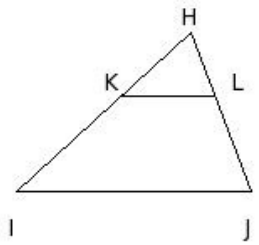
EduSahara™ Assignment

Name : Problems on Proportionality

Chapter : Similarity

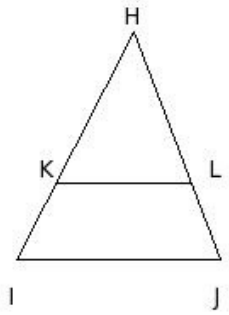
Grade : ICSE Grade IX

1. In the given figure, $KL \parallel IJ$. If $\frac{HK}{KI} = \frac{2}{3}$ and $HJ = 10.6$ cm, find HL



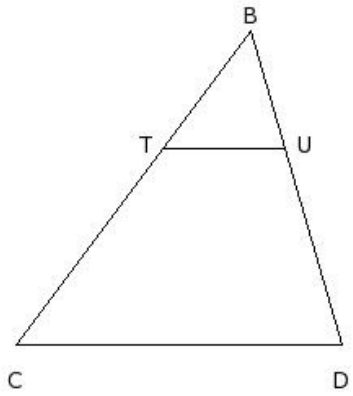
(i) 6.24 cm (ii) 4.24 cm (iii) 3.24 cm (iv) 5.24 cm (v) 2.24 cm

2. In the given figure, $KL \parallel IJ$.
If $HK = 10.07$ cm, $HI = 15.1$ cm and $HJ = 14.5$ cm, find HL



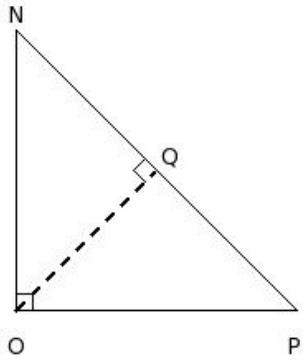
(i) 9.67 cm (ii) 7.67 cm (iii) 8.67 cm (iv) 10.67 cm (v) 11.67 cm

3. In the given figure, TU ∥ CD and BD = 20 cm, TU = 12 cm and CD = 20 cm, find BU



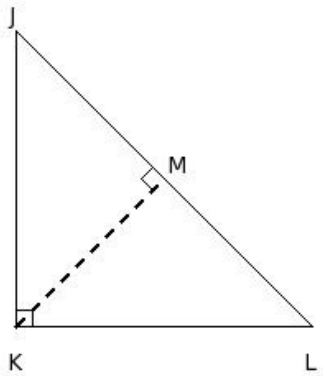
(i) 13.0 cm (ii) 11.0 cm (iii) 12.0 cm (iv) 10.0 cm (v) 14.0 cm

4. In the given figure, △NOP is isosceles right-angled at O and OQ ⊥ PN. ∠N =



(i) ∠O (ii) ∠P (iii) ∠R (iv) ∠S (v) ∠Q

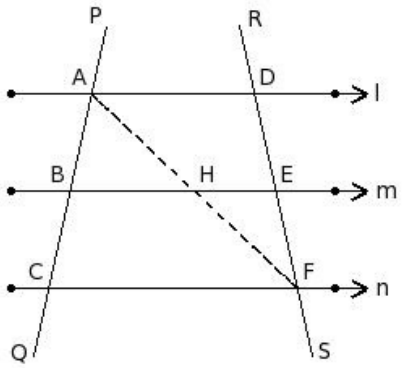
5. In the given figure, △JKL is isosceles right-angled at K and KM ⊥ LJ. ∠KMJ =



(i) ∠KLM (ii) ∠JKM (iii) ∠MJK (iv) ∠MKL (v) ∠JKL

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

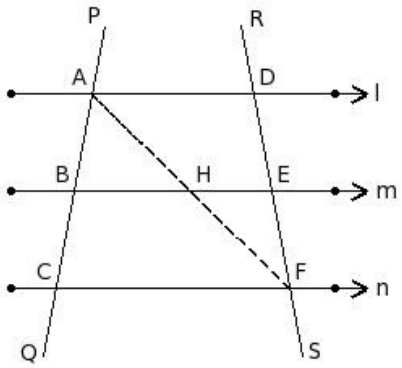
6. Two transversals PQ and RS intersect them at the points A , B , C and D , E , F respectively.
△ABH ~



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

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

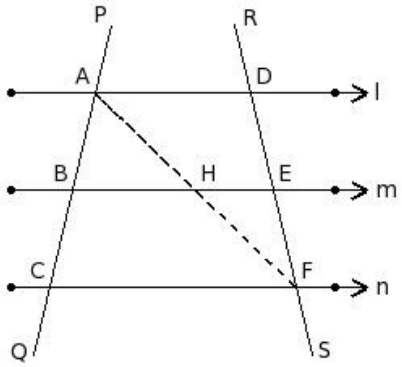
7. Two transversals PQ and RS intersect them at the points A , B , C and D , E , F respectively.
∠HAB =



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

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

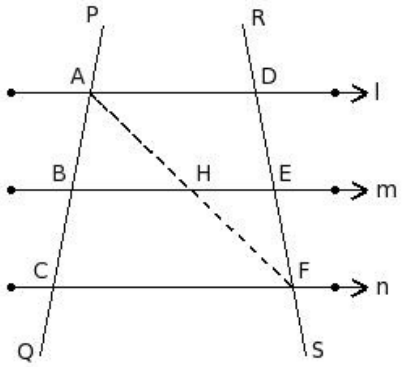
8. Two transversals PQ and RS intersect them at the points A , B , C and D , E , F respectively.
∠ABH =



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

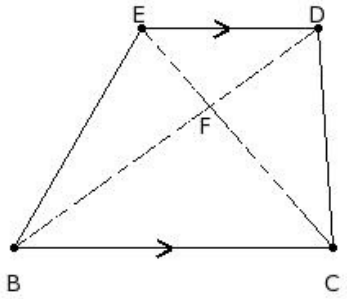
In the given figure, three lines l , m and n are such that l ∥ m ∥ n.

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



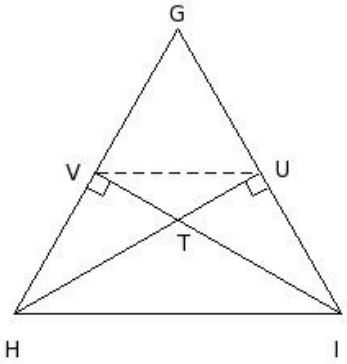
(i) ∠EHF (ii) ∠CFA (iii) ∠HFE (iv) ∠BHA (v) ∠AFD

10. In the given figure, BCDE is a trapezium in which
BC ∥ DE and the diagonals CE and BD intersect at F.
If $FB = (2x+14)$ cm, $CF = (3x+16)$ cm, $FD = (x+12)$ cm and
$EF = (2x+6)$ cm, find the value of x



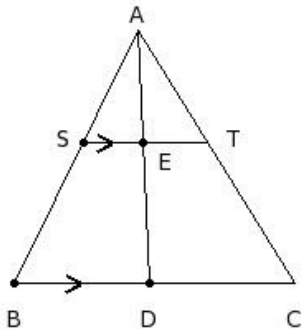
(i) (-4,20) (ii) (19,-5) (iii) (18,-6) (iv) (18,-7) (v) (20,-6)

11. In the given figure, the altitudes UH and IV of △GHI meet at T. ∠HTV =



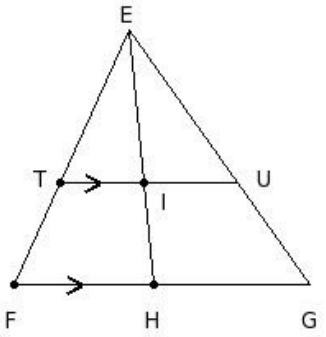
(i) ∠VHT (ii) ∠TIU (iii) ∠TVH (iv) ∠IUT (v) ∠UTI

12. In the given figure, ST ∥ BC , and median AD bisects ST.
If AB = 17 cm, AD = 17 cm and AS = 7.56 cm, ED =



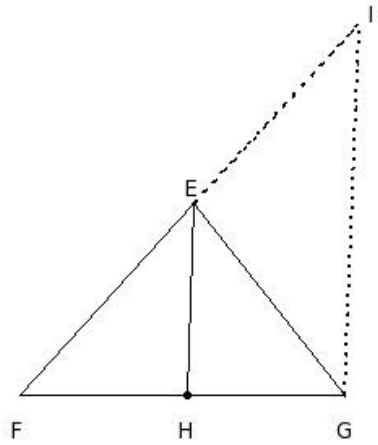
(i) 9.44 cm (ii) 10.44 cm (iii) 8.44 cm (iv) 7.44 cm (v) 11.44 cm

13. In the given figure, TU ∥ FG , and median EH bisects TU.
If EH = 15.6 cm, EI = 9.36 cm and EU = 11.4 cm, EG =



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

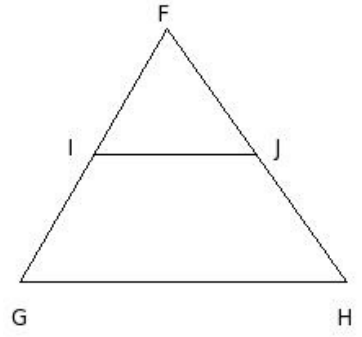
14. In the given figure, △EFG is a triangle in which EH is the internal bisector of ∠E and GI ∥ HE meeting FE produced at I . ∠EGI =



(i) ∠HGE (ii) ∠EHG (iii) ∠FHE (iv) ∠IEG (v) ∠GEH

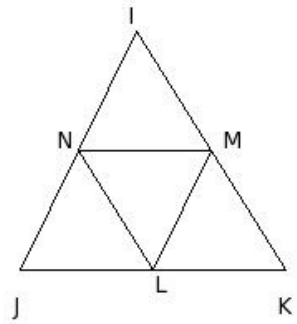
15. In the given figure, I and J are points on the sides FG and FH respectively of △FGH.For which of the following cases, IJ ∥ GH

a) FG = 18 cm, IG = 9 cm, FJ = 11.5 cm and FH = 19 cm
b) FI = 9 cm, IG = 9 cm, FJ = 9.5 cm and JH = 9.5 cm
c) FG = 18 cm, FI = 11 cm, FH = 19 cm and JH = 9.5 cm
d) FG = 18 cm, IG = 9 cm, FH = 19 cm and FJ = 9.5 cm



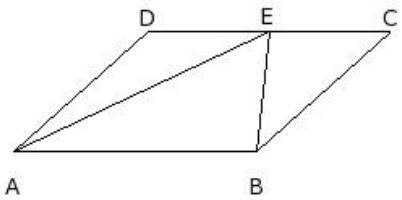
(i) {a,d,b} (ii) {a,c,b} (iii) {c,d} (iv) {b,d} (v) {a,b}

16. In the given figure, the area of the △IJK is x sq.cm. L,M,N are the mid-points of the sides JK , KI and IJ respectively. The area of the △LMN is



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

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



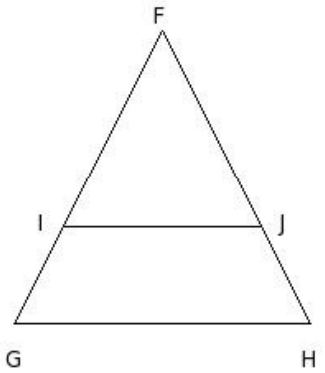
(i) thrice the area of the triangle (ii) $\frac{4}{3}$ the area of the triangle (iii) twice the area of the triangle

(iv) $\frac{3}{2}$ the area of the triangle (v) $\frac{5}{4}$ the area of the triangle

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

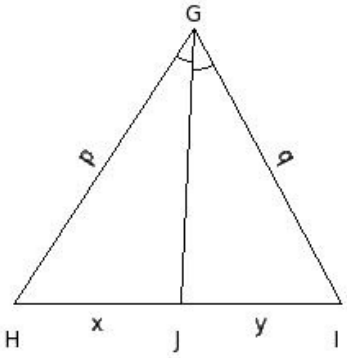
(i) FG : DE (ii) DE : FG (iii) DF : EG (iv) EF : DG (v) DG : EF

19. In the given △FGH, IJ ∥ GH. If FI : IG = 13.33 cm : 6.67 cm and FH = 20 cm, FJ =



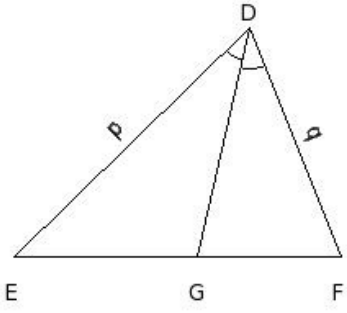
(i) 12.33 cm (ii) 14.33 cm (iii) 11.33 cm (iv) 15.33 cm (v) 13.33 cm

20. In the given figure, given ∠JGH = ∠IGJ, x : y = 10.26 cm : 9.74 cm and p = 20 cm, find q =



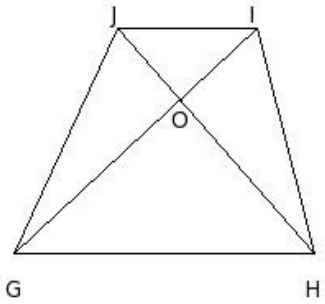
(i) 21.00 cm (ii) 17.00 cm (iii) 19.00 cm (iv) 18.00 cm (v) 20.00 cm

21. In the given figure, given ∠GDE = ∠FDG, p = 11.43 cm, q = 8.57 cm and EF = 20 cm, find EG =



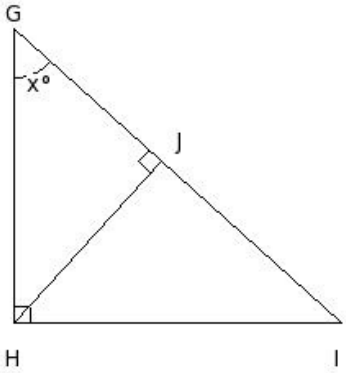
(i) 9.43 cm (ii) 10.43 cm (iii) 12.43 cm (iv) 11.43 cm (v) 13.43 cm

22. In the given figure, GHIJ is a trapezium where OG = 14 cm , OH = 14 cm and OJ = 5 cm . Find OI =



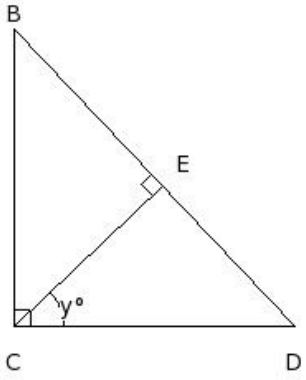
(i) 5 cm (ii) 6 cm (iii) 7 cm (iv) 4 cm (v) 3 cm

23. In the given figure, ∠GHJ = 42.27°, find the value of x =



(i) 48.73° (ii) 46.73° (iii) 47.73° (iv) 49.73° (v) 45.73°

24. In the given figure, ∠CDE = 47.43°, find the value of y =



(i) 41.57° (ii) 44.57° (iii) 43.57° (iv) 40.57° (v) 42.57°

25. In the given figure, △CDE is right-angled at D. Also, DF ⊥ CE. Which of the following are true?

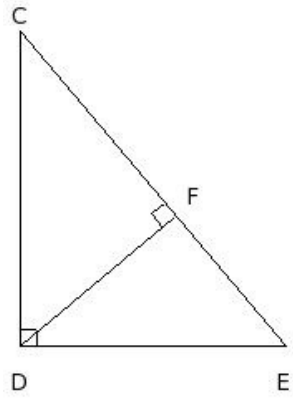
a) $DF^2 = CF \cdot FE$

b) $CD^2 = EC \cdot EF$

c) $DE^2 = CE \cdot CF$

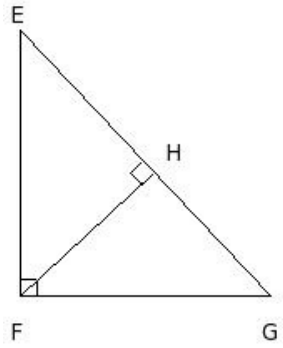
d) $DE^2 = EC \cdot EF$

e) $CD^2 = CE \cdot CF$



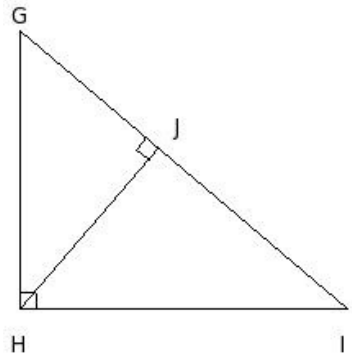
(i) {b,c,e} (ii) {b,a,d} (iii) {b,a} (iv) {a,d,e} (v) {c,d}

26. In the given figure, △EFG is right-angled at F. Also, FH ⊥ EG. If FG = 15 cm, FH = 10.94 cm, then find EF.



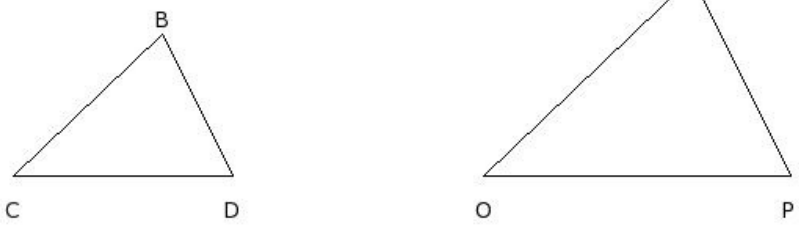
(i) 15.00 cm (ii) 17.00 cm (iii) 18.00 cm (iv) 14.00 cm (v) 16.00 cm

27. In the given figure, △GHI is right-angled at H. Also, HJ ⊥ GI. If JI = 15.2 cm, HJ = 12.99 cm, then find GJ.



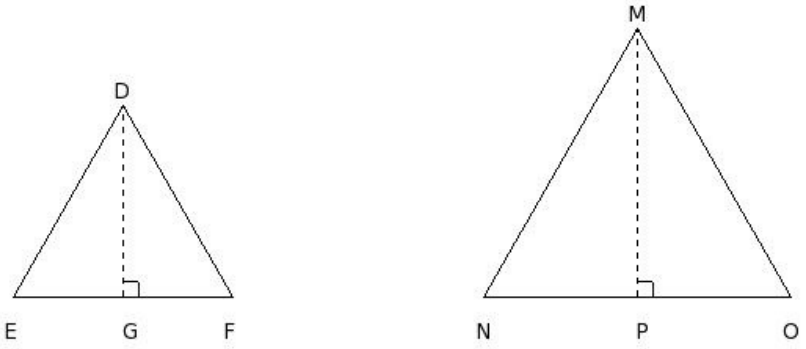
(i) 10.10 cm (ii) 12.10 cm (iii) 11.10 cm (iv) 9.10 cm (v) 13.10 cm

28. In the given figure, △BCD ~ △NOP and BC = 13 cm, NO = 18.2 cm.
If the area of the △NOP = 122.28 sq.cm, find the area of the △BCD



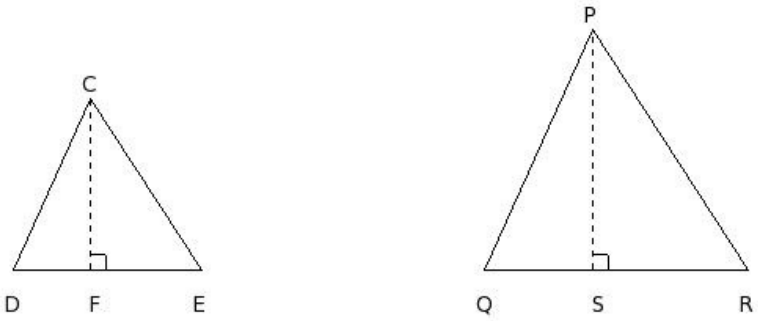
(i) 60.39 sq.cm (ii) 63.39 sq.cm (iii) 61.39 sq.cm (iv) 62.39 sq.cm (v) 64.39 sq.cm

29. In the given figure, △DEF ~ △MNO and EF = 14 cm , NO = 19.6 cm and
MP = 16.97 cm, find the area of the △DEF



(i) 86.87 sq.cm (ii) 85.87 sq.cm (iii) 82.87 sq.cm (iv) 84.87 sq.cm (v) 83.87 sq.cm

30. In the given figure, △CDE & △PQR are similar triangles. If the ratio of the heights CF : PS = 11 : 15, then the ratio of their areas is



(i) 121 sq.cm : 225 sq.cm (ii) 122 sq.cm : 225 sq.cm (iii) 121 sq.cm : 228 sq.cm (iv) 121 sq.cm : 222 sq.cm

(v) 120 sq.cm : 225 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?

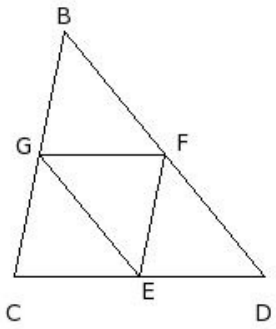
a) Area of △BCD = 4 times area of △EFG

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

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

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

e) All four small triangles have equal areas

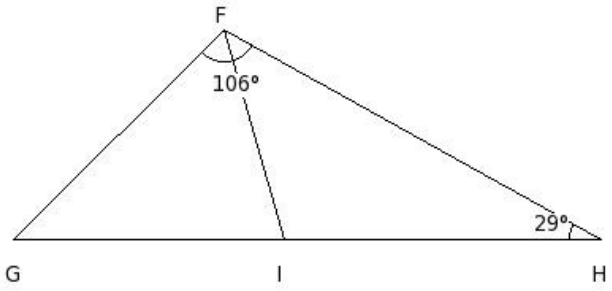


(i) {a,c,e} (ii) {b,d,e} (iii) {b,a} (iv) {d,c} (v) {b,a,c}

32. The perimeters of two similar triangles are 26 cm and 20 cm respectively. If one side of the first triangle is 9 cm, find the length of the corresponding side of the second triangle.

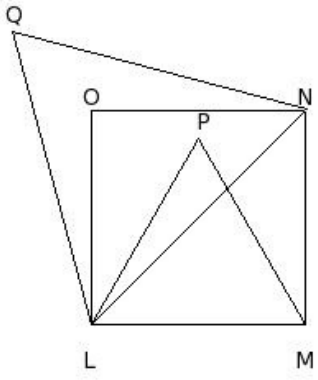
(i) 4.92 cm (ii) 5.92 cm (iii) 8.92 cm (iv) 6.92 cm (v) 7.92 cm

33. In the given figure, I is a point on side GH of △FGH such that ∠HFG = ∠FIH = 106° , ∠IHF = 29°. Find ∠HFI



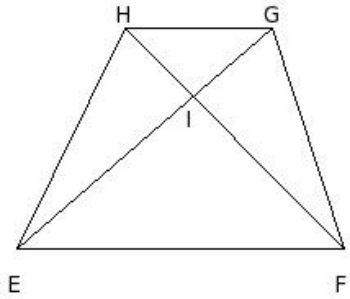
(i) 47° (ii) 43° (iii) 45° (iv) 44° (v) 46°

34. LMNO is a square and △LMP is an equilateral triangle. Also, △LNQ is an equilateral triangle. If area of △LMP is 'a' sq.units, then the area of △LNQ is



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

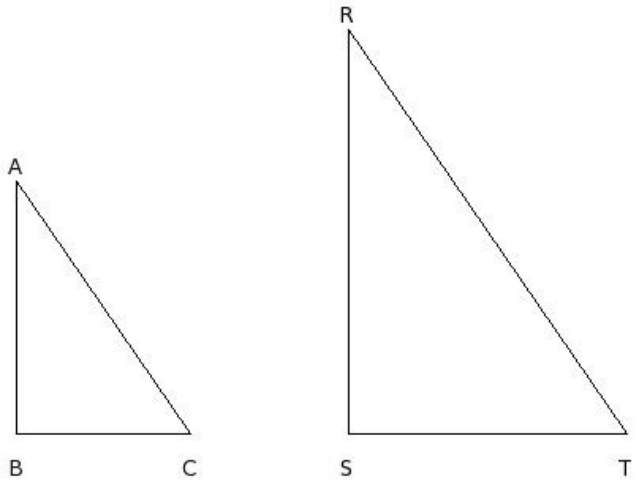
35. EFGH is a cyclic trapezium. Diagonals FH and EG intersect at I. If HE = 15 cm, find FG



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

A vertical stick 16 m long casts a shadow of 11 m long on the ground.

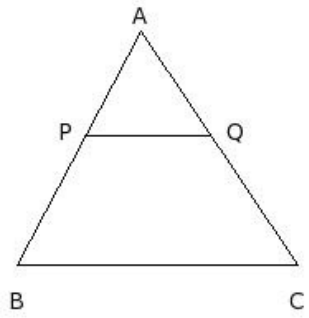
36. At the same time, a tower casts the shadow 88 m long on the ground. Find the height of the tower.



(i) 126 m (ii) 130 m (iii) 129 m (iv) 127 m (v) 128 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) 1 (ii) $\frac{1}{2}\sqrt{\frac{1}{2}}$ (iii) $\frac{1}{2}\frac{4}{\sqrt{2}}$ (iv) $\frac{1}{2}\sqrt{5}$ (v) $\frac{1}{2}\sqrt{2}$

38. In the given figure, $\triangle CED$ is right-angled at E, EF $\perp$ CD.
$CD = c, ED = a, CE = b$ and $EF = p$. Which of the following are true?

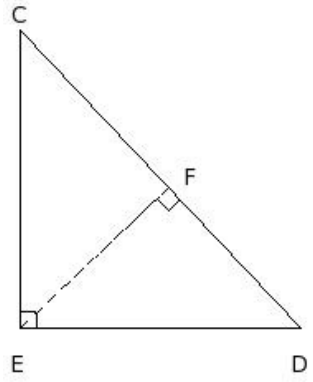
a) $ab = pc$

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

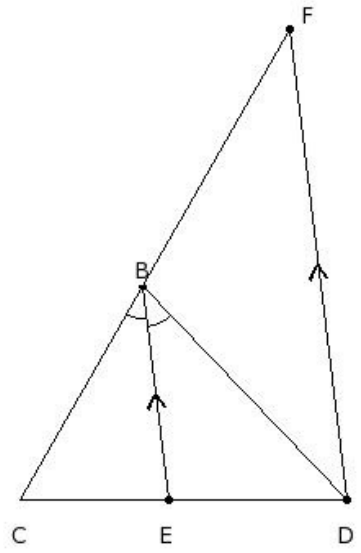
e) $a^2 + b^2 = c^2$



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

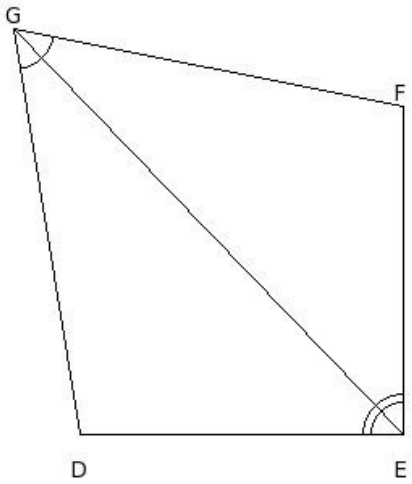
39. In an equilateral triangle ABC, the side BC is trisected at D. Then
(i) $3\ AD^2 = 7\ AB^2$ (ii) $9\ AD^2 = 7\ AB^2$ (iii) $7\ AD^2 = 3\ AB^2$ (iv) $7\ AD^2 = 9\ AB^2$

40. In the given figure, $\angle EBC = \angle DBE$ and BE $\parallel$ FD and BC = 15 cm, CE = 9 cm and ED = 11 cm. Find BF



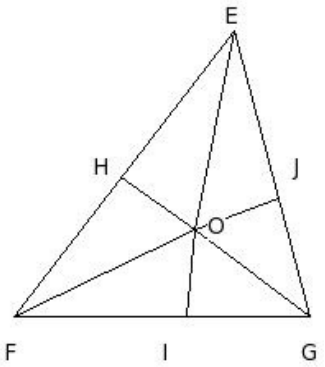
(i) 17.33 cm (ii) 20.33 cm (iii) 19.33 cm (iv) 16.33 cm (v) 18.33 cm

41. In the given figure, EG is the angular bisector of $\angle E$ & $\angle G$
$DE = 20\ cm, EF = 20\ cm$ and $FG = 25\ cm$. Find GD



(i) 26.00 cm (ii) 27.00 cm (iii) 24.00 cm (iv) 23.00 cm (v) 25.00 cm

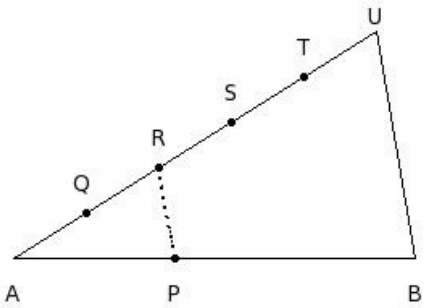
42. In the given figure, EFG is a triangle and 'O' is a point inside $\triangle EFG$. The angular bisector of $\angle FOE$, $\angle GOF$ & $\angle EOG$ meet EF, FG & GE at H, I & J respectively . Then



(i) EH . FI . GJ = OH . OI . OJ (ii) EH . FI . GJ = EF . FG . GE (iii) EH . FI . GJ = OE . OF . OG

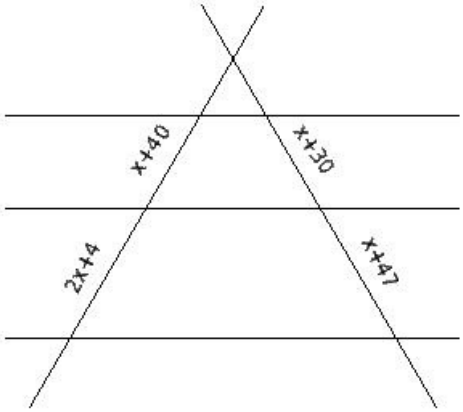
(iv) EH . FI . GJ = HF . IG . JE (v) EH . FI . GJ = HI . IJ . JH

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

44. From the given figure and values, find x

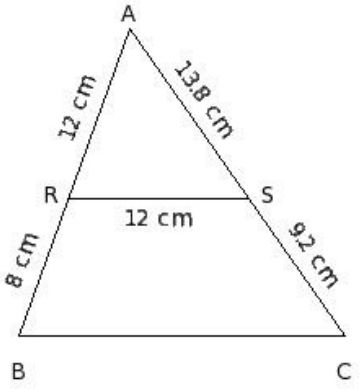


(i) (-30,57) (ii) (58,-32) (iii) (56,-31) (iv) (55,-33) (v) (55,-32)

45. The ratio of the bases of two triangles ABC and DEF is 5:4 .
If the triangles are equal in area, then the ratio of their heights is

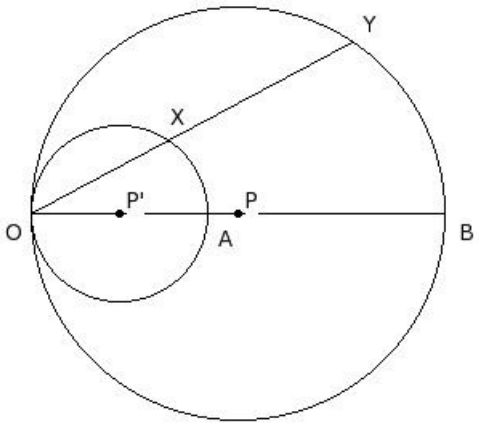
(i) 6:4 (ii) 4:4 (iii) 5:6 (iv) 4:5 (v) 5:2

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



(i) 22.0 cm (ii) 18.0 cm (iii) 20.0 cm (iv) 21.0 cm (v) 19.0 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 = 23 cm and radius of the inner circle is 5.5 cm .
Find the radius of the outer circle.



(i) 10.65 cm (ii) 11.65 cm (iii) 12.65 cm (iv) 14.65 cm (v) 13.65 cm

Assignment Key

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