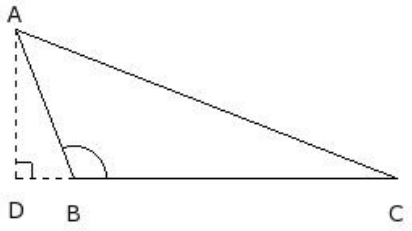
EduSahara™ Assignment

Name : Pythagoras Theorem

Chapter : Pythagoras Theorem

Grade : ICSE Grade IX

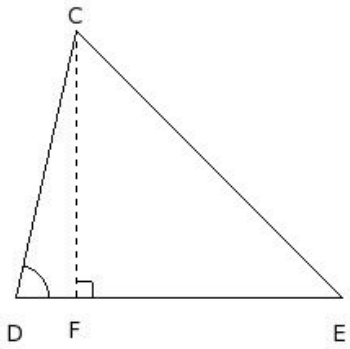
1. In the given figure, △ABC is an obtuse angled triangle and AD ⊥ BC. Then



(i) $AC^2 = AB^2 + BC^2 + BD^2$ (ii) $AC^2 = AB^2 + BC^2 + 2BC.BD$ (iii) $AC^2 = AB^2 + BC^2 - 2BC.BD$

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

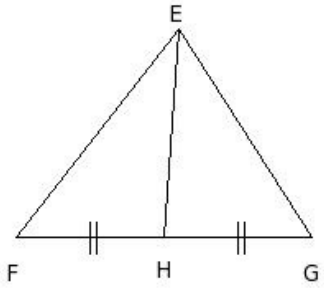
2. In the given figure, △CDE is an acute angled triangle and CF ⊥ DE. Then



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

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

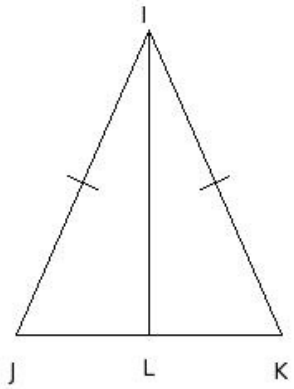
3. In the given figure, △EFG is a triangle with EH being the median of FG. Then



(i) $EF^2 + EG^2 = EH^2$ (ii) $EF^2 + EG^2 = FG^2$ (iii) $EF^2 + EG^2 = 2FH^2 + 2EH^2$ (iv) $EF^2 + EG^2 = 2FH^2 + 2HG^2$

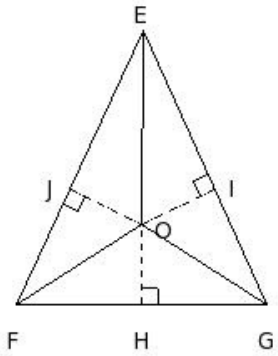
(v) $EF^2 + EG^2 = 2HG^2 + 2EH^2$

4. In the given figure, △IJK is a triangle in which IJ = IK and L is a point on JK. Then



(i) $IJ^2 - IL^2 = IL.JL$ (ii) $IJ^2 - IL^2 = IL.KL$ (iii) $IJ^2 + IL^2 = JL.KL$ (iv) $IJ^2 - IL^2 = JL.KL$ (v) $IJ^2 + IL^2 = JK^2$

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

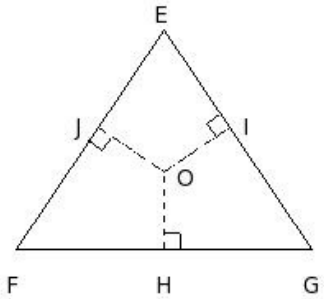


(i) $EJ^2 + FH^2 + GI^2 = EF^2 + HG^2 + GE^2 - FJ^2 - GH^2 - IE^2$ (ii) $EJ^2 + FH^2 + GI^2 = OJ^2 + OI^2 + OH^2$

(iii) $EJ^2 + FH^2 + GI^2 = OE^2 + OF^2 + OG^2 - OH^2 - OI^2 - OJ^2$

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

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



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

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

7. In the given figure, $\triangle CED$ is right-angled at E. S is the mid-point of CE and T is the mid-point of DE. Which of the following cases are true?

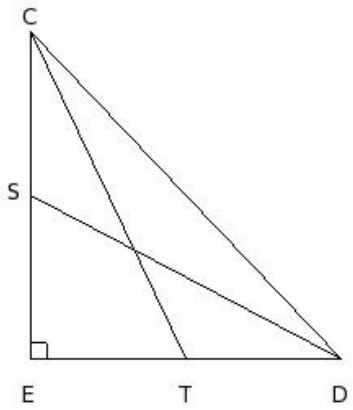
a) $4\,CT^2 = 4\,DE^2 + CE^2$

b) $4\,CT^2 = 4\,CE^2 + DE^2$

c) $4\,DS^2 = 4\,DE^2 + CE^2$

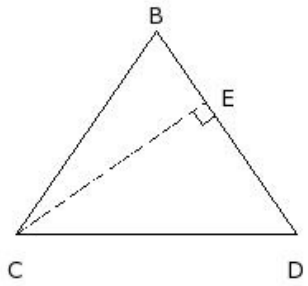
d) $4\,DS^2 = 4\,CE^2 + DE^2$

e) $4\,(CT^2 + DS^2) = 5\,CD^2$



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

8. In the given figure, $\triangle BCD$ is isosceles with $BC = BD$ and $CE \perp BD$. Then



(i) $CE^2 + DE^2 = 2\,DE.BE$ (ii) $CE^2 + BE^2 = 2\,DE.BE$ (iii) $CE^2 - BE^2 = 2\,DE.BE$ (iv) $CE^2 - DE^2 = 2\,DE.BE$

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

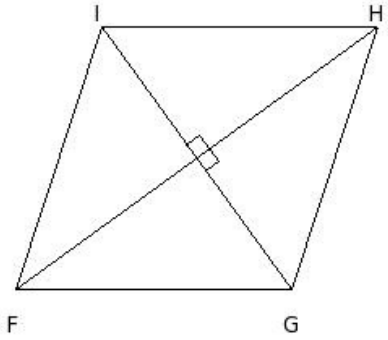
a) $GH^2 + HI^2 = GI^2$

b) $4\,FG^2 = FH^2 + GI^2$

c) $2\,FG^2 = FH^2 + GI^2$

d) $FG^2 + GH^2 = FH^2$

e) $FG^2 + GH^2 + HI^2 + FI^2 = FH^2 + GI^2$



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

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

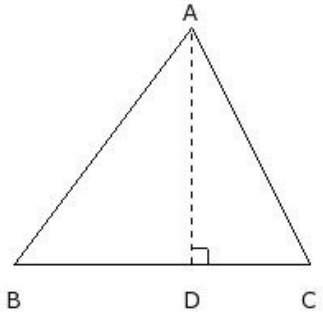
a) $AB^2 + AC^2 = BD^2 + CD^2$

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

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

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

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

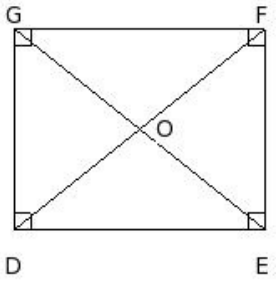


(i) {c,a,d} (ii) {a,d} (iii) {d,e} (iv) {b,e,d} (v) {b,e}

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

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

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



(i) $OD^2 + OF^2 = OE^2 + OG^2$ (ii) $OD^2 + OE^2 + OF^2 + OG^2 = DE^2 + EF^2 + FG^2 + GD^2$

(iii) $OD^2 + OE^2 + OF^2 + OG^2 = DF^2 + EG^2$ (iv) $OD^2 - OF^2 = OE^2 - OG^2$

13. In the given figure, $\triangle BCD$, E is the mid-point of CD and BF $\perp$ CD. Which of the following are true?

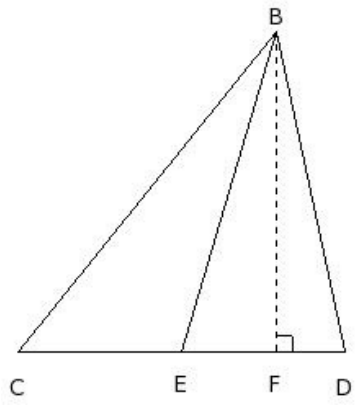
a) $BD^2 = BF^2 + CD.EF + \frac{1}{4} CD^2$

b) $BC^2 = BF^2 - CD.EF + \frac{1}{4} CD^2$

c) $BD^2 = BE^2 + CD.EF + \frac{1}{4} CD^2$

d) $BC^2 = BE^2 - CD.EF + \frac{1}{4} CD^2$

e) $BC^2 + BD^2 = 2\,BE^2 + \frac{1}{2} CD^2$



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

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

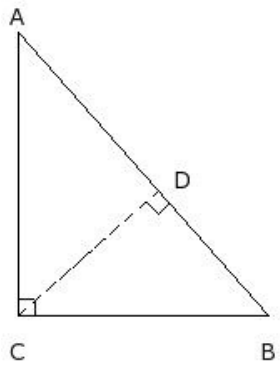
a) $\frac{1}{a^2} + \frac{1}{b^2} = \frac{1}{p^2}$

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

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

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

e) $ab = pc$

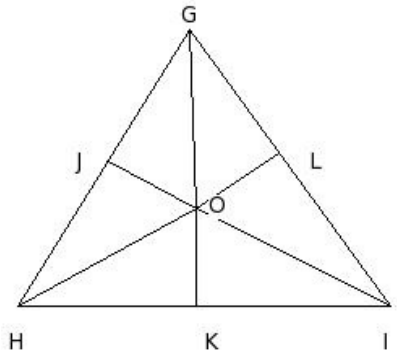


(i) {b,a} (ii) {b,a,c} (iii) {b,d,e} (iv) {d,c} (v) {a,c,e}

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

(i) $7\,AD^2 = 3\,AB^2$ (ii) $9\,AD^2 = 7\,AB^2$ (iii) $3\,AD^2 = 7\,AB^2$ (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 = OJ . OK . OL (iii) GJ . HK . IL = GH . HI . IG

(iv) GJ . HK . IL = OG . OH . OI (v) GJ . HK . IL = JH . KI . LG

17. A vehicle goes 14 km East and then 10 km South. How far is it from its starting point ?

(i) 19.20 km (ii) 15.20 km (iii) 17.20 km (iv) 18.20 km (v) 16.20 km

18. The foot of a ladder resting on a wall from the foot of the wall is 14 m. If the height of the top of the ladder from ground is 11 m, find the length of the ladder

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

19. Two poles of heights 7 m and 17 m stand vertically on a plane ground. If the distance between their feet is 11 m, find the distance between their tops

(i) 16.87 m (ii) 12.87 m (iii) 14.87 m (iv) 15.87 m (v) 13.87 m

20. A ladder reaches a window which is 9 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 14 m high. Find the width of the street if the length of the ladder is 17 m

(i) 25.07 m (ii) 23.07 m (iii) 26.07 m (iv) 24.07 m (v) 22.07 m

21. In a right angled triangle, if one of the sides is 4 cm and hypotenuse 5 cm, find the third side

(i) 3.00 cm (ii) 1.00 cm (iii) 5.00 cm (iv) 4.00 cm (v) 2.00 cm

22. In a right angled triangle, if the two non-hypotenuse sides are 14 cm and 48 cm, find the hypotenuse

(i) 51.00 cm (ii) 50.00 cm (iii) 52.00 cm (iv) 49.00 cm (v) 48.00 cm

23. In a right angled triangle, if one of the angles is 52.43°, find the third angle

(i) 42.57° (ii) 67.57° (iii) 37.57° (iv) 47.57° (v) 52.57°

24. In a right angled triangle, if one of the angles is 42.71°, find the third angle

(i) 62.29° (ii) 52.29° (iii) 47.29° (iv) 77.29° (v) 57.29°

Assignment Key

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