

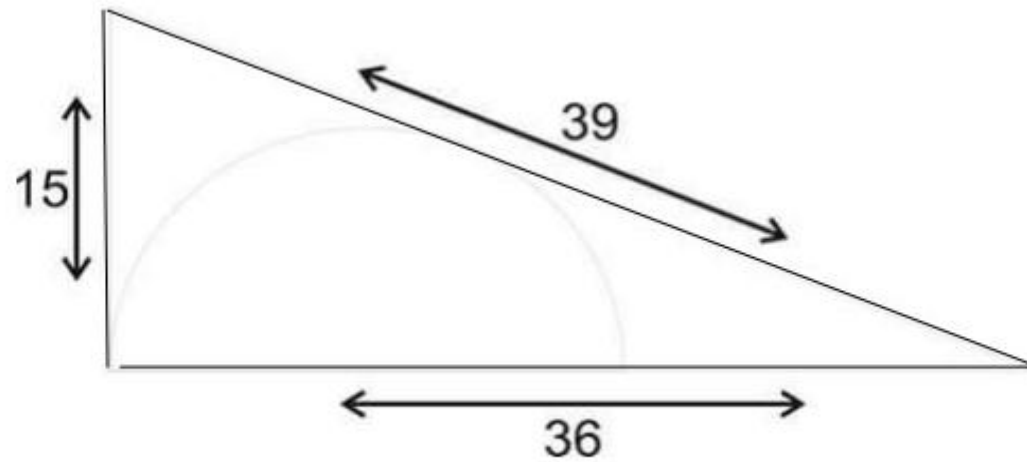
# ELITES GRID

GEOMETRY ASSIGNMENT3 (TRIANGLE -SIMILARITY )

[Free Practice tests – Click here](#)



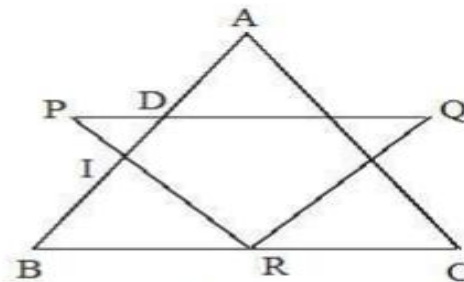
Q.1



Find radius of Semicircle in Right angle triangle .

Q2.

$\triangle ABC$  and  $\triangle PQR$  are triangles such that  $PQ \parallel BC$ ,  $QR \parallel AB$  and  $PR \parallel AC$  as shown in the figure. In  $\triangle PQR$ ,  $2PD = DQ$  and in  $\triangle ABC$ ,  $BI = AD = 2DI$ . Find the ratio of areas of  $\triangle ABC$  and  $\triangle PQR$ .



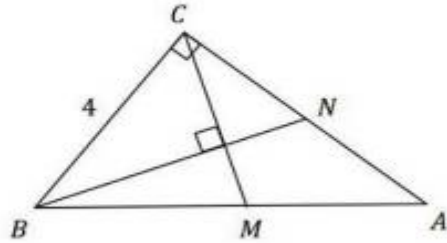
- a.  $\frac{49}{25}$
- c.  $\frac{25}{9}$

e. Cannot be determined

- b.  $\frac{4}{1}$
- d.  $\frac{29}{14}$

**Q3.**

In the figure below, triangle  $ABC$  is a right triangle, with  $\angle BCA = 90^\circ$ . Median  $CM$  is perpendicular to median  $BN$ , and side  $BC = 4$ . The length of  $BN$  is:



a)  $4\sqrt{2}$

b)  $6\sqrt{2}$

c)  $8\sqrt{2}$

d)  $2\sqrt{5}$

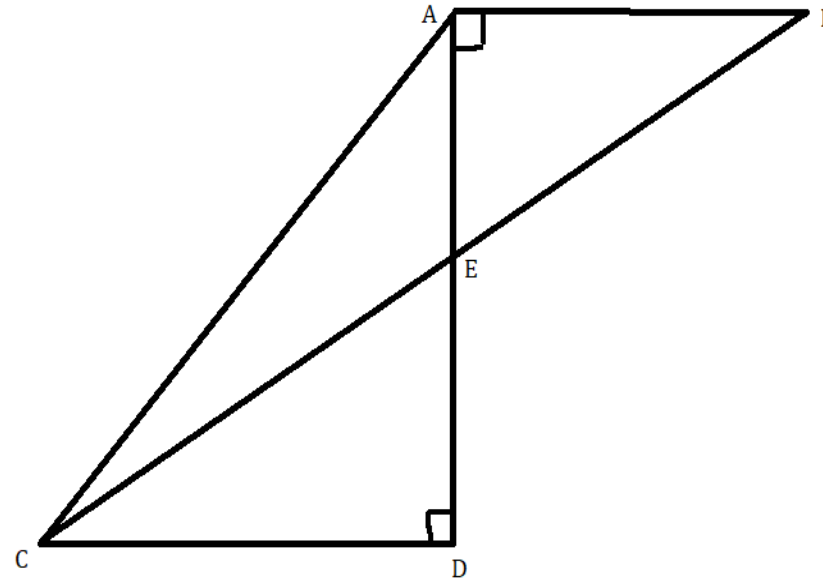
e)  $2\sqrt{6}$

**Q4.** In a triangle  $ABC$  with  $AB = 14$  cm,  $D$  and  $E$  are points on  $BC$  and  $AC$  respectively such that  $BE$  and  $AD$  intersect at point  $F$  and the area of  $\triangle BFD =$  area of  $\triangle AFE$ . Also  $BD:DC = 2:5$ . Find the length of  $DE$ ?

**Q5.** In a triangle  $ABC$ ,  $CD$  and  $AE$  are altitudes such that  $BD = 3$ ,  $DA = 5$ ,  $BE = 2$ . Find  $EC$ .

**Q6.** In triangle  $ABC$  the medians  $AM$  and  $CN$  to sides  $BC$  and  $AB$ , respectively, intersect in point  $O$ .  $P$  is the midpoint of side  $AC$ , and  $MP$  intersects  $CN$  in  $Q$ . If the area of triangle  $OMQ$  is  $n$ , then the area of triangle  $ABC$  is:

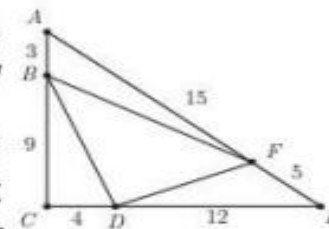
**Q7.**



In the figure above  $AD=4$ ,  $AB=3$ ,  $CD=9$  What is the area of triangle AEC ?

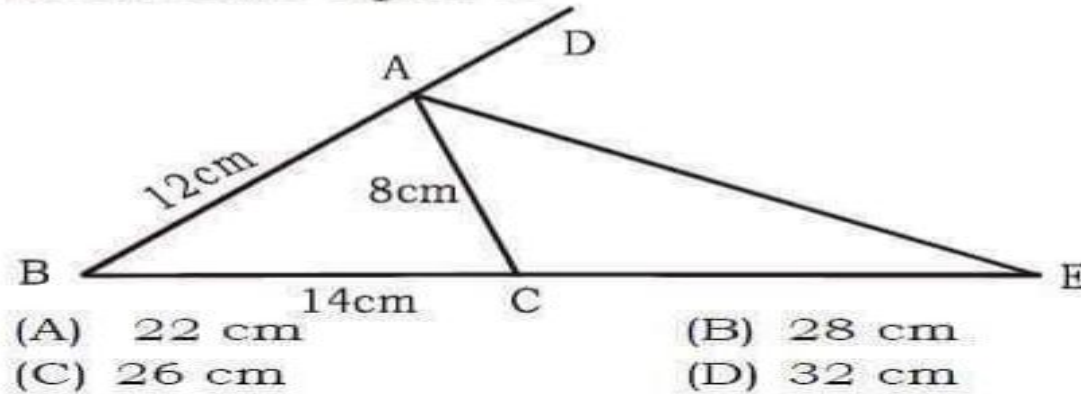
**Q8.**

In right triangle  $\triangle ACE$ , we have  $AC = 12$ ,  $CE = 16$ , and  $EA = 20$ . Points  $B$ ,  $D$ , and  $F$  are located on  $\overline{AC}$ ,  $\overline{CE}$ , and  $\overline{EA}$ , respectively, so that  $AB = 3$ ,  $CD = 4$ , and  $EF = 5$ . What is the ratio of the area of  $\triangle BDF$  to that of  $\triangle ACE$ ?

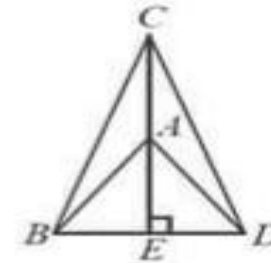


**Q7.**

In the adjoining figure, the bisector of exterior angle  $\angle CAD$  meets  $BC$  produced at  $E$ . If  $AB = 12$  cm,  $AC = 8$  cm and  $BC = 14$  cm, then  $CE$  is equal to –

**Q10.**

In the diagram,  $AB = AC = AD = BD$  and  $CAE$  is a straight line segment that is perpendicular to  $BD$ . What is the measure of  $\angle CDB$ ?

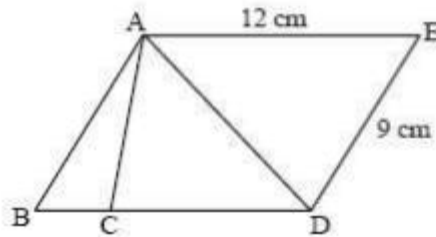


**Q11.** In a trapezium ABCD,  $AB \parallel CD$  and  $AB/CD = 1/4$ . If area of triangle AOB is 4 units (O is intersection point of the diagonals), then find the area of trapezium ABCD.

**Q12.** In a triangle ABC, AD and BE are altitudes and  $EC = 8$ ,  $CD = 6$ ,  $AE = 3$ . Find BC

**Q13.** ABCD is a square. AC & BD intersect at point O. Bisector of angle BAC intersect BO at P and BC at Q. Find the ratio of OP:CQ.

**Q14.** □ABDE is a parallelogram. Also,  $\angle CAB \cong \angle ADB$ . Find CD.



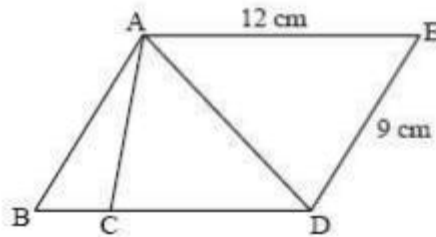
**Q15.** The altitudes PL, QM and RN of the scalene  $\triangle PQR$ , intersect at a point O inside the triangle. If  $PO = 9$  units,  $PL = 10$  units,  $QO = 6$  units, then what is the length of QM?

**Q11.** In a trapezium ABCD,  $AB \parallel CD$  and  $AB/CD = 1/4$ . If area of triangle AOB is 4 units (O is intersection point of the diagonals), then find the area of trapezium ABCD.

**Q12.** In a triangle ABC, AD and BE are altitudes and  $EC = 8$ ,  $CD = 6$ ,  $AE = 3$ . Find BC

**Q13.** ABCD is a square. AC & BD intersect at point O. Bisector of angle BAC intersect BO at P and BC at Q. Find the ratio of OP:CQ.

**Q14.** □ABDE is a parallelogram. Also,  $\angle CAB \cong \angle ADB$ . Find CD.

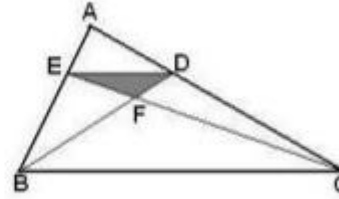


**Q15.** The altitudes PL, QM and RN of the scalene  $\Delta PQR$ , intersect at a point O inside the triangle. If  $PO = 9$  units,  $PL = 10$  units,  $QO = 6$  units, then what is the length of QM?

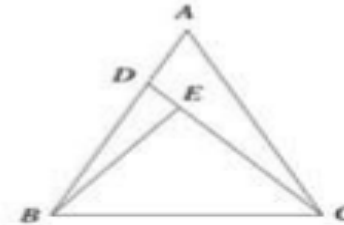
**Q16.**

In triangle  $ABC$ ,  $D$  and  $E$  are points on  $AC$  and  $AB$  such  $DE \parallel BC$  and length of  $DE$  is one-third of  $BC$ . If the area of triangle  $ABC$  is 216 square units, find the area of the shaded triangle.

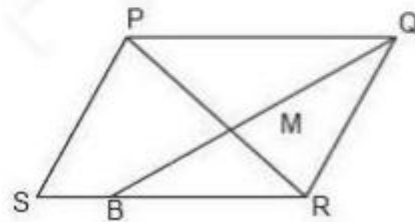
- a) 12    b) 18    c) 24    d) None

**Q17.**

In the figure,  $E$  is a point inside  $\triangle ABC$  and  $CE$  is produced to meet  $AB$  at  $D$ . If  $AB = 6$ ,  $BC = 5$ ,  $CA = 7$  and  $\triangle ABC \sim \triangle CEB$ , find  $CD \times CE$ .

**Q18.**

Consider the following figure. PQRS is a parallelogram. Point  $B$  is on side  $RS$ . Diagonal  $PR$  meets segment  $QB$  at  $M$ . Ratio  $RB:BS$  is 4:1. Calculate the area of triangle  $RMQ$  (in square units) if the area of PQRS is 126 sq. units.

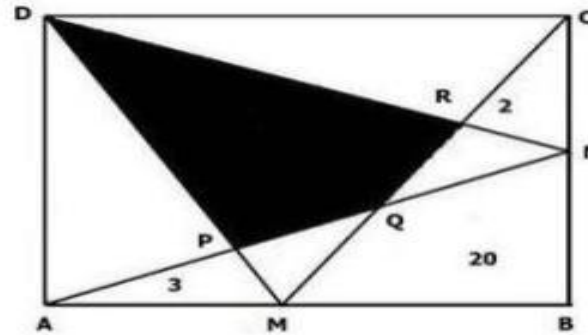




**Q19.**

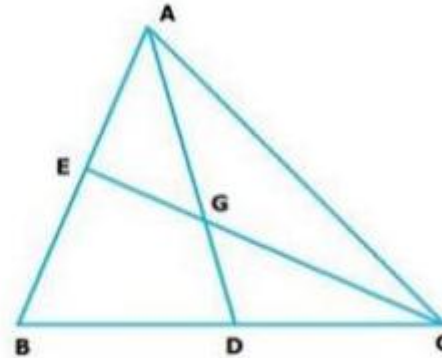
ABCD is a rectangle such that M and N are points on AB and BC respectively. M and N are connected to A, B, C and D as shown in the figure. It is given that area of region APM is 3 units, of region MQNB is 20 units and that of NRC is 2 units. Find the area of black region.

- a) 20
- b) 22
- c) 23
- d) 25

**Q20.**

In the triangle ABC, AD and CE are medians and they intersect at G. It is also given that  $AB = 27$ ,  $AC = 39$  and  $GD = 10$ , then find the length of BC.

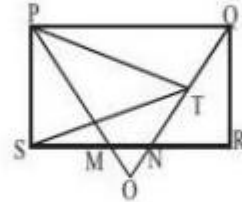
- a) 25
- b) 27
- c) 30
- d) 35



**Q21.** In a triangle ABC right-angled at B, the bisector of the external angle CAF (F is a point on BA extended) when produced intersects the base CB (extended) at E. If  $AB = 3$  cm and  $AC = 5$  cm, then find the length of the line segment AE.

**Q22.**

PQRS is a rectangle and an equilateral triangle OPQ is drawn such that O lies outside the rectangle. TPS is another equilateral triangle such that T lies on OQ as shown in the figure given below. What is the ratio of the lengths of PQ to QR?



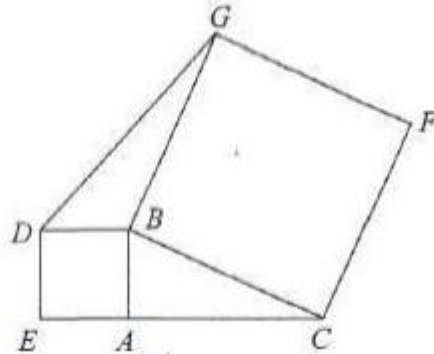
- (1)  $\sqrt{3}$       (2)  $\frac{2}{\sqrt{3}}$       (3) 2      (4)  $\frac{3}{2}$       (5)  $\frac{5}{2}$

**Q23.**

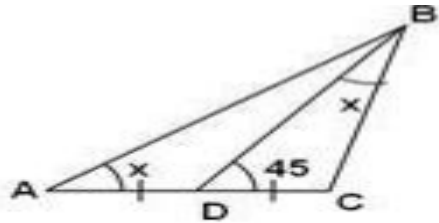
In triangle ABC, the incircle touches the sides BC, CA and AB respectively at D, E and F. If the radius of incircle is 4 units and BD, CE and AF are consecutive integers, then find the perimeter of  $\triangle ABC$ .

**Q24.**

ABC is a right-angled triangle with  $\angle BAC = 90^\circ$ . A square is constructed on the side AB and BC as shown. The area of the square ABDE is  $8 \text{ cm}^2$  and the area of the square BCFG is  $26 \text{ cm}^2$ . Find the area of triangle DBG in  $\text{cm}^2$ .



**Q25.** In triangle ABC,  $AD=DC$  and angle  $BDC=45^\circ$ . Find angle  $x$ .



# **ANSWER KEYS**

**BEFORE CHECKING ANSWER KEYS – TRY QUESTIONS ATLEAST 2-3 TIMES**

[Free Practice tests – Click here](#)



- |                |          |                  |
|----------------|----------|------------------|
| 1) 10          | 11) 100  | 21) $3\sqrt{5}$  |
| 2) 25:9        | 12) 44:3 | 22) $2/\sqrt{3}$ |
| 3) $2\sqrt{6}$ | 13) 1:2  | 23) 42           |
| 4) 10          | 14) 27:4 | 24) 6            |
| 5) 10          | 15) 7.5  | 25) 30           |
| 6) $24n$       | 16) 12   |                  |
| 7) 4.5         | 17) 25   |                  |
| 8) 7:16        | 18) 28   |                  |
| 9) 28          | 19) 25   |                  |
| 10) 75         | 20) 30   |                  |

[Free Practice tests – Click here](#)

