EduSahara™ Learning Center Assignment

Grade : Class IX, ICSE
Chapter : Pythagoras Theorem
Name : Pythagoras Theorem

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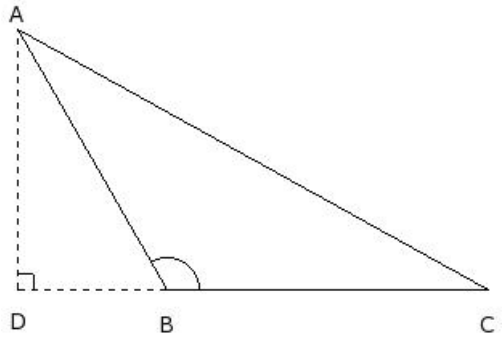
1. In the given figure, △ABC is an obtuse angled triangle and AD ⊥ BC. Then



(i) $AC^2 = AB^2 + BC^2 + BD^2$

(ii) $AC^2 = AB^2 + BC^2 + 2\ BC\ .\ BD$

(iii) $AC^2 = AB^2 + BC^2 + 2\ AB\ .\ BC$

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

(v) $AC^2 = AB^2 + BC^2 - 2\ BC\ .\ BD$

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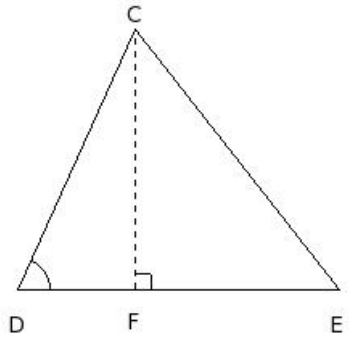
2. In the given figure, △CDE is an acute angled triangle and CF ⊥ DE. Then



(i) $CE^2 = CD^2 + DE^2 + 2\ DE\ .\ DF$

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

(iii) $CE^2 = CD^2 + DE^2 + 2\ CD\ .\ DE$

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

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

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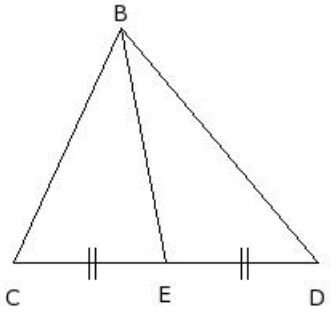
3. In the given figure, △BCD is a triangle with BE being the median of CD. Then



(i) $BC^2 + BD^2 = 2\ CE^2 + 2\ BE^2$

(ii) $BC^2 + BD^2 = 2\ ED^2 + 2\ BE^2$

(iii) $BC^2 + BD^2 = 2\ CE^2 + 2\ ED^2$

(iv) $BC^2 + BD^2 = BE^2$

(v) $BC^2 + BD^2 = CD^2$

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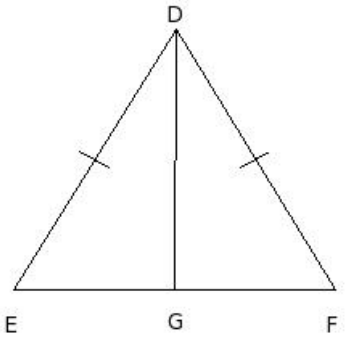
4. In the given figure, △DEF is a triangle in which DE = DF and G is a point on EF



(i) $DE^2 - DG^2 = DG \cdot FG$

(ii) $DE^2 - DG^2 = EG \cdot FG$

(iii) $DE^2 + DG^2 = EF^2$

(iv) $DE^2 - DG^2 = DG \cdot EG$

(v) $DE^2 + DG^2 = EG \cdot FG$

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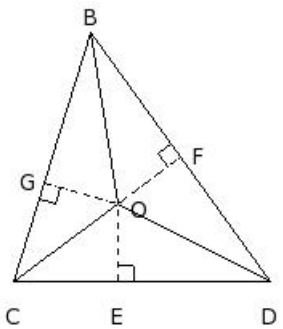
5. In the given figure, in △BCD, 'O' is a point inside the triangle. OE ⊥ CD, OF ⊥ BD and OG ⊥ BC. Then



(i) $BG^2 + CE^2 + DF^2 = OB^2 + OC^2 + OD^2 + OE^2 + OF^2 + OG^2$

(ii) $BG^2 + CE^2 + DF^2 = BC^2 + ED^2 + DB^2 - CG^2 - DE^2 - FB^2$

(iii) $BG^2 + CE^2 + DF^2 = OB^2 + OC^2 + OD^2 - OE^2 - OF^2 - OG^2$

(iv) $BG^2 + CE^2 + DF^2 = OG^2 + OF^2 + OE^2$

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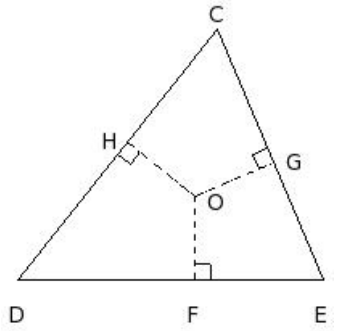
6. In the given figure, in △CDE, 'O' is a point inside the triangle. OF ⊥ DE, OG ⊥ CE and OH ⊥ CD. Then



(i) $CH^2 + DF^2 + EG^2 = OH \cdot OF + OF \cdot OG + OG \cdot OH$

(ii) $CH^2 + DF^2 + EG^2 = CG^2 + EF^2 + DH^2$

(iii) $CH^2 + DF^2 + EG^2 = OF^2 + OG^2 + OH^2$

(iv) $CH^2 + DF^2 + EG^2 = OC \cdot OD + OD \cdot OE + OE \cdot OC$

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7. In the given figure, △DFE is right-angled at F . T is the mid-point of DF and U is the mid-point of EF . Which of the following cases are true ?

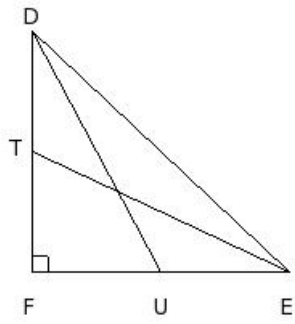
a) $4\ ET^2 = 4\ EF^2 + DF^2$

b) $4\ DU^2 = 4\ EF^2 + DF^2$

c) $4\ ET^2 = 4\ DF^2 + EF^2$

d) $4\ DU^2 = 4\ DF^2 + EF^2$

e) $4\ (\ DU^2 + ET^2\ ) = 5\ DE^2$



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

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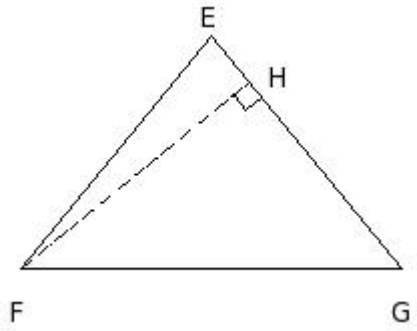
8. In the given figure, △EFG is isosceles with EF = EG and FH ⊥ EG. Then



(i) $FH^2 + GH^2 = 2\,GH \,.\, EH$

(ii) $FH^2 - GH^2 = 2\,GH \,.\, EH$

(iii) $FH^2 + EH^2 = 2\,GH \,.\, EH$

(iv) $FH^2 - EH^2 = 2\,GH \,.\, EH$

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

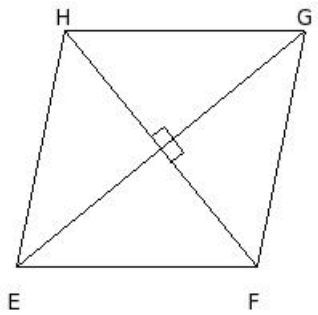
a) $EF^2 + FG^2 = EG^2$

b) $2\ EF^2 = EG^2 + FH^2$

c) $4\ EF^2 = EG^2 + FH^2$

d) $EF^2 + FG^2 + GH^2 + EH^2 = EG^2 + FH^2$

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



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

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10. In the given figure, $\triangle CDE$, $CF \perp DE$. Which of the following are true ?

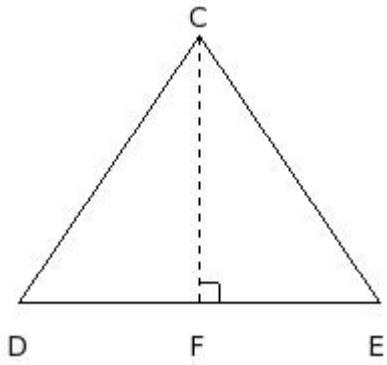
a) $CD^2 - DF^2 = CE^2 - EF^2$

b) $CD^2 - CE^2 = DF^2 - EF^2$

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

d) $CD^2 + DF^2 = CE^2 + EF^2$

e) $CF^2 = 2\,DF \,.\, EF$



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

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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) $\sqrt{3}\ a,\ \frac{1}{2}\sqrt{3}\ a$

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

(iv) $\sqrt{3}\ a,\ \frac{1}{2}\sqrt{3}\ a^2$

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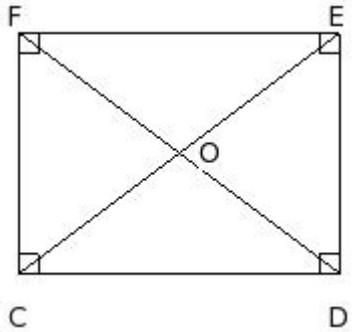
12. In the given figure, O is a point in the interior of the rectangle CDEF. Then



(i) $OC^2 + OD^2 + OE^2 + OF^2 = CD^2 + DE^2 + EF^2 + FC^2$

(ii) $OC^2 + OD^2 + OE^2 + OF^2 = CE^2 + DF^2$

(iii) $OC^2 - OE^2 = OD^2 - OF^2$

(iv) $OC^2 + OE^2 = OD^2 + OF^2$

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13. In the given figure, $\triangle FGH$, I is the mid-point of GH and $FJ \perp GH$. Which of the following are true ?

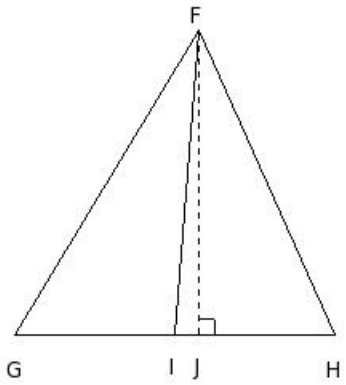
a) $FG^2 + FH^2 = 2\ FI^2 + \frac{1}{2}\ GH^2$

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

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

d) $FG^2 = FI^2 - GH \cdot IJ + \frac{1}{4} GH^2$

e) $FH^2 = FJ^2 + GH \cdot IJ + \frac{1}{4} GH^2$



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

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14. 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 ?

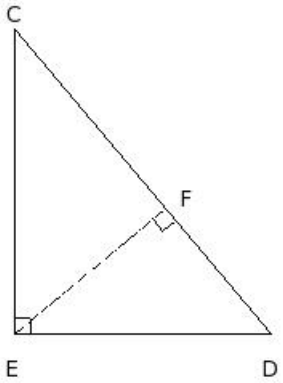
a) $\frac{1}{a^2} + \frac{1}{b^2} = \frac{1}{c^2} + \frac{1}{p^2}$

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

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

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

e) ab = pc



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

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

(i) $7 AD^2 = 9 AB^2$

(ii) $9 AD^2 = 7 AB^2$

(iii) $3\,AD^2 = 7\,AB^2$

(iv) $7\,AD^2 = 3\,AB^2$

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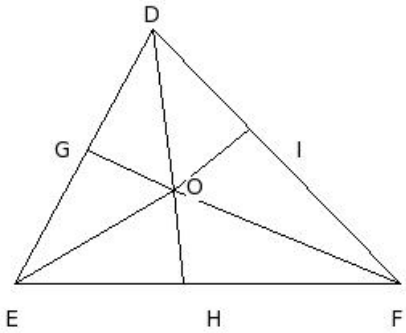
16. In the given figure, DEF is a triangle and 'O' is a point inside △DEF. The angular bisector of ∠EOD, ∠FOE & ∠DOF meet DE, EF & FD at G, H & I respectively . Then



(i) DG . EH . FI = GH . HI . IG

(ii) DG . EH . FI = OG . OH . OI

(iii) DG . EH . FI = OD . OE . OF

(iv) DG . EH . FI = GE . HF . ID

(v) DG . EH . FI = DE . EF . FD

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17. A vehicle goes 13 km East and then 10 km South. How far is it from its starting point ?

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

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18. The foot of a ladder resting on a wall from the foot of the wall is 10 mt. If the height of the top of the ladder from ground is 12 mt, find the length of the ladder

(i) 17.62 mt (ii) 15.62 mt (iii) 14.62 mt (iv) 16.62 mt (v) 13.62 mt

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19. Two poles of heights 5 mt and 14 mt stand vertically on a plane ground. If the distance between their feet is 15 mt, find the distance between their tops

(i) 17.49 mt (ii) 19.49 mt (iii) 18.49 mt (iv) 15.49 mt (v) 16.49 mt

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20. A ladder reaches a window which is 10 mt 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 16 mt high. Find the width of the street if the length of the ladder is 21 mt

(i) 32.07 mt (ii) 31.07 mt (iii) 34.07 mt (iv) 30.07 mt (v) 33.07 mt

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21. In a right angled triangle, if one of the sides is 10 cm and hypotenuse 26 cm, find the third side

(i) 26.00 cm (ii) 25.00 cm (iii) 23.00 cm (iv) 24.00 cm (v) 22.00 cm

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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) 35.00 cm (iii) 39.00 cm (iv) 38.00 cm (v) 37.00 cm

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23. In a right angled triangle, if one of the angles is 51.84°, find the third angle

(i) 48.16° (ii) 68.16° (iii) 53.16° (iv) 43.16° (v) 38.16°

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24. In a right angled triangle, if one of the angles is 47.12°, find the third angle

(i) 57.88° (ii) 52.88° (iii) 47.88° (iv) 42.88° (v) 72.88°

Assignment Key

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