MATHS

BOOKS - UNIQUE MATHS (HINGLISH)

PYTHAGORS THEORM

Practice Set 2 1

1. Identify, with reaosn, which of the are Pythagorean triplets.

$(3, 5, 4)$

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2. Identify, with reaosn, which of the are Pythagorean triplets.

$(4, 9, 12)$

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3. Identify, with reaosn, which of the are Pythagorean triplets.

$(5, 12, 13)$

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4. Identify, with reaosn, which of the are Pythagorean triplets.

$(24, 70, 74)$

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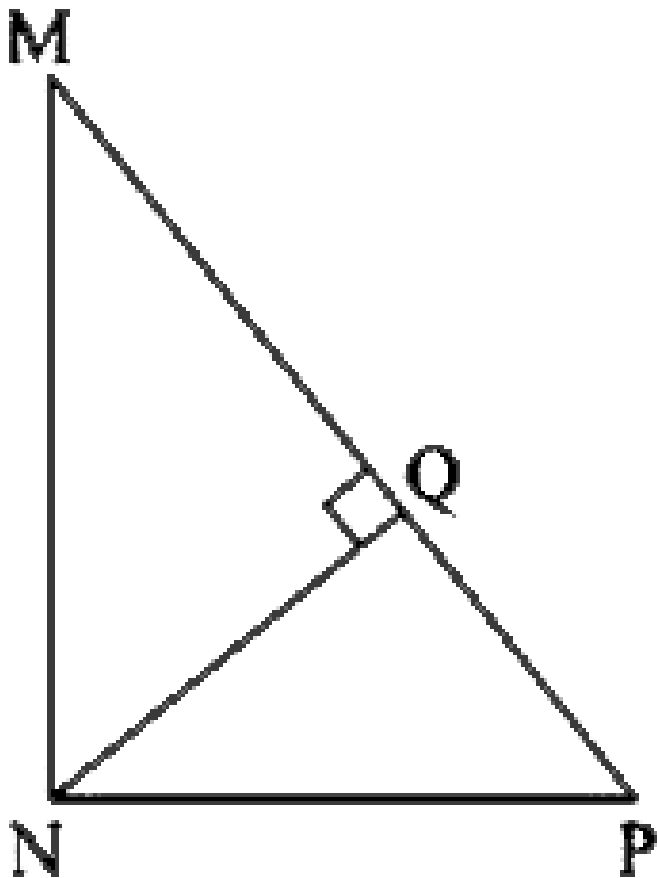**5.** Identify, with reaosn, which of the are Pythagorean triplets.

$(10, 24, 27)$

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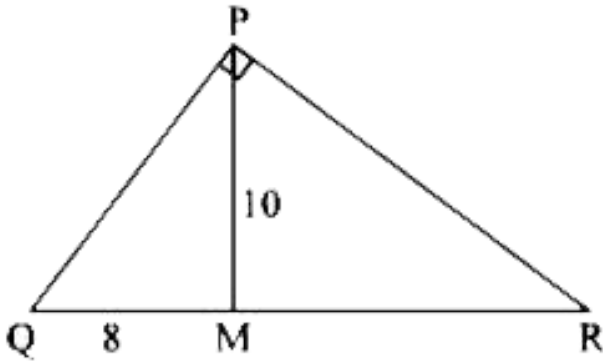**6.** $\angle MNP = 90°$, $NQ \perp MP$, $MQ = 9$, $QP = 4$, find NQ.

7. In the adjoining figure.

$\angle QPR = 90°$,
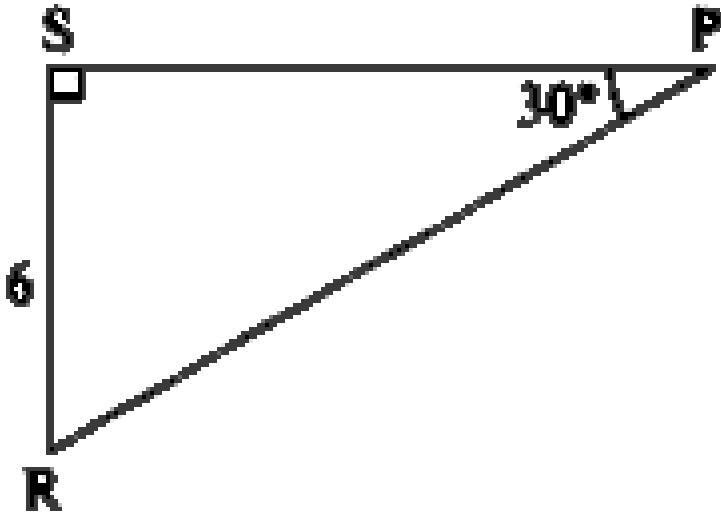
seg $PM \perp segQR$ and $Q - M - R, PM = 10, QM = 8,$

find QR.

8. Find RP and PS using the information given in $\triangle PSR$.

9. For finding AB and BC with the help of information given in figure, complete the following activity.

A

$\sqrt{8}$

B

C
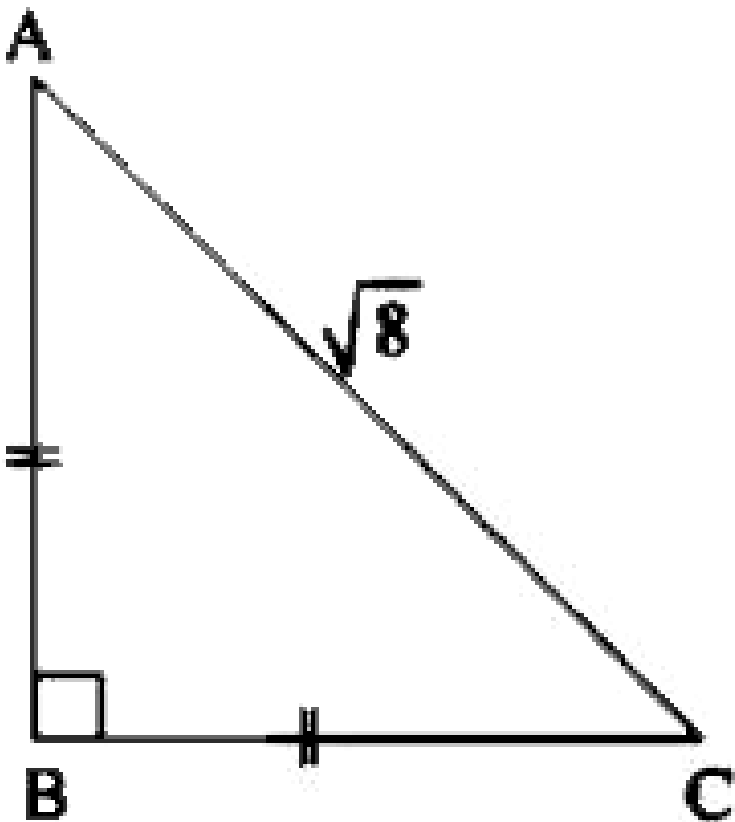
10. Find the side and perimeter of a square whose diagonal is 10 cm.

11. $\angle DFE = 90°$, $FG \perp ED$, $IFGD = 8$, $FG = 12$, find (1)
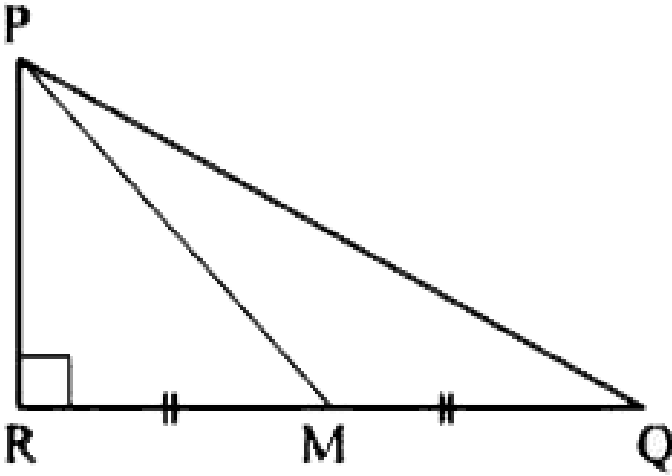
EG (2) FD (3) EF
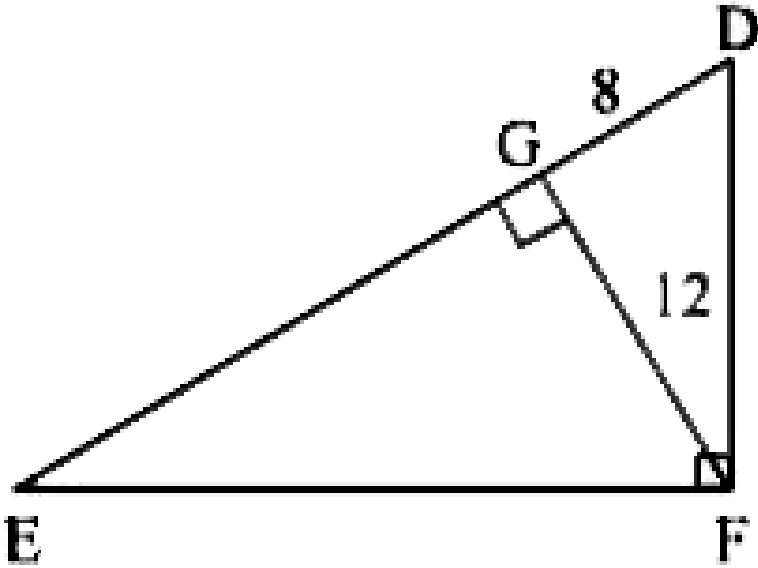
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12. Find the diagonal of a reactiangle whose length is 35 cm

and breadth is 12 cm.

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13. In the given figure, M is the midpoint of QR. $\angle PQR = 90°$.

Prove that, $PQ^2 = 4PM^2 - 3PR^2$.

14. Walls of two buildings on eiterh side of a street are parallel to each other. A ladder 5.8m long is placed on the street such that its top jist reaches the window of a building at the height of 4 m. On turning the ladder over to the other side of the

street, its top touches the window of the other building at a height 4.2 m. Find the width of the street.

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Practice Set 2 2

1. In $\triangle PQR$, point S is the midoint of side QR. If $PQ = 11, PR = 17, PS = 13,$ Find QR.
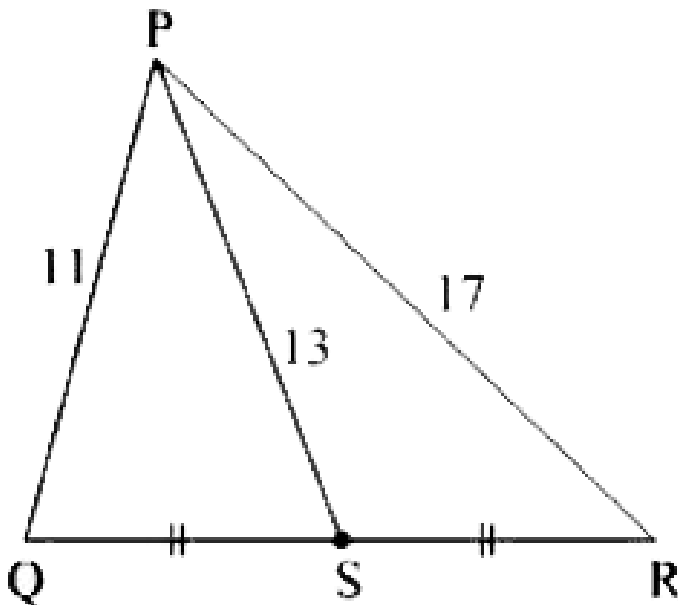
2. In $\triangle ABC$, $AB = 10$, $AC = 7$, $BC = 9$ then find the length of the medium drawn point C to side AB .

3. In adjoining figure, seg PS is the median of $\triangle PQR$ and $PT \perp QR.$ Prove that
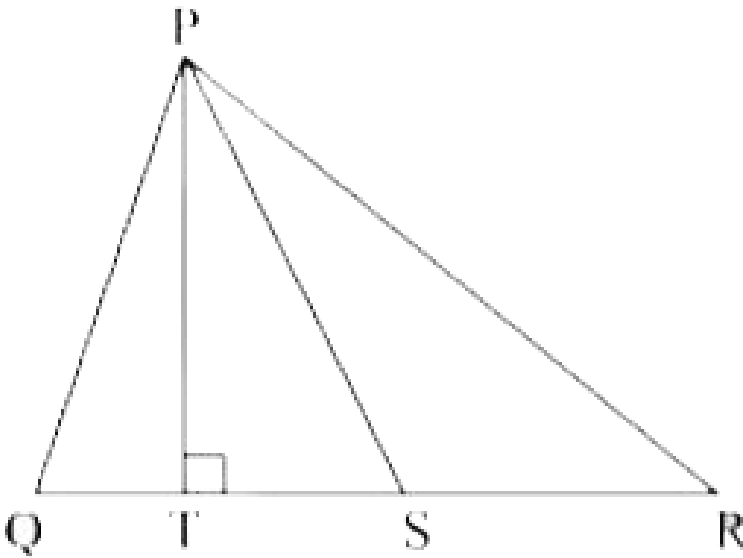
(1) $PR^2 = PS^2 + QR \times ST + \left(\dfrac{OR}{2}\right)^2$

(2) $PQ^2 = PS^2 + QR \times ST + \left(\dfrac{QR}{2}\right)^2$

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4. In Figure point T is the interior of reactangle PQRS, Prove that, $TS^2 + TQ^2 + TR^2$ (As shown in the figure, drawn seg AB

|| side SR and A-T-B)
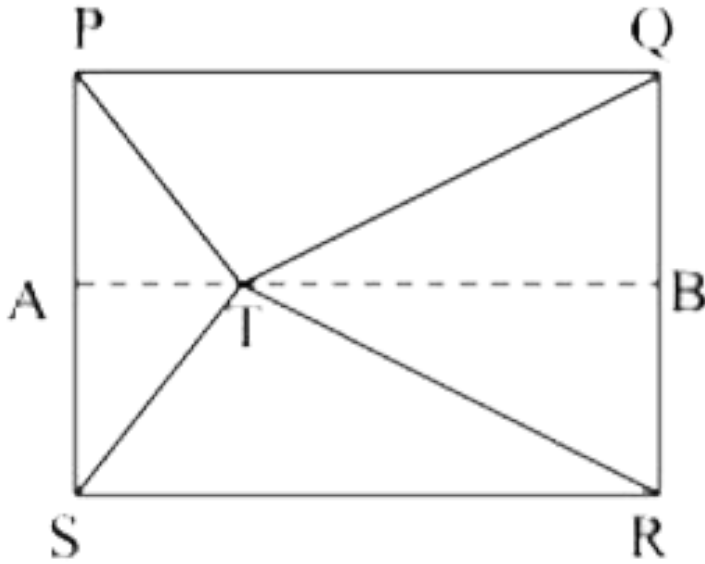
Problem Set 2

1. Out of the following which is the Pythagorean triple ?

A. $(1, 5, 10)$

B. $(3, 4, 5)$

C. $(2, 2, 2)$

D. $(5, 5, 2)$

Answer: B

2. In a right angled triangle, if sum of the squares of sides making right angle is 169 then what is the length of the hypotenuse ?

A. 15

B. 13

C. 5

D. 12

Answer: B

3. Out of the dates given below which date constitutes a Pythagorean triplet ?

A. 15/08/17

B. 16/08/16

C. 42799

D. $\frac{4}{9}/15$

Answer: A

4. If a,b, c are sides of a triangle and $a^2 + b^2 = c^2$, name the type of triangle.

A. Obtuse angled triangle

B. Acute angled triangle

C. Right angled triangle

D. Equilateral triangle

Answer: C

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5. Find the perimeter of a square, if its diagonal is $10\sqrt{2}cm$.

A. 10 cm

B. $40\sqrt{2}$

C. $20cm$

D. $40cm$

Answer: D

6. Altitude on the hypotenuse of a right angled triangle divides it in two parts of lengths 4 cm and 9 cm. Find the length of the altitude.

A. 9 cm

B. 4 cm

C. 6 cm

D. $2\sqrt{6}$ cm

Answer: C

7. Height and base of a right angled triangle are 24 cm and 18 cm find the length of its hypotenus.

    A. 24 cm

    B. 30 cm

    C. 15 cm

    D. 18 cm

Answer: A

8. In $\triangle ABC$, $AB = 6\sqrt{3}cm$, $AC = 12cm$, $BC = 6cm$. Find measure of $\angle A$.

A. $30°$

B. $60°$

C. $90°$

D. $45°$

Answer: A

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9. Find the height of an equilateral triangle having side 2a

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10. Do side 7 cm, 24 cm, 25 cm form a right angled triangle ? Given reason.

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11. Find the length a diagonal of a reactangle having sides 11 cm and 60cm.

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12. Find the length of the hypotenuse of a right angled triangle if remaining sides are 9 cm and 12 cm.

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13. A side of an isosceles right angled triangle is x. Find its hypotensuse.

14. In $\triangle PQR, PQ = \sqrt{8}, QR = \sqrt{5}, PR = \sqrt{3}. Is\triangle PQR$ a right angled triangle ? If yes, which angle is of $92°$?

15. In $\triangle RS \tan g \le S = 90°, \angle T = 30°, RT = 12$ cm then find RS and ST.

16. Find the diagonal of a reactangle whose length is 16 cm and area is 192 sq.cm.

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17. Find the length of the side and perimeter of an equilateral triangle whose height is $\sqrt{3}$ cm.

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18. In $\triangle ABC$ seg AP is a median. If $BC = 18, AB^2 + AC^2 = 260$ Find AP.
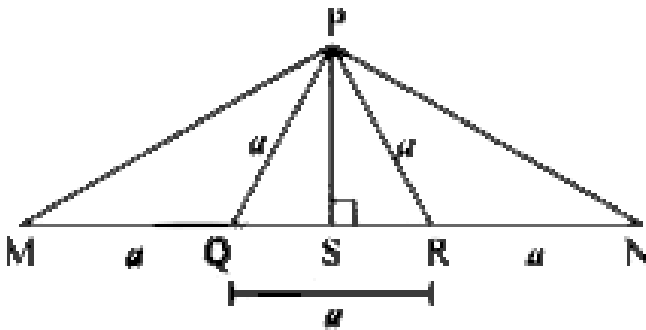
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19. $\triangle ABC$ is an equilateral triangle. Point P is on base BC such that $PC = \dfrac{1}{3}$ BC, if $AB = 6$ cm find AP.

20. From the information given in the figure, prove that

$$PM = PN = \sqrt{3} \times a$$

21. Prove that the sum of squares of the diagonals of a parallelogram is equal to the sum of the squares of its sides.
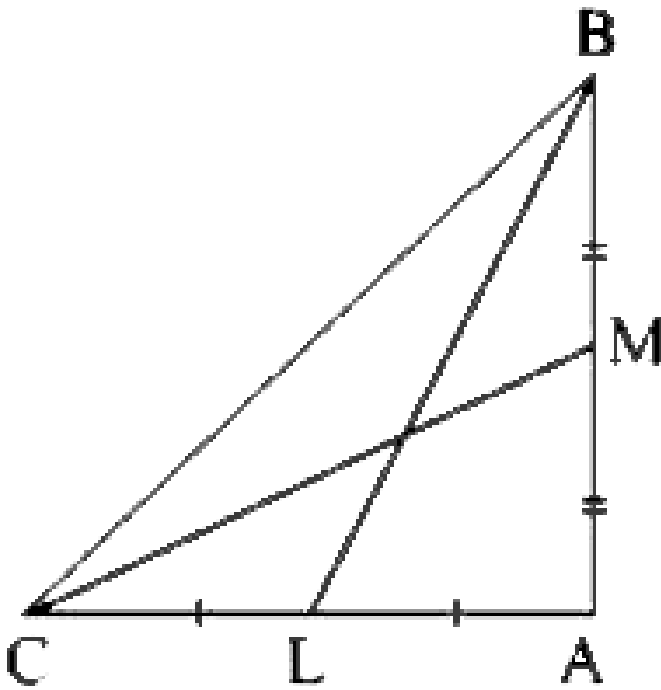
22. Pranali and Prased started walking to the East and to the North respectively, from the same point and at the same speed. After 2 hours distance between them was $15\sqrt{2}$ km. Find their speed per hour.

23. In $\triangle ABC, \angle BAC = 90°$, seg BL and seg CM are median of $\triangle ABC$. Then prove that: $4(Bl^2 + Cm^2) = 5BC^2$

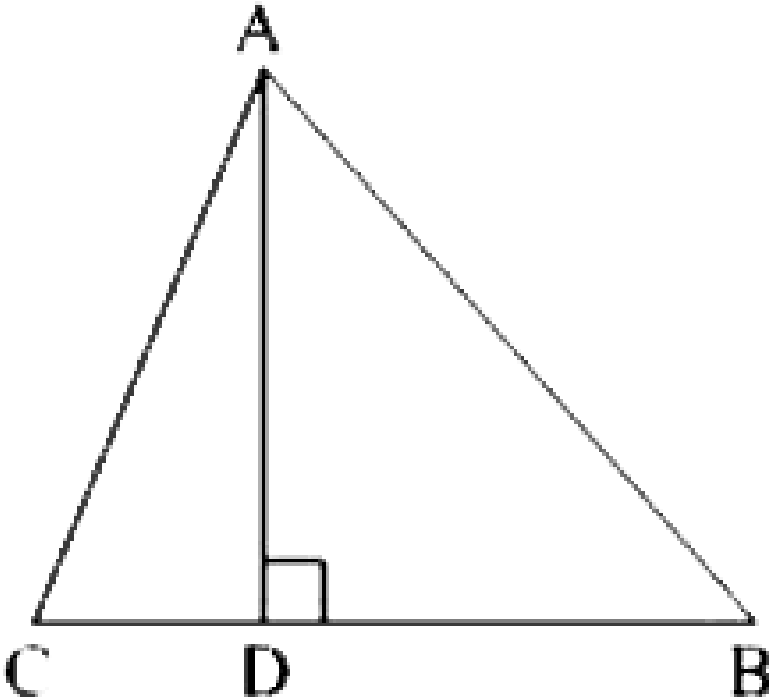**24.** Sum of the squares of adjacent sides of a parallelogram is 130 sq. cm and length of one of its diagonals is 14 cm. Find the length of the other diagonal.

25. In $\triangle ABC$, seg $AD \perp$ seg $BC\ DB = 3CD$.

Prove that : $2AB^2 = 2AC^2 + BC^2$

26. In an isosceles triangle, length of the congruent sides is 13 cm and its base is 10 cm. Find the distance between the vertex

opposite the base and the centrioid.

27. In a trapezium ABCD seg $AB \mid\mid segDC$

seg $BD \perp segAD,$

seg $AC \perp segBC,$

If $AB = 25.$ Find $A(\square ABCD)$
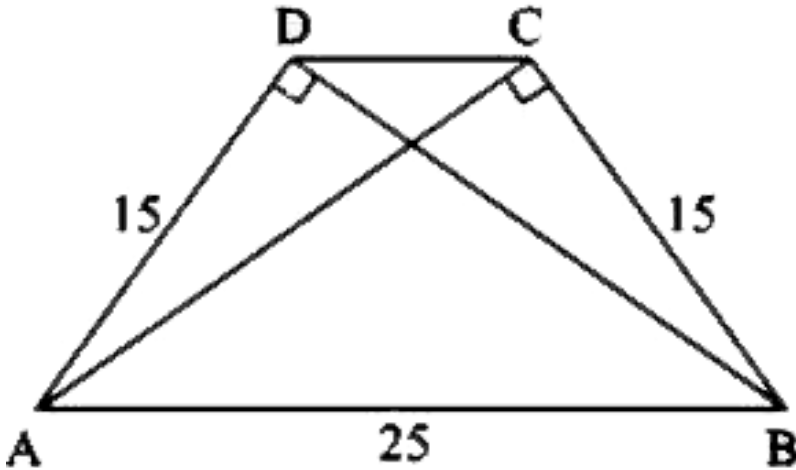
28. In the figure $\triangle PQR$ is an equilateral triangle. Point S is on

seg QR such that

$$QS = \frac{1}{3}QR.$$

Prove that : $9PS^2 = 7PQ^2$
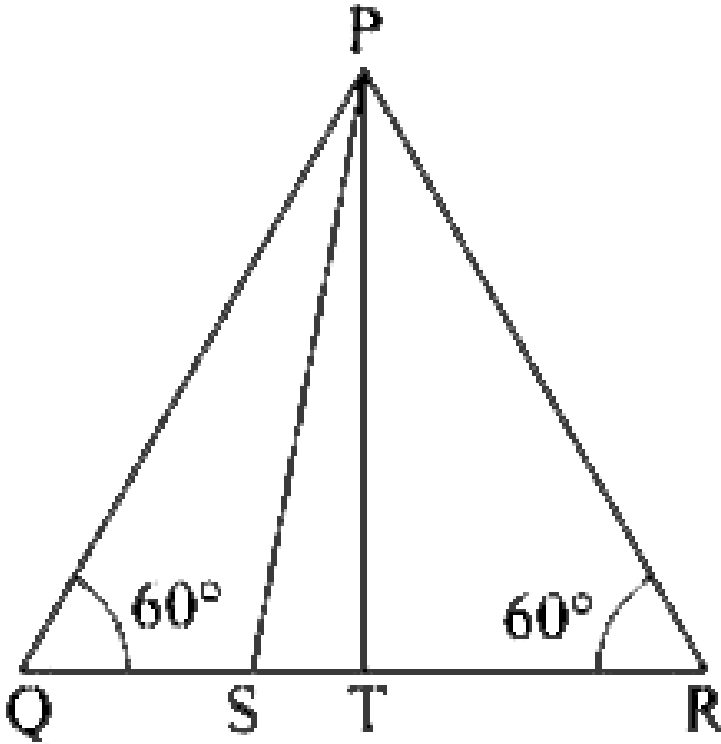
29. Seg PM is a median of ΔPQR. $IF PQ = 40$, $PR = 42$ and $PM = 29$, find QR.

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30. Seg AM is a median of ΔABC. $If AB = 22$, $AC = 34$, $BC = 24$, find AM.

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Hots Solved

1. In ΔABC, $\angle A = 90°$, $AB = AC$, D is any point on BC. Provew that $BD^2 + CD^2 = 2AD^2$.

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2. ΔABC is a triangle where $\angle C = 90°$, $\le tBC = a, CA = b, AB = c$ and let 'p' be the length of the perpendicular from C on AB. Prove that:

$cp = ab$

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3. ΔABC is a triangle where $\angle C = 90°$, $\le tBC = a, CA = b, AB = c$ and let 'p' be the length of the perpendicular from C on AB. Prove that: ?

(ii) $\dfrac{1}{p^2} = \dfrac{1}{a^2} + \dfrac{1}{b^2}$

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4. $\triangle ABC$ is an equilateral triangle. Point D is on seg BC such that $BD = \dfrac{1}{5}AC.$ Prove : that $25AD^2 = 21AB^2$

5. In $\triangle ABC, \angle C = 45°,$ prove that $AB^2 + BC^2 - 4A(\triangle ABC).$

Unique Practice Session Mcq S 1 Marks Question

1. Find the diagonal of a reactangle whose sides are 35 m and 12 m.

2. In $\triangle PQR, p = 17, q = 8, r = 15.$ State with reason whether the triangle is right-angled triangle or not.

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3. In an isoceles right angled triangle, the length of hypotenuse is 8 cm. Find the remaining sides.

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4. Decide whether $(5, 12, 13)$ is Pythagorean triplet or not.

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5. In $\triangle ABC \angle B = 90°$, $\angle A = 30°$. $If AC = 8cm$. Find BC.

6. The perpendicular sides of a right angled triangle are 7 cm and 24 cm. Find the length of the hypotenuse.

7. The length of side of square is 7 cm. Find the legth of its diagonal.

8. Is $6, 4\sqrt{52}$ a Pythagoran triplet ? Give reason.

9. The perimeter of a square is 40. Find its diagonsl.

10. In $\triangle ABC, \angle A = 90°,$ seg $BP \perp$ side $AC. AP = 2, PC = 8.$ Find BP.

11. In $\triangle ABC,$

$\angle C = 90°,$

$\angle B = 60°,$

$\angle C = 6.$ Find AB.

Unique Practice Session Mcq S 2 Marks Question

1. In ΔPQS, $RT \perp QS$. Find a and b.

2. The height of an equilateral teiangle is $3\sqrt{3}$ cm. Find the perimeter.

3. The length of diagonals of a rhombus are 24 cm and 10 cm respectively. Find its side.

4. In Isosceles right angled triangle $ABC, \angle A = 90°, AB = AC.$

IF the length of congruent side is $5\sqrt{2}$ cm. Find AD if $AD \perp BC.$

5. In $\triangle ABC, \angle B = 90°, AB = 5, BC = 12,$ then find the length of median drawn from point B to side AC.

6. In $\triangle PQR, \angle Q = 90°,$ seg $RS \perp$ side PR. If $PQ = 16, QR = 30.$ Find QS.

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7. The lower end of ladder is at the distance of 27 cm from the base of a pillar and its upper end reaches at the height of 120 cm on the pillar. Find the length of the ladder.

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8. A wooden box has dimensions 12 cm, 9 cm, 8 cm. Find maximum length of a stick which can be placed inside the box.

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9. In $\triangle ABC$, $\angle ABC = 150°$, $AD \perp BC$, $AB = 20cm$. Find height of $\triangle ABC$.

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10. See figure. In $\triangle ABC$, $\angle B 90°$, $\angle A = 30°$, $AC = 14$, then find AB and BC.

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11. $\angle PQR = 90°$, $segQn \perp segPR$, $PN = 9$, $NR = 16$. Find QN.

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12. In the right angled triangle, sides making right angle are 9 cm and 12 cm. Find the length of the hypotenuse.

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Unique Practice Session Mcq S 3 Marks Question

1. Starring from Mina/s house Leena first goes 12 m to north then 73 m to west, then 67 m to south and finally 25 m to east and searches Tina's house. Then what is the distance between Mina's ans Tina's house ?

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2.

$\triangle PQR, PQ = QR, m\angle PQR = 120°, Qd \perp PR, P - D - R$

then prove that

$mPR = \sqrt{3}QR = \sqrt{3}PQ$

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3. In $\triangle PQR, \angle PQR = 90°, segQS \perp segPR,$ then find x,y,z.

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4. Two poles of height 7 cm and 12 cm stand on a plane ground. If the distance between their feet is 12 m, distance between their feet is 12 m, find the distance between their tips.

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5. In

$\triangle ABC, segAd \perp segBC, \angle C, = 45°, BD = 5$ and $AC = 5\sqrt{2}$

then find AD and BC.

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6. In $\triangle PQR, \angle PQR = 90°,$

seg $QS \perp$ seg PR then find x,y,z.

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Unique Practice Session Mcq S 4 Marks Question

1. □$PQRS$ is trapezium. Seg $PQ \ || \ seg RS,$

$PS = 6\sqrt{2},$

$PQ = 8.$

Find SR.

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2. The sides of a triangle are 11 m, 60 m, 61 m. Find the altitude to its smallest side and longest side.

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3. Seg Pm is a median of

$\triangle PQR. \ PM = 9$ and $PQ^2 + PR^2 = 290,$ then find QR.

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1. In $\triangle ABC$, seg $AM \perp segBC, AB = 18, BC = 20, AC = 22.$ Find BM and CM.

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