∠IFG = ∠HFI, x : y = 9.14 cm : 10.86 cm and p = 16 cm, find q =



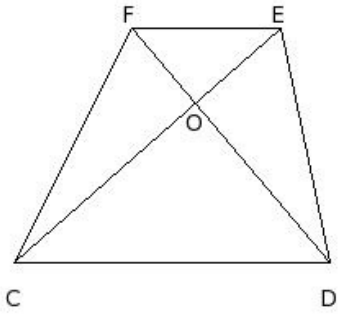
(i) 20.00 cm (ii) 18.00 cm (iii) 19.00 cm (iv) 21.00 cm (v) 17.00 cm

21. In the given figure, given ∠GDE = ∠FDG, p = 8.82 cm, q = 11.18 cm and EF = 20 cm, find EG =



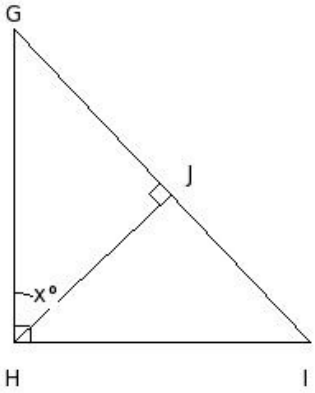
(i) 6.82 cm (ii) 10.82 cm (iii) 8.82 cm (iv) 9.82 cm (v) 7.82 cm

22. In the given figure, CDEF is a trapezium where OC = 14 cm , OD = 14 cm and OE = 5 cm . Find OF =



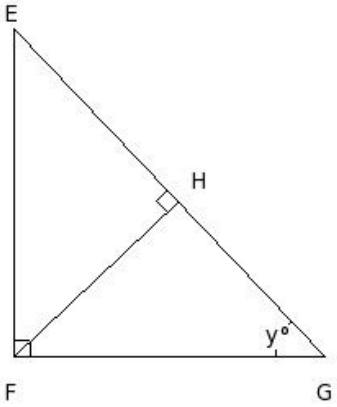
(i) 6 cm (ii) 7 cm (iii) 3 cm (iv) 5 cm (v) 4 cm

23. In the given figure, ∠JGH = 43.83°, find the value of x =



(i) 47.17° (ii) 44.17° (iii) 46.17° (iv) 45.17° (v) 48.17°

24. In the given figure, ∠HFG = 43.25°, find the value of y =



(i) 45.75° (ii) 47.75° (iii) 48.75° (iv) 46.75° (v) 44.75°

25. In the given figure, △IJK is right-angled at J. Also, JL ⊥ IK. Which of the following are true?

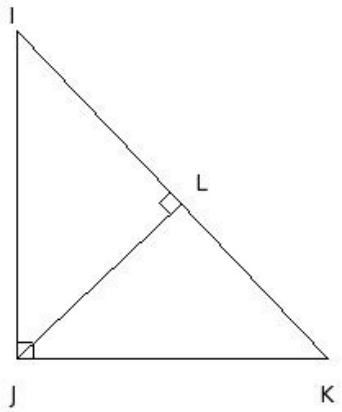
a) $IJ^2 = KI \cdot KL$

b) $JK^2 = IK \cdot IL$

c) $JK^2 = KI \cdot KL$

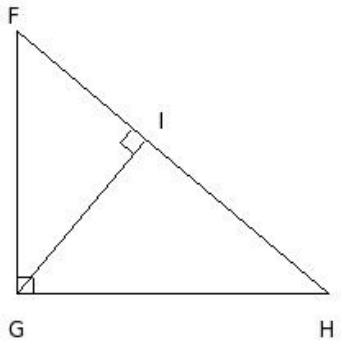
d) $IJ^2 = IK \cdot IL$

e) $JL^2 = IL \cdot LK$



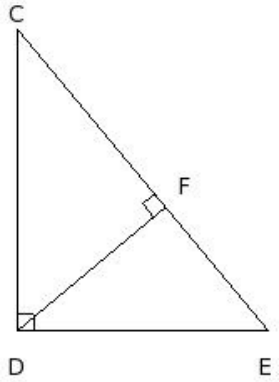
(i) {a,c,d} (ii) {b,d} (iii) {a,c} (iv) {a,b,e} (v) {c,d,e}

26. In the given figure, △FGH is right-angled at G. Also, GI ⊥ FH. If FG = 16 cm, GI = 12.24 cm, then find GH.



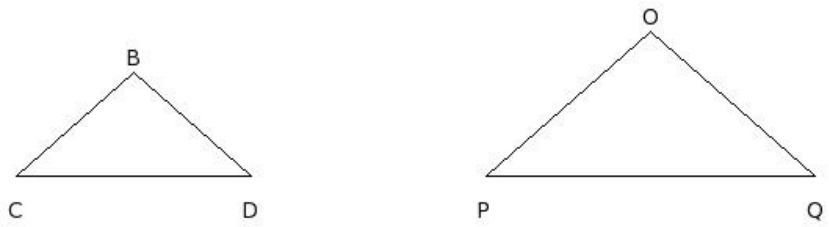
(i) 21.00 cm (ii) 17.00 cm (iii) 20.00 cm (iv) 18.00 cm (v) 19.00 cm

27. In the given figure, △CDE is right-angled at D. Also, DF ⊥ CE. If FE = 9.6 cm, DF = 11.51 cm, then find CF.



(i) 13.80 cm (ii) 11.80 cm (iii) 15.80 cm (iv) 12.80 cm (v) 14.80 cm

28. In the given figure, △BCD ~ △OPQ and BC = 10 cm, OP = 14 cm.
If the area of the △BCD = 49.61 sq.cm, find the area of the △OPQ

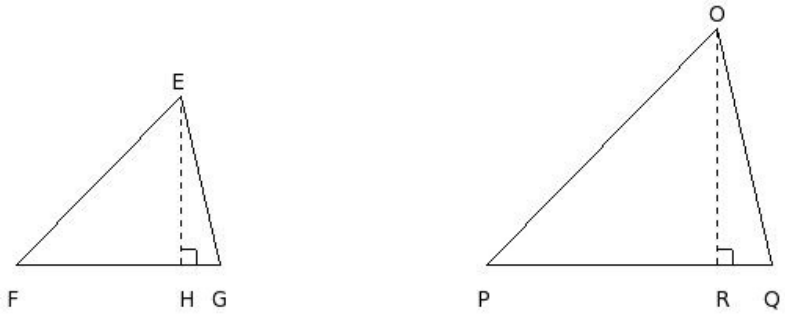


(i) 96.23 sq.cm (ii) 99.23 sq.cm (iii) 97.23 sq.cm (iv) 95.23 sq.cm (v) 98.23 sq.cm

29. In the given figure, △EFG ~ △NOP and FG = 10 cm , OP = 14 cm and
NQ = 12.86 cm, find the area of the △EFG

(i) 47.93 sq.cm (ii) 46.93 sq.cm (iii) 44.93 sq.cm (iv) 45.93 sq.cm (v) 43.93 sq.cm

30. In the given figure, △EFG & △OPQ are similar triangles. If the ratio of the heights EH : OR = 11 : 15, then the ratio of their areas is



(i) 121 sq.cm : 225 sq.cm (ii) 120 sq.cm : 225 sq.cm (iii) 122 sq.cm : 225 sq.cm (iv) 121 sq.cm : 222 sq.cm

(v) 121 sq.cm : 227 sq.cm

31. In the given figure, points E , F and G are the mid-points of sides CD, DB and BC of △BCD. Which of the following are true?

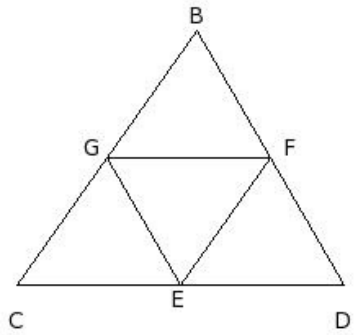
a) Area of △BCD = 4 times area of △EFG

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

c) Area of △BCD = $\frac{1}{3}$ area of △EFG

d) Area of trapezium CDFG is thrice the area of △BGF

e) All four small triangles have equal areas

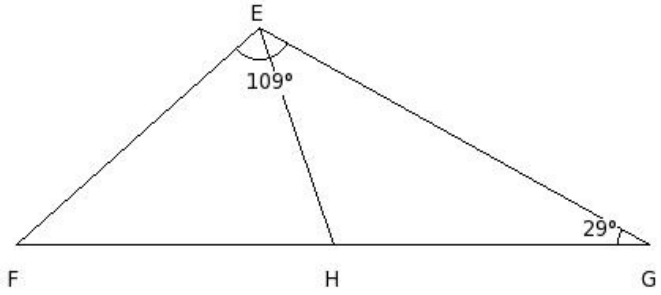


(i) {a,d,e} (ii) {b,c,e} (iii) {c,d} (iv) {b,a,d} (v) {b,a}

32. The perimeters of two similar triangles are 29 cm and 20 cm respectively. If one side of the first triangle is 14 cm, find the length of the corresponding side of the second triangle.

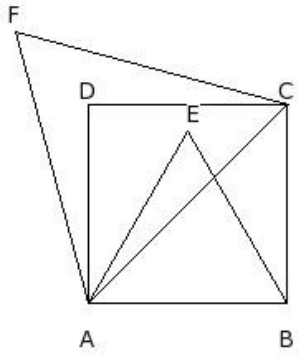
(i) 8.66 cm (ii) 10.66 cm (iii) 7.66 cm (iv) 9.66 cm (v) 11.66 cm

33. In the given figure, H is a point on side FG of △EFG such that ∠GEF = ∠EHG = 109° , ∠HGE = 29°. Find ∠GEH



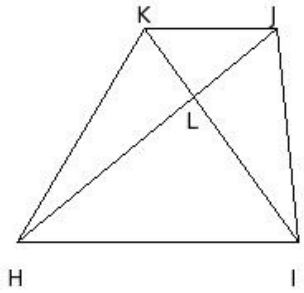
(i) 41° (ii) 42° (iii) 40° (iv) 43° (v) 44°

34. ABCD is a square and △ABE is an equilateral triangle. Also, △ACF is an equilateral triangle. If area of △ABE is 'a' sq.units, then the area of △ACF is



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

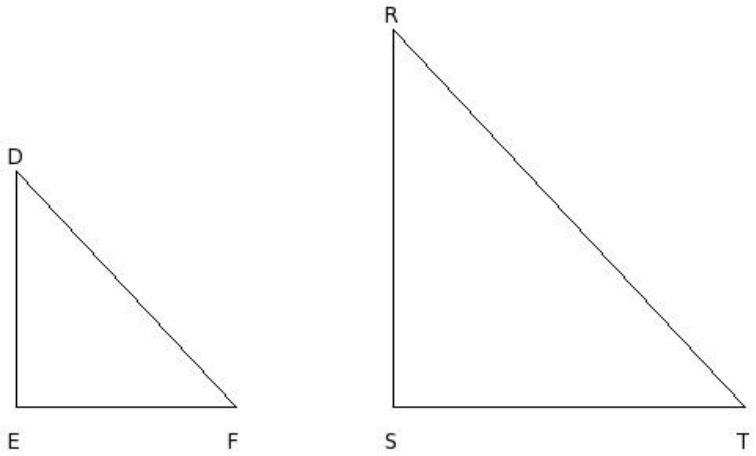
35. HIJK is a cyclic trapezium. Diagonals IK and HJ intersect at L. If KH = 15 cm, find IJ



(i) 17 cm (ii) 13 cm (iii) 14 cm (iv) 16 cm (v) 15 cm

A vertical stick 15 m long casts a shadow of 14 m long on the ground.

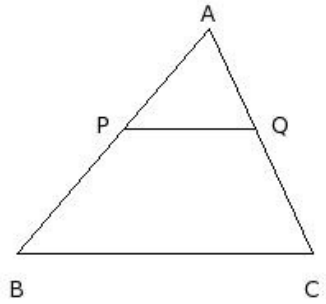
36. At the same time, a tower casts the shadow 112 m long on the ground.
Find the height of the tower.



(i) 118 m (ii) 120 m (iii) 122 m (iv) 119 m (v) 121 m

In the given figure, $\triangle ABC$, $PQ \parallel BC$ such that

37. area of $\triangle APQ$ = area of $PQCB$. Find $\frac{AP}{AB}$



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

38. In the given figure, $\triangle BDC$ is right-angled at D, $DE \perp BC$.
$BC = c, DC = a, BD = b$ and $DE = p$. Which of the following are true?

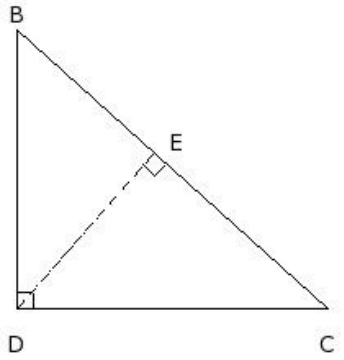
a) $\frac{1}{a^2} + \frac{1}{b^2} + \frac{1}{c^2} = \frac{1}{p^2}$

b) $ab = pc$

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

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

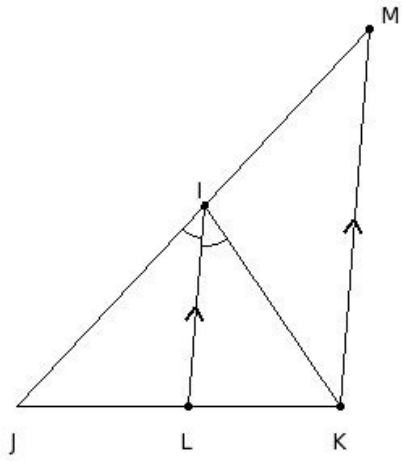
e) $a^2 + b^2 = c^2$



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

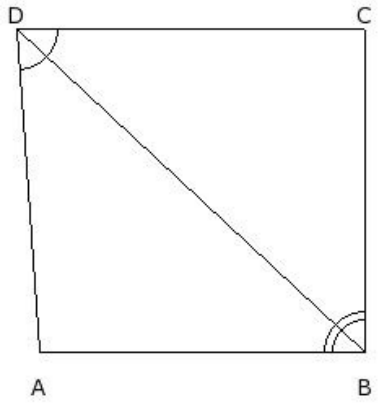
39. In an equilateral triangle ABC, the side BC is trisected at D. Then
(i) $9\ AD^2 = 7\ AB^2$ (ii) $7\ AD^2 = 9\ AB^2$ (iii) $3\ AD^2 = 7\ AB^2$ (iv) $7\ AD^2 = 3\ AB^2$

40. In the given figure, $\angle LIJ = \angle KIL$ and IL ∥ MK and IJ = 17 cm, JL = 11 cm and LK = 9 cm. Find IM



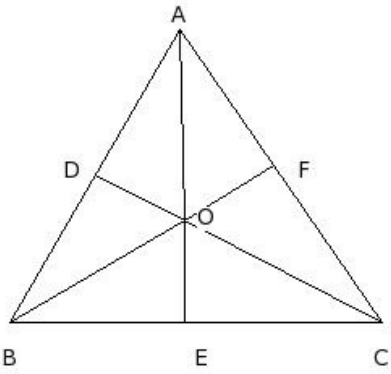
(i) 13.91 cm (ii) 15.91 cm (iii) 11.91 cm (iv) 12.91 cm (v) 14.91 cm

41. In the given figure, BD is the angular bisector of $\angle B$ & $\angle D$
$AB = 20$ cm, $BC = 20$ cm and $CD = 21$ cm. Find DA



(i) 21.00 cm (ii) 19.00 cm (iii) 20.00 cm (iv) 22.00 cm (v) 23.00 cm

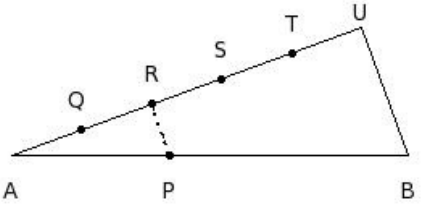
42. In the given figure, ABC is a triangle and 'O' is a point inside $\triangle ABC$. The angular bisector of $\angle BOA$, $\angle COB$ & $\angle AOC$ meet AB, BC & CA at D, E & F respectively . Then



(i) AD . BE . CF = DE . EF . FD (ii) AD . BE . CF = OA . OB . OC (iii) AD . BE . CF = OD . OE . OF

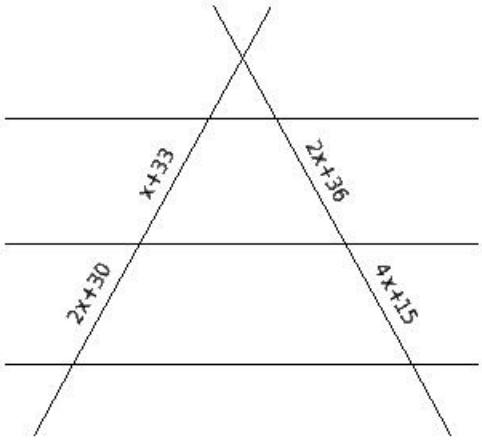
(iv) AD . BE . CF = DB . EC . FA (v) AD . BE . CF = AB . BC . CA

43. In the given figure, if A, Q, R, S, T, U are equidistant and RP ∥ UB and AB = 25 cm and AP = 10 cm. Find PB



(i) 17.00 cm (ii) 13.00 cm (iii) 15.00 cm (iv) 16.00 cm (v) 14.00 cm

44. From the given figure and values, find x

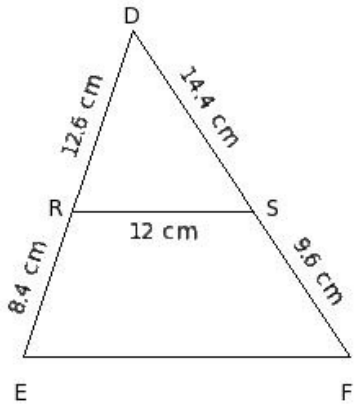


(i) (39,38) (ii) (40,40) (iii) (42,39) (iv) (41,41) (v) (39,39)

45. The ratio of the bases of two triangles ABC and DEF is $7:10$.
If the triangles are equal in area, then the ratio of their heights is

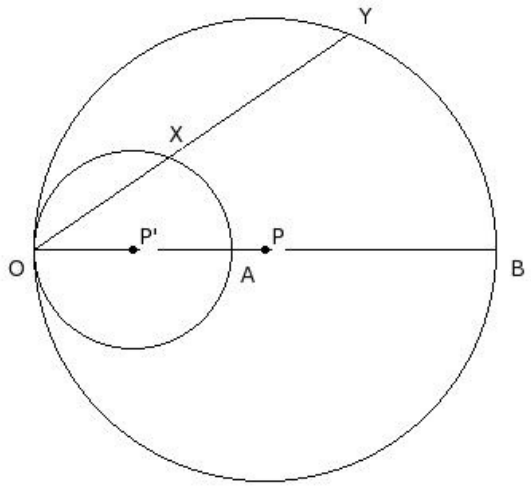
(i) $10:7$ (ii) $8:10$ (iii) $6:10$ (iv) $7:8$ (v) $7:12$

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



(i) 21.0 cm (ii) 19.0 cm (iii) 18.0 cm (iv) 20.0 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 = 24 cm and radius of the inner circle is 6.2 cm .
Find the radius of the outer circle.



(i) 13.88 cm (ii) 12.88 cm (iii) 16.88 cm (iv) 14.88 cm (v) 15.88 cm

Assignment Key

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