GEOMETRY (TRIANGLE- PROPERTIES)

1. In $\Delta ABC, \angle B = 90°$. If M and N are respectively midpoint of sides AB and BC then 4 $(AN^2 + CM^2)$ is equal to
   (a) $3AC^2$
   (b) $4AC^2$
   (c) $5AC^2$
   (d) $6AC^2$
2. Triangle ABC is right angled at A. If AB = 3 unit, AC = 4 unit and AD is perpendicular to side BC, then what is the area of the triangle ADB?
   (a) $\frac{9}{25}$ $(unit)^2$
   (b) $\frac{54}{25}$ $(unit)^2$
   (c) $\frac{72}{25}$ $(unit)^2$
   (d) $\frac{96}{25}$ $(unit)^2$
3. Suppose that WXYZ is a square. Suppose points P, Q, R are respectively midpoint of WX, XY and ZW. K, L are respectively midpoint of PQ and PR. What is the value of $\frac{area\ of\ triangle\ PKL}{area\ of\ triangle\ WXYZ}$?
   (a) $\frac{1}{32}$
   (b) $\frac{1}{16}$
   (c) $\frac{1}{8}$
   (d) $\frac{1}{64}$
4. ABC is an isosceles triangle such that AB = BC = 8 cm and $\angle ABC = 90°$ what is the length of altitude drawn from B to AC?
   (a) 4 cm
   (b) $4\sqrt{2}\ cm$
   (c) $2\sqrt{2}\ cm$
   (d) 2 cm
5. Points D and E respectively lie on sides AB and AC of triangle ABC such that DE is parallel to BC. If AD = 2 cm, DB = 1 cm, AE = 3 cm, then the length of EC is
   (a) 1.5 cm
   (b) 1.6 cm
   (c) 1.8 cm
   (d) 2.1 cm
6. In ΔABC line PQ is drawn parallel to side BC where P and Q are respectively lie on side AB and AC. If AB = 3AP, what is the ratio of area of ΔAPQ to area of ΔABC?
   (a) 1 : 3
   (b) 1 : 5
   (c) 1 : 7
   (d) 1 : 9
7. $\Delta ABC\ and\ \Delta DEF$ are similar such that $\frac{AB}{DE} = \frac{BC}{EF}$. Area of the two triangles are respectively 16 cm^2 and 49 cm^2. If BC = $2\sqrt{2}$ cm, then what is length of EF?
   (a) 3.5 cm
   (b) $(3.5)\sqrt{2}$ cm
   (c) $(3.5)\sqrt{3}$ cm
   (d) 7.0 cm
8. In ΔABC, DE || BC where D and E are respectively lie on AB and AC and DE : BC = 3 : 5. What is the ratio of area of triangle ABC to area of triangle DAE?
   (a) 3 : 1
   (b) 5 : 3
   (c) 9 : 2
   (d) 25 : 9
9. A line parallel to side BC of the triangle ABC meets side AB at D and side AC at E. If area of ΔABE is 36 square cm, then what is the area of ΔACD?
   (a) 18 sq. cm
   (b) 36 sq. cm
   (c) 9 sq. cm
   (d) 72 sq. cm
10. Consider a point D on the side AC of ΔABC. If P, Q, X, Y are respectively midpoints of AB, BC, AD and DC then what is the ratio of PX and QY?
    (a) 1 : 2
    (b) 1 : 1
    (c) 2 : 1
    (d) 2 : 3