Triangles

<1M>

1.In ΔABC right angled at C, AD is median. Then AB^2 =

(A) $AC^2 - AD^2$

(B) $AD^2 - AC^2$

(C) $3AC^2 - 4AD^2$

(D) $4AD^2 - 3AC^2$

2.Which of the following statement is true?

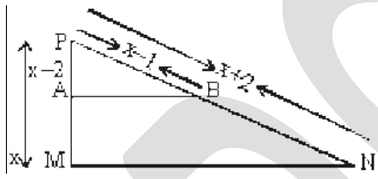
(A) Any two right triangles are similar

(B) Any two squares are similar

(C) Any two rectangles are similar

(D) Both b and c

3.In the given fig. AB || MN, If PA = x - 2, PM = x ; PB = x - 1 and PN = x + 2, find the value of 'x'.



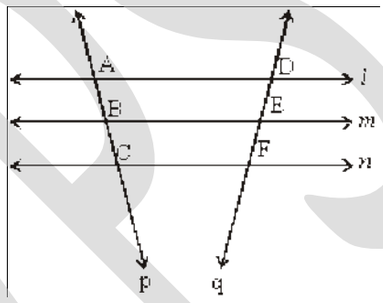
(A) 2

(B) 3

(C) 4

(D) none

4.If three or more parallel lines are intersected by transversals, the intercepts made by them on the transversals are



(A) $\frac{AD}{BE} = \frac{BE}{CF}$

(B) $\frac{AE}{BD} = \frac{BF}{CE}$

(C) $\frac{AC}{BC} = \frac{DF}{DE}$

(D) $\frac{AB}{BC} = \frac{DE}{EF}$

5.If ABC is an equilateral triangle with side 12 cm, then the area of triangle formed by joined its mid points is :

(A) $9\sqrt{3}$ sq cm

(B) $2\sqrt{2}$ sq cm

(C) 64 sq cm

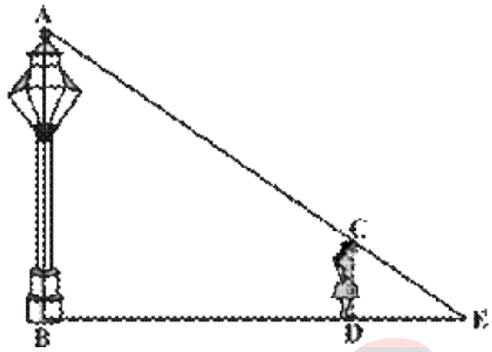
(D) none of these

6.The areas of two similar triangles are 121 cm2and 64 cm2respectively. If the median of the first triangle is 12.1 cm. find the corresponding median of the other.

(A) 8 cm

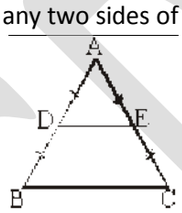
(B) 8.5 cm
(C) 8.9 cm
(D) 8.8 cm

7.A girl of height 120 cm is walking from the base of a lamp-post at a speed to 1.2 m/s. If the lamp is 3.6 m above the ground, find the length of her shadow after 4 seconds.



(A) 1.6 m
(B) 2.2 m
(C) 2.4 m
(D) 2.6 m

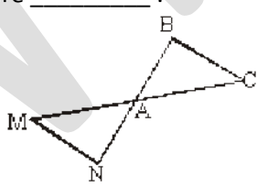
8.The line segment joining the midpoints of any two sides of a triangle is parallel to



(A) right angle
(B) isosceles triangle
(C) second side
(D) Third side

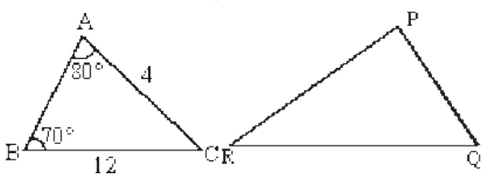
9.If D, E, F are the midpoints of sides BC, CA, AB of ABC. Then the DEF and ABC are_____
(A) congruent
(B) similar
(C) both A & B
(D) none of these

10.Given MN || BC, $\triangle$ABC and $\triangle$ANM are _____ .



(A) similar
(B) congruent
(C) neither similar nor congruent
(D) none of these

11.If $\triangle ABC \cong \triangle PQR$ and then find $\angle R$.



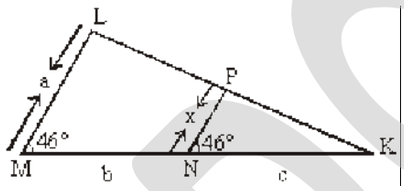
(A) 20°
(B) 30°

(C) 35°
(D) 37°

12.In $\triangle$ABC, AB > AC and AD $\perp$ BC. Then $AB^2 - AC^2$
(A) $BD^2 + AD^2$
(B) $BD^2 + CD^2$
(C) $BD^2 + AC^2$
(D) $BD^2 - CD^2$

13.If the corresponding sides of two triangles are proportional then they are
(A) congruent
(B) similar
(C) proportional
(D) none of these

14.From given fig. express 'x' in terms of a, b, c.



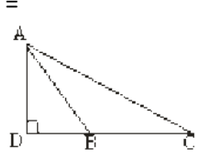
(A) $\frac{-ac}{b+c}$
(B) $\frac{ac}{b-c}$
(C) $\frac{ac}{b+c}$
(D) None

15.The areas of two similar triangles are 64 cm^2, 49 cm^2. Altitude of first one is 6 cm. Then altitude of second in cm is.
(A) 5.25cm
(B) 3.5
(C) 27.56

16.ABC and $\triangle$DEF are similar, in which BC = 3.5 cm, EF = 2.5 cm and area of $\triangle$ABC = 7 sq cm. Then area of $\triangle$DEF in sq cm is
(A) 4.59
(B) 5.49
(C) 9.54
(D) 3.57

17.If the ratios of areas of two similar triangles are 81 : 49 the ratios of their corresponding angle-bisector segments is:
(A) 5 : 4
(B) 9 : 7
(C) 4 : 5
(D) 625 : 256

18.In the figure $\angle$ABC is obtuse. Then AC^2 =



(A) $AB^2 + BC^2 - 2BC.\ BD$
(B) $AB^2 + BC^2$

(C) $AB^2 + BC^2 + 2BC.\ BD$

(D) $AD^2 + BD^2$

19.In the figure, CD $\perp$ AB, CD = p. Then $\frac{c}{a} =$

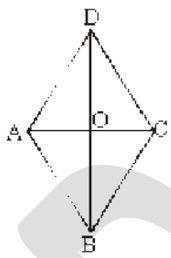
(A) $\frac{c}{b}$

(B) -p/b

(C) $\frac{b}{p}$

(D) None of these

20.In rhombus ABCD, $AB^2 + BC^2 + CD^2 + DA^2 =$



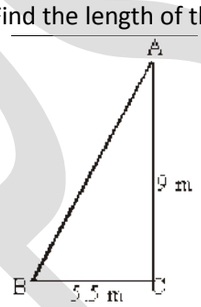
(A) $OA^2 + OB^2$

(B) $OB^2 + OC^2$

(C) $OC^2 + OD^2$

(D) $AC^2 + BD^2$

21.A ladder is placed against a wall such that its foot is at a distance of 5.5m from the wall and its top reaches a window 9 m above the ground. Find the length of the ladder.



(A) 10.52 m

(B) 10.54 m

(C) 11 m

(D) 10.9 m

22.In a right angle triangle, one of the angles is 60 degree, the side opposite to this angle is .

(A) $\frac{1}{2} \times hypotenuse$

(B) $\frac{1}{\sqrt{2}} \times hypotenuse$

(C) $\frac{2}{3} \times hypotenuse$

(D) $\frac{\sqrt{3}}{2} \times hypotenuse$

23.In equilateral triangle ABC, if $AD \perp BC$, then:

(A) $2AB^2 = 3AD^2$

(B) $4AB^2 = 3AD^2$

(C) $3AB^2 = 4AD^2$

(D) $3AB^2 = 2AD^2$

24.On joining the mid points of the sides of a triangle along with any of the vertices as the fourth point make a .

(A) parallelogram

(B) Rhombus

(C) rectangle

(D) Square.

25.The triangle with measurements a = (2p - 1), $b = 2\sqrt{2p}$, c = (2p + 1) is

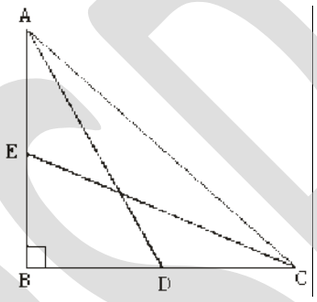
(A) equilateral

(B) right angled

(C) isosceles

(D) none of these

26.In the fig. ABC is a rt. Δ, rt. angled at B. AD and CE are the two medians drawn from A and C respectively. If AC = 5 cm. and AD $= \frac{3\sqrt{5}}{2}$ cm. Then CE



(A) $\sqrt{5}$cm

(B) $\sqrt{7}$cm

(C) $2\sqrt{5}$cm

(D) none of these

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27.The perimeters of two similar triangles are 36 cm and 48 cm respectively. If one side of the first triangles is 9 cm, what is the corresponding side of the other triangle?

28.ABC is a right triangle right-angled at B. Let D and E be any points on AB and BC respectively. Prove that $AE^2 + CD^2 = AC^2 + DE^2$

29.Any point X inside the ΔDEF is joined to its vertices. From a point P in DX, PQ is drawn parallel to DE meeting XE at Q and QR is drawn parallel to EF meeting XF in R. Prove that $PR \parallel DF$

<3M>

30.A girl of height 90 cm is walking away from the base of a lamp-post at a speed of 1.2 m/s. If the lamp is 3.6 m above the ground, find the length of her shadow after 4 seconds.

31.A Point O in the interior of a rectangle ABCD is joined with each of the vertices A,B, C and D prove that $OB^2 + OD^2 = OC^2 + OA^2$

32.

In a trapezium $ABCD, AB \parallel DC$ and $DC = 2\,AB; FE$ drawn parallel to AB Cuts AD in F and BC in $E,$ such that $\frac{BE}{EC} = \frac{3}{4}$ Diagonal DB intersects

FE at G. Prove that $7FE = 10AB$

33.ABC is a triangle in which AB=AC and D is any point in BC. Prove that
$AB^2 - AD^2 = BD.CD$

34.D, E and F are respectively mid-points of the sides of BC, CA and AB of ΔABC. Find the ratio of the areas of ΔDEF and ΔABC

35.In figure ABC is a right triangle, right angled at B. Medians $\overline{AD}$ and CE are of respective lengths 5 cm and $2\sqrt{5}$ cm. Find the length of $\overline{AC}$.

36.

ABC is a right triangle right-angled at C. Let $\overline{BC = a, CA = b, AB = c}$ and let p be the length of perpendicular form C on AB prove that

(i) $\overline{cp = ab}$

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

37.In Figure if $AD \perp BC$ prove that $AB^2 + CD^2 = BD^2 + AC^2$

<6M>

38.Prove that the ratio of the areas of two similar triangles is equal to the ratio of squares of their corresponding sides.

39.Prove that in a right triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides

Use the above theorem in the figure to prove that

$\overline{PR^2 = PQ^2 + QR^2 - 2QM.QR}$

40.If a line is drawn parallel to one side of a triangle intersecting the other two sides, then the other sides are divided in the same ratio. Prove this theorem Using above theorem, prove that in the figure if $ABCD$ is a trapezium in which