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# Triangle Questions for SSC Exams (CGL Tier 1, CGL Tier 2 & SSC 10+2)

## Triangle Quiz 4

Directions: Study the following questions carefully and choose the right answer:

1. The sides of a triangle are in the ratio 3 : 4 : 6. The triangle is :

- A. acute-angled    B. right-angled    C. obtuse-angled    D. either acute-angled or right-angled

2. If the circumcentre of a triangle lies outside it, then the triangle is

- A. Equilateral    B. Acute angled    C. Right angled    D. Obtuse angled

3. Taking any three of the line segments out of segments of length 2 cm, 3 cm, 5 cm and 6 cm, the number of triangles that can be formed is :

- A. 3    B. 2    C. 1    D. 4

4. If the length of the sides of a triangle are in the ratio 4 : 5 : 6 and the inradius of the triangle is 3 cm, then the altitude of the triangle corresponding to the largest side as base is :

- A. 7.5 cm    B. 6 cm    C. 10 cm    D. 8 cm

5. ABC is a triangle. The bisectors of the internal angle  $\angle B$  and external angle  $\angle C$  intersect at D. if  $\angle BDC = 50^\circ$ , then  $\angle A$  is

- A.  $100^\circ$     B.  $90^\circ$     C.  $120^\circ$     D.  $60^\circ$

6. 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

- A.  $35^\circ$                       B.  $60^\circ$                       C.  $40^\circ$                       D.  $45^\circ$

7. I is the incentre of  $\triangle ABC$ ,  $\angle ABC = 60^\circ$  and  $\angle ACB = 50^\circ$ . Then  $\angle BIC$  is :

- A.  $55^\circ$                       B.  $125^\circ$                       C.  $70^\circ$                       D.  $65^\circ$

8. I is the incentre of a triangle ABC. If  $\angle ABC = 65^\circ$  and  $\angle ACB = 55^\circ$ , then the value of  $\angle BIC$  is

- A.  $130^\circ$                       B.  $120^\circ$                       C.  $140^\circ$                       D.  $110^\circ$

9. If two angles of a triangle are  $21^\circ$  and  $38^\circ$ , then the triangle is

- A. Right-angled triangle                      B. Acute-angled triangle                      C. Obtuse-angled triangle  
D. Isosceles triangle

10. In a triangle ABC, if  $\angle A + \angle C = 140^\circ$  and  $\angle A + 3\angle B = 180^\circ$ , then  $\angle A$  is equal to

- A.  $80^\circ$                       B.  $40^\circ$                       C.  $60^\circ$                       D.  $20^\circ$

### Correct Answers:

1	2	3	4	5	6	7	8	9	10
C	D	B	A	A	A	B	B	C	C

### Explanations:

1.

Let the sides of the triangle be  $3x$ ,  $4x$  and  $6x$  units.

$$\text{Clearly, } (3x)^2 + (4x)^2 < (6x)^2$$

$\therefore$  The triangle will be obtuse angled.

Hence, option C is correct.

2.

The right bisectors of the sides of a triangle meet at a point. The point of intersection is called circum-centre. For an obtuse angled triangle, circum-centre lies outside the triangle.

Hence, option D is correct.

3.

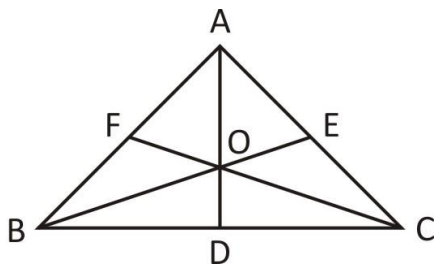
We know that "**The sum of two sides of a triangle should be greater than the third side.**"

Following this we can get only two possible combinations using the given details as mentioned below.

$(3, 5, 6)$  and  $(2, 5, 6)$

Hence, option B is correct.

4.



Let,  $AB = 4x$  cm,  $BC = 5x$  cm,  $CA = 6x$  cm

Now,  $\Delta OBA + \Delta BOC + \Delta AOC = \Delta ABC$

$$\Rightarrow \frac{1}{2} \times 4x \times 3 + \frac{1}{2} \times 5x \times 3 + \frac{1}{2} \times 6x \times 3 = \frac{1}{2} \times 6x \times h$$

$$\Rightarrow 6x + \frac{15x}{2} + 9x = 3xh$$

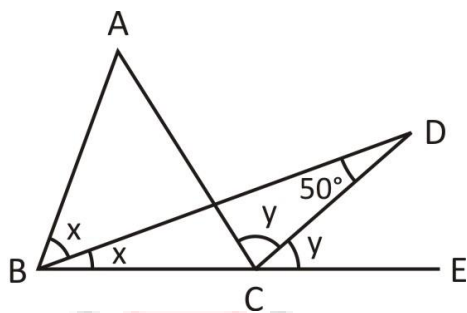
$$\Rightarrow 12 + 15 + 18 = 6h$$

$$\Rightarrow 45 = 6h$$

$$\Rightarrow h = 7.5 \text{ cm}$$

Hence, option A is correct.

5.



We know that, Exterior angle is sum of opposite interior angles

$$\therefore \angle ACE = \angle A + \angle ABC$$

$$\Rightarrow 2y = \angle A + 2x$$

$$\Rightarrow \angle A = 2y - 2x \quad \dots(i)$$

Similarly,

$$\angle DCE = \angle DBC + \angle BDC$$

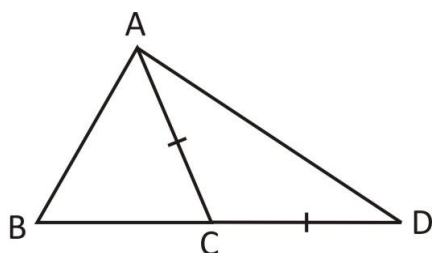
$$\Rightarrow y = x + 50^\circ$$

From equation (i)

$$\angle A = 2(x + 50^\circ) - 2x = 2x + 100^\circ - 2x = 100^\circ$$

Hence, option A is correct.

6.



We know that, Exterior angle is sum of opposite interior angles

$$\therefore \angle CAD + \angle ADC = \angle ACB = 72^\circ$$

$$2\angle ADC = 72^\circ \quad [ \because AC = DC \Rightarrow \angle CAD = \angle ADC ]$$

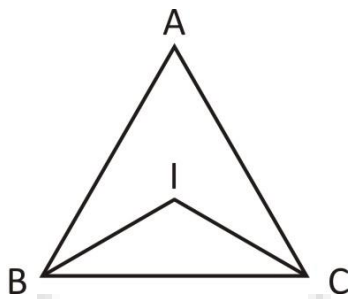
$$\angle ADC = 36^\circ$$

In  $\triangle ABD$ , we know that

$$\angle ABC = 180^\circ - \angle BAD - \angle ADB = 180^\circ - 109^\circ - 36^\circ = 35^\circ$$

Hence, option A is correct.

**7.**



Given,  $\angle ABC = 60^\circ$  and  $\angle ACB = 50^\circ$

$$\angle IBC = \frac{1}{2}\angle ABC = 30^\circ$$

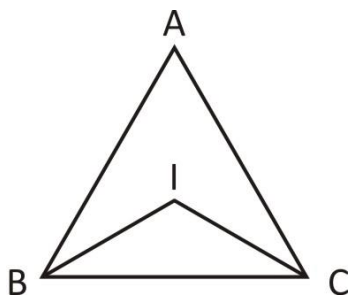
$$\angle ICB = \frac{1}{2}\angle ACB = 25^\circ$$

In  $\triangle IBC$ , we know that

$$\therefore \angle BIC = 180^\circ - \angle IBC - \angle ICB = 180^\circ - 30^\circ - 25^\circ = 125^\circ$$

Hence, option B is correct.

**8.**



Given,  $\angle ABC = 65^\circ$  and  $\angle ACB = 55^\circ$

$$\angle IBC = \frac{1}{2}\angle ABC = 32.5^\circ$$

$$\angle ICB = \frac{1}{2}\angle ACB = 27.5^\circ$$

In  $\triangle IBC$ , we know that

$$\therefore \angle BIC = 180^\circ - \angle IBC - \angle ICB = 180^\circ - 32.5^\circ - 27.5^\circ = 120^\circ$$

Hence, option B is correct.

**9.**

$$\text{Third angle of triangle} = 180^\circ - 21^\circ - 38^\circ = 121^\circ > 90^\circ$$

i.e. obtuse angle.

Hence, option C is correct.

**10.**

We know that, the sum of the angles of a triangle is  $180^\circ$

$$\angle A + \angle B + \angle C = 180^\circ$$

$$\therefore \angle B = 180^\circ - 140^\circ = 40^\circ \quad [\because \angle A + \angle C = 140^\circ]$$

It is also given,

$$\angle A + 3\angle B = 180^\circ$$

$$\Rightarrow \angle A + 3 \times 40^\circ = 180^\circ$$

$$\Rightarrow \angle A = 180^\circ - 120^\circ = 60^\circ$$

Hence, option C is correct.

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