

1. For a triangle ABC, D and E are two points on AB and AC such that $AD = \frac{1}{4}AB$, $AE = \frac{1}{4}AC$. If $BC = 12$ cm then DE is :

3 cm

6 cm

5 cm

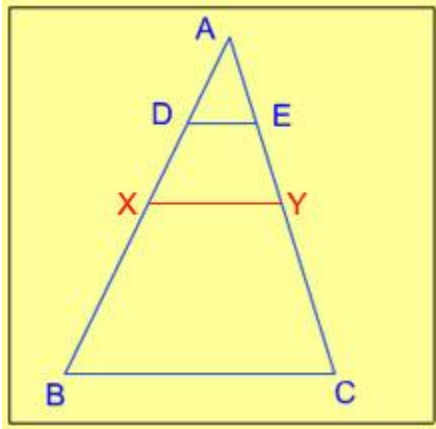
4 cm

Answer (a). X and Y are mid points of AB and BC respectively.

As per mid-point theorem $XY = BC/2$ or 6 cm.

Similarly, in triangle AXY, D and E are mid-points of AX and AY respectively.

Therefore, as per mid-point theorem $DE = XY/2 = 3$ cm.



2. In an acute angled triangle ABC, if $\sin 2(A + B - C) = 1$ and $\tan(B + C - A) = \sqrt{3}$, then the value of angle B is

60°

30°

$52 \frac{1}{2}^\circ$

$67 \frac{1}{2}^\circ$

Answer (c). $\sin 2(A + B - C) = 1$

$2(A + B - C) = 90^\circ$ (since $\sin 90^\circ = 1$)

$A + B - C = 45^\circ$(1)

$\tan (B + C - A) = \sqrt{3}$

$B + C - A = 60^\circ$ (since $\tan 60^\circ = \sqrt{3}$)(2)

Adding (1) and (2) $A + B - C + B + C - A = 45^\circ + 60^\circ = 105^\circ$

$2B = 105^\circ$

$B = 52 \frac{1}{2}^\circ$

3. If the **in radius** of a triangle with perimeter 32 cm is 6 cm, then the area of the triangle in sq. cm is

48

100

64

96

Answer (d).

Area of the triangle = in radius x semi-perimeter

Area = $6 \times 16 = 96$ sq. cm.

4. ABC is a right angled triangle, B being the right angle. Mid-points of BC and AC are respectively B' and A'. The ratio of the area of the quadrilateral AA' B'B to the area of the triangle ABC is

1 : 2

2 : 3

3 : 4

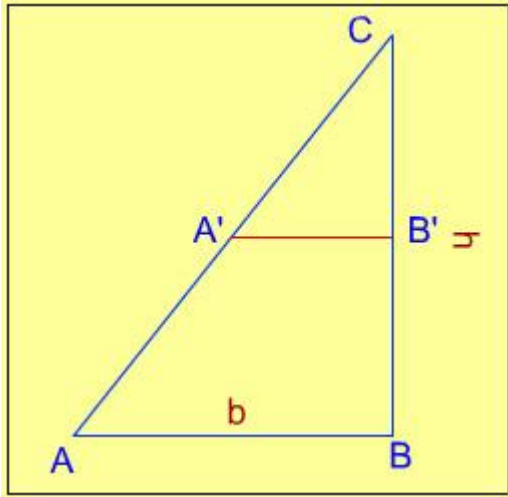
None of the above

Answer (c). Area of triangle $ABC = bh/2$

Since CB' is half of CB , area of triangle $CA'B' = bh/8$

The ratio of area of triangle $CA'B'$ to $ABC = 1 : 4$.

Therefore, the ratio of area of quadrilateral $AA'B'B'$ to the area of triangle $ABC = 3 :$



4.

5. In a triangle ABC , the side BC is extended up to D . Such that $CD = AC$, if angle $BAD = 109^\circ$ and angle $ACB = 72^\circ$ then the value of angle ABC is

35°

60°

40°

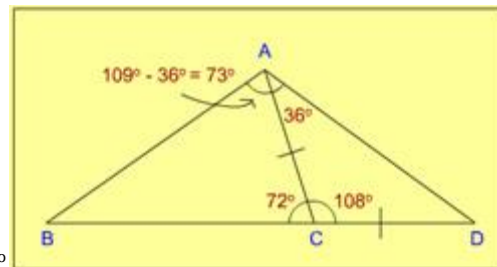
45°

Answer (a). Angle $ACB = 72^\circ$, hence angle $ACD = 180^\circ - 72^\circ = 108^\circ$

Since $CD = AC$, triangle ADC is an isosceles triangle.

Therefore angles CAD and CDA are both equal to $72^\circ/2 = 36^\circ$.

But angle $BAD = 109^\circ$, hence angle $BAC = 109^\circ - 36^\circ = 73^\circ$



Finally angle $ABC = 180^\circ - (73^\circ + 72^\circ) = 35^\circ$

6. Side BC of triangle ABC is produced to D. If angle ACD = 140° and angle ABC = $3 \angle BAC$, then find angle A.

45°

55°

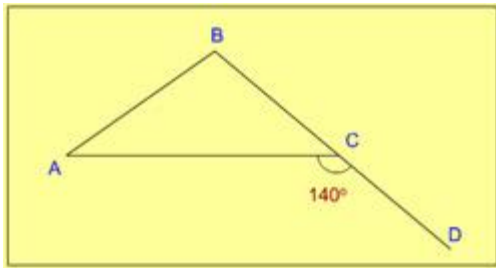
35°

60°

Answer (c). Exterior angle is equal to the sum of 2 opposite interior angles.

i.e. Angle A + angle B = 140°

Dividing 140° in the ratio 1 : 3, we get angle A = 35°



7. If O be the circum centre of a triangle PQR and angle QOR = 110° , angle OPR = 25° , then the measure of angle PRQ is

55°

60°

65°

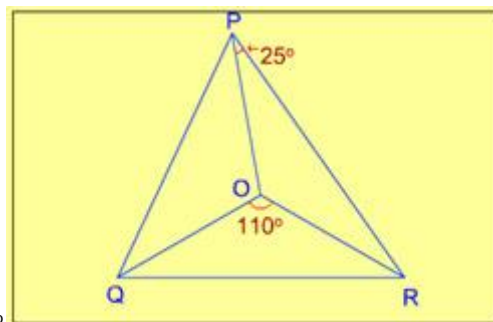
50°

Answer (b). Since O is the circum centre, $OP = OQ = OR$

Thus, triangle OPR is an isosceles triangle, hence angle PRO = 25°

Similarly, triangle OQR is also an isosceles triangle

Hence, angle ORQ = $(180^\circ - 110^\circ)/2 = 35^\circ$



Therefore, angle PRQ = $35^\circ + 25^\circ = 60^\circ$

8. D and E are mid-points of AB and AC of triangle ABC. If angle A = 80° , angle C = 35° , then angle EDB is equal to

100°

115°

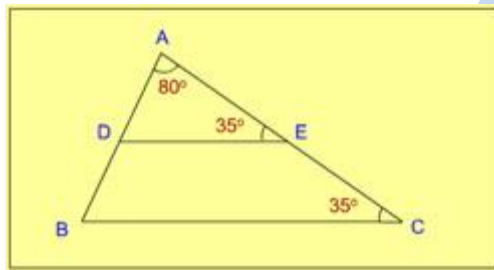
120°

125°

Answer (b).Note: A line joining the mid-points of any two sides is parallel to the third side.

In triangle ADE, angle E = 35° (angle E and angle C are a pair of corresponding angles, hence equal)

Therefore angle EDB = $80^\circ + 35^\circ = 115^\circ$ (Exterior angle is equal to the sum of two



opposite interior angles)

9. In a right-angled triangle ABC, angle ABC = 90° , AB = 5 cm and BC = 12 cm. The radius of the circum circle of the triangle ABC is

6.5 cm

7 cm

7.5 cm

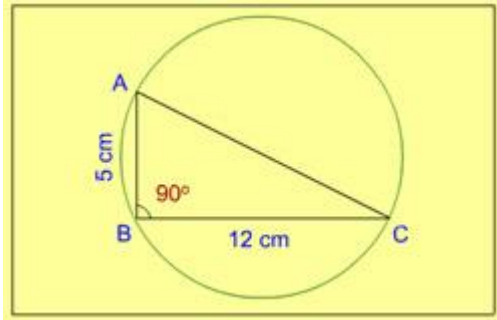
6 cm

Answer (a). The circumcentre of a right angled triangle is the mid-point of the hypotenuse.

In the given diagram, $AC^2 = 12^2 + 5^2$

$AC = 13$ cm which is also the diameter of circumcircle.

Therefore the radius of the circumcircle = 6.5 cm.



10. If the circum radius of an equilateral triangle ABC be 8 cm, then the height of the triangle is

8 cm

12 cm

16 cm

6 cm

Answer (b). In an equilateral triangle, centroid and the circumcenter coincide. AD is thus the height as well as the median of the triangle. Since the centroid divides the median in the ratio 2 : 1, the height of the triangle will be 12 cm.

