EduSahara™ Assignment

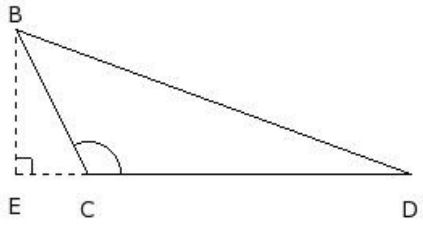
Name : Pythagoras Theorem

Chapter : Pythagoras Theorem

Grade : ICSE Grade IX



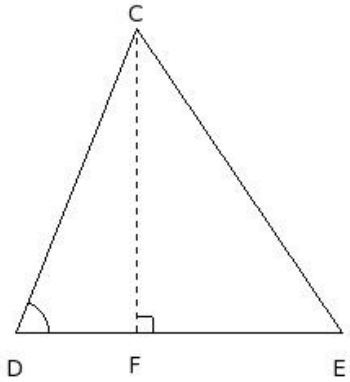
1. In the given figure, △BCD is an obtuse angled triangle and BE ⊥ CD. Then




(i) $BD^2 = BC^2 + CD^2 + 2CE.DE$ (ii) $BD^2 = BC^2 + CD^2 + CE^2$ (iii) $BD^2 = BC^2 + CD^2 - 2CD.CE$

(iv) $BD^2 = BC^2 + CD^2 + 2CD.CE$ (v) $BD^2 = BC^2 + CD^2 + 2BC.CD$

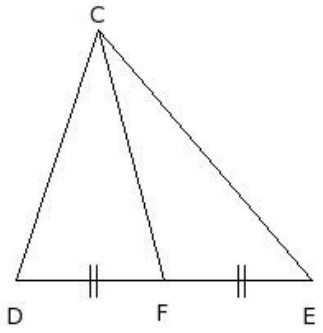
2. In the given figure, △CDE is an acute angled triangle and CF ⊥ DE. Then




(i) $CE^2 = CD^2 + DE^2 - 2CD.DE$ (ii) $CE^2 = CD^2 + DE^2 + 2DE.DF$ (iii) $CE^2 = CD^2 + DE^2 - 2DE.DF$

(iv) $CE^2 = CD^2 + DE^2 - CF^2$ (v) $CE^2 = CD^2 + DE^2 + 2CD.DE$

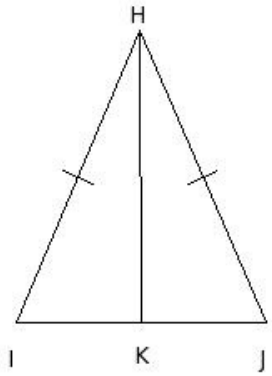
3. In the given figure, △CDE is a triangle with CF being the median of DE. Then




(i) $CD^2 + CE^2 = 2DF^2 + 2FE^2$ (ii) $CD^2 + CE^2 = 2FE^2 + 2CF^2$ (iii) $CD^2 + CE^2 = DE^2$ (iv) $CD^2 + CE^2 = CF^2$

(v) $CD^2 + CE^2 = 2DF^2 + 2CF^2$

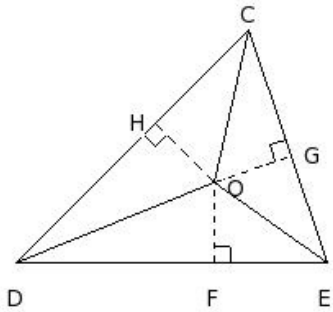
4. In the given figure, △HIJ is a triangle in which HI = HJ and K is a point on IJ. Then




(i) $HI^2 + HK^2 = IJ^2$ (ii) $HI^2 - HK^2 = HK.JK$ (iii) $HI^2 - HK^2 = IK.JK$ (iv) $HI^2 + HK^2 = IK.JK$

(v) $HI^2 - HK^2 = HK.IK$

5. In the given figure, in △CDE, 'O' is a point inside the triangle. OF ⊥ DE, OG ⊥ CE and OH ⊥ CD. Then

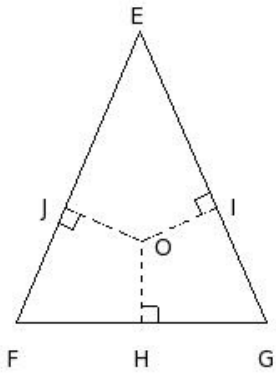



(i) $CH^2 + DF^2 + EG^2 = OC^2 + OD^2 + OE^2 - OF^2 - OG^2 - OH^2$

(ii) $CH^2 + DF^2 + EG^2 = OC^2 + OD^2 + OE^2 + OF^2 + OG^2 + OH^2$ (iii) $CH^2 + DF^2 + EG^2 = OH^2 + OG^2 + OF^2$

(iv) $CH^2 + DF^2 + EG^2 = CD^2 + FE^2 + EC^2 - DH^2 - EF^2 - GC^2$

6. In the given figure, in △EFG, 'O' is a point inside the triangle. OH ⊥ FG, OI ⊥ EG and OJ ⊥ EF. Then




(i) $EJ^2 + FH^2 + GI^2 = OH^2 + OI^2 + OJ^2$ (ii) $EJ^2 + FH^2 + GI^2 = OE.OF + OF.OG + OG.OE$

(iii) $EJ^2 + FH^2 + GI^2 = EI^2 + GH^2 + FJ^2$ (iv) $EJ^2 + FH^2 + GI^2 = OJ.OH + OH.OI + OI.OJ$

7. In the given figure, $\triangle BDC$ is right-angled at $D$. $R$ is the mid-point of $BD$ and $S$ is the mid-point of $CD$. Which of the following cases are true?

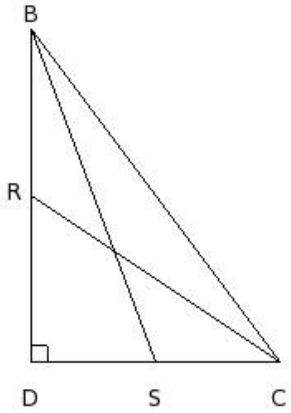
a) $4\,CR^2 = 4\,CD^2 + BD^2$

b) $4\,BS^2 = 4\,BD^2 + CD^2$

c) $4\,CR^2 = 4\,BD^2 + CD^2$

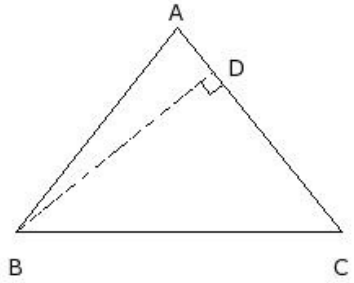
d) $4\,BS^2 = 4\,CD^2 + BD^2$

e) $4\,(BS^2 + CR^2) = 5\,BC^2$




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

8. In the given figure, $\triangle ABC$ is isosceles with $AB = AC$ and $BD \perp AC$. Then




(i) $BD^2 - AD^2 = 2\,CD.AD$ (ii) $BD^2 + AD^2 = 2\,CD.AD$ (iii) $BD^2 + CD^2 = 2\,CD.AD$ (iv) $BD^2 - CD^2 = 2\,CD.AD$

9. In the given figure, CDEF is a rhombus. Which of the following are true?

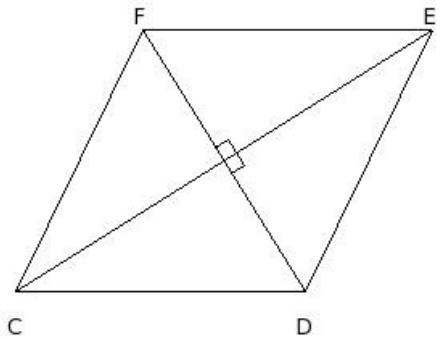
a) $4\,CD^2 = CE^2 + DF^2$

b) $DE^2 + EF^2 = DF^2$

c) $CD^2 + DE^2 + EF^2 + CF^2 = CE^2 + DF^2$

d) $2\,CD^2 = CE^2 + DF^2$

e) $CD^2 + DE^2 = CE^2$




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

10. In the given figure, $\triangle ABC$, $AD \perp BC$. Which of the following are true?

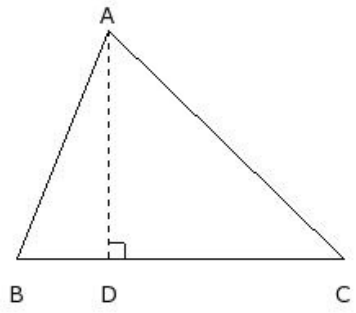
a) $AD^2 = 2BD.CD$

b) $AB^2 - BD^2 = AC^2 - CD^2$

c) $AB^2 + BD^2 = AC^2 + CD^2$

d) $AB^2 + AC^2 = BD^2 + CD^2$

e) $AB^2 - AC^2 = BD^2 - CD^2$

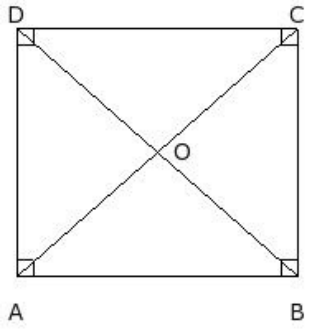



(i) {d,a,b} (ii) {a,b} (iii) {c,e,b} (iv) {c,e} (v) {b,e}

11. The altitude and area of an equilateral triangle of side 'a' is

(i) $\sqrt{3}\,a, \frac{1}{2}\sqrt{3}\,a$ (ii) $\sqrt{3}\,a, \frac{1}{2}\sqrt{3}\,a^2$ (iii) $\frac{1}{2}\sqrt{3}\,a, \frac{1}{4}\sqrt{3}\,a^2$ (iv) $\frac{1}{2}\sqrt{3}\,a, \frac{1}{2}\sqrt{3}\,a^2$

12. In the given figure, O is a point in the interior of the rectangle ABCD. Then




(i) $OA^2 + OC^2 = OB^2 + OD^2$ (ii) $OA^2 - OC^2 = OB^2 - OD^2$

(iii) $OA^2 + OB^2 + OC^2 + OD^2 = AB^2 + BC^2 + CD^2 + DA^2$ (iv) $OA^2 + OB^2 + OC^2 + OD^2 = AC^2 + BD^2$

13. In the given figure, △FGH , I is the mid-point of GH and FJ ⊥ GH. Which of the following are true?

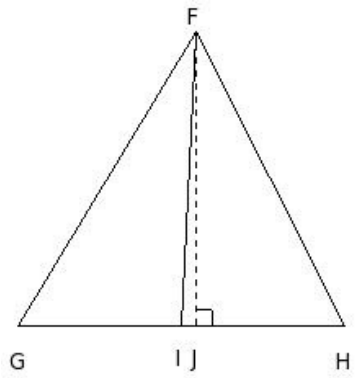
a) $FG^2 + FH^2 = 2\,FI^2 + \frac{1}{2}\,GH^2$

b) $FG^2 = FJ^2 - GH.IJ + \frac{1}{4}\,GH^2$

c) $FH^2 = FI^2 + GH.IJ + \frac{1}{4}\,GH^2$

d) $FH^2 = FJ^2 + GH.IJ + \frac{1}{4}\,GH^2$

e) $FG^2 = FI^2 - GH.IJ + \frac{1}{4}\,GH^2$




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

14. In the given figure, △ACB is right-angled at C, CD ⊥ AB.
$AB = c, CB = a, AC = b$ and $CD = p$. Which of the following are true?

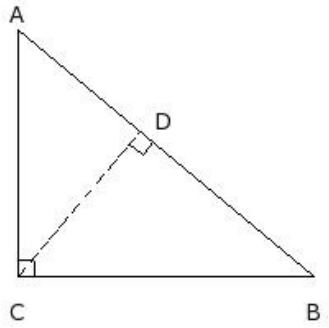
a) $\frac{1}{a^2} + \frac{1}{b^2} + \frac{1}{c^2} = \frac{1}{p^2}$

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

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

d) $ab = pc$

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

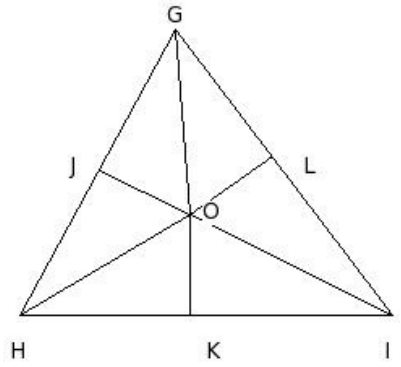



(i) {a,b,c} (ii) {a,b} (iii) {a,e,d} (iv) {b,c,d} (v) {e,c}

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

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

16. In the given figure, GHI is a triangle and 'O' is a point inside △GHI. The angular bisector of ∠HOG, ∠IOH & ∠GOI meet GH, HI & IG at J, K & L respectively . Then




(i) GJ . HK . IL = JK . KL . LJ (ii) GJ . HK . IL = JH . KI . LG (iii) GJ . HK . IL = OG . OH . OI

(iv) GJ . HK . IL = GH . HI . IG (v) GJ . HK . IL = OJ . OK . OL

17. A vehicle goes 11 km North and then 14 km West. How far is it from its starting point ?

(i) 17.80 km (ii) 16.80 km (iii) 18.80 km (iv) 19.80 km (v) 15.80 km

18. The foot of a ladder resting on a wall from the foot of the wall is 10 m. If the height of the top of the ladder from ground is 15 m, find the length of the ladder

(i) 20.03 m (ii) 19.03 m (iii) 16.03 m (iv) 17.03 m (v) 18.03 m

19. Two poles of heights 7 m and 17 m stand vertically on a plane ground. If the distance between their feet is 13 m, find the distance between their tops

(i) 14.40 m (ii) 15.40 m (iii) 17.40 m (iv) 18.40 m (v) 16.40 m

20. A ladder reaches a window which is 12 m above the ground on one side of a street. Keeping its foot at the same point, the ladder is turned to the other side of the street to reach a window 15 m high. Find the width of the street if the length of the ladder is 21 m

(i) 30.93 m (ii) 29.93 m (iii) 31.93 m (iv) 32.93 m (v) 33.93 m

21. In a right angled triangle, if one of the sides is 20 cm and hypotenuse 101 cm, find the third side

(i) 100.00 cm (ii) 98.00 cm (iii) 97.00 cm (iv) 101.00 cm (v) 99.00 cm

22. In a right angled triangle, if the two non-hypotenuse sides are 12 cm and 35 cm, find the hypotenuse

(i) 36.00 cm (ii) 37.00 cm (iii) 38.00 cm (iv) 39.00 cm (v) 35.00 cm

23. In a right angled triangle, if one of the angles is 42.51°, find the third angle

(i) 77.49° (ii) 52.49° (iii) 62.49° (iv) 57.49° (v) 47.49°

24. In a right angled triangle, if one of the angles is 56.31°, find the third angle

(i) 43.69° (ii) 48.69° (iii) 38.69° (iv) 63.69° (v) 33.69°

## Assignment Key

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|---|---|---|---|---|---|
| 1) (iv) | 2) (iii) | 3) (v) | 4) (iii) | 5) (i) | 6) (iii) |
| 7) (iv) | 8) (iv) | 9) (ii) | 10) (v) | 11) (iii) | 12) (i) |
| 13) (v) | 14) (iv) | 15) (iii) | 16) (ii) | 17) (i) | 18) (v) |
| 19) (v) | 20) (iii) | 21) (v) | 22) (ii) | 23) (v) | 24) (v) |