ANSWER:

We get a triangle by joining the three non-collinear points A, B, and C.
(i) The side opposite to ∠C is AB.
(ii) The angle opposite to the side BC is ∠A.
(iii) The vertex opposite to the side CA is B.
(iv) The side opposite to the vertex B is AC.

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ANSWER:

The measures of two angles of a triangle are 72° and 58°.
Let the third angle be x.
Now, the sum of the measures of all the angles of a triangle is 180°.

$\therefore\therefore \quad x + 72^\circ + 58^\circ = 180^\circ$

$\Rightarrow x + 130^\circ = 180^\circ$

$\Rightarrow x = 180^\circ - 130^\circ$

$\Rightarrow x = 50^\circ$

The measure of the third angle of the triangle is 50°.

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ANSWER:

The angles of a triangle are in the ratio 1:3:5.
Let the measures of the angles of the triangle be (1x), (3x) and (5x)
Sum of the measures of the angles of the triangle = 180°

$\therefore 1x + 3x + 5x = 180^\circ$

$\Rightarrow 9x = 180^\circ$

$\Rightarrow x = 20^\circ$

$1x = 20^\circ$
$3x = 60^\circ$
$5x = 100^\circ$
The measures of the angles are 20°, 60° and 100°.

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ANSWER:

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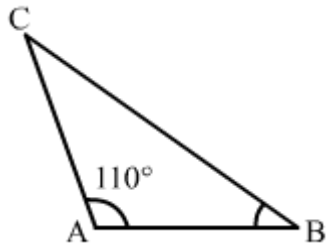
In a right angle triangle, one of the angles is 90°.
It is given that one of the acute angled of the right angled triangle is 50°.
We know that the sum of the measures of all the angles of a triangle is 180°.
Now, let the third angle be x.
Therefore, we have:

$$90^\circ + 50^\circ + x = 180^\circ$$
$$\Rightarrow \quad 140^\circ + x = 180^\circ$$
$$\Rightarrow \quad x = 180^\circ - 140^\circ$$
$$\Rightarrow \quad x = 40^\circ$$

The third acute angle is 40°.

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ANSWER:



Given:
$\angle A = 110^\circ$ and $\angle B = \angle C$
Now, the sum of the measures of all the angles of a traingle is 180° .

$$\angle A + \angle B + \angle C = 180^\circ$$
$$\Rightarrow \quad 110^\circ + \angle B + \angle B = 180^\circ$$
$$\Rightarrow \quad 110^\circ + 2\angle B = 180^\circ$$
$$\Rightarrow \quad 2\angle B = 180^\circ - 110^\circ$$
$$\Rightarrow \quad 2\angle B = 70^\circ$$
$$\Rightarrow \quad \angle B = 70^\circ / 2$$
$$\Rightarrow \quad \angle B = 35^\circ$$

$\therefore \angle C = 35^\circ$
The measures of the three angles:
$\angle A = 110^\circ$, $\angle B = 35^\circ$, $\angle C = 35^\circ$

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ANSWER:

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Given:
$\angle A = \angle B + \angle C$
We know:
$\angle A + \angle B + \angle C = 180^\circ$
$\Rightarrow \angle B + \angle C + \angle B + \angle C = 180^\circ$
$\Rightarrow 2\angle B + 2\angle C = 180^\circ$
$\Rightarrow 2(\angle B + \angle C) = 180^\circ$
$\Rightarrow \angle B + \angle C = 180/2$
$\Rightarrow \angle B + \angle C = 90^\circ$
$\therefore\therefore \angle A = 90^\circ$
This shows that the triangle is a right angled triangle.

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ANSWER:

Let $3\angle A = 4\ \angle B = 6\ \angle C = x$
Then, we have:
$\angle A = x3$, $\angle B = x4$, $\angle C = x6$But, $\angle A + \angle B + \angle C = 180° \therefore x3 + x4 + x6 = 180°$or $4x + 3x + 2x12 = 180°$or $9x = 180° \times 12 = 2160°$or $x = 240° \therefore \angle A = 2403 = 80°$, $\angle B = 2404 = 60°$, $\angle C = 2406 = 40°$$\angle A = x3$, $\angle B = x4$, $\angle C = x6$But, $\angle A + \angle B + \angle C = 180° \therefore x3 + x4 + x6 = 180°$or $4x + 3x + 2x12 = 180°$or $9x = 180° \times 12 = 2160°$or $x = 240° \therefore \angle A = 2403 = 80°$, $\angle B = 2404 = 60°$, $\angle C = 2406 = 40°$

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ANSWER:

(i) It is an obtuse angle triangle as one angle is 130°, which is greater than 90°.

(ii) It is an acute angle triangle as all the angles in it are less than 90°.

(iii) It is a right angle triangle as one angle is 90°.

(iv) It is an obtuse angle triangle as one angle is 92°, which is greater than 90°.

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ANSWER:

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Equilateral Triangle: A triangle whose all three sides are equal in length and each of the three angles measures 60°.
Isosceles Triangle: A triangle whose two sides are equal in length and the angles opposite them are equal to each other.
Scalene Triangle: A triangle whose all three sides and angles are unequal in measure.

(i) Isosceles
AC = CB = 2 cm
(ii) Isosceles
DE = EF = 2.4 cm
(iii) Scalene
All the sides are unequal.
(iv) Equilateral
XY = YZ = ZX = 3 cm
(v) Equilateral
All three angles are 60°.
(vi) Isosceles
Two angles are equal in measure.
(vii) Scalene
All the angles are unequal.

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ANSWER:

In ΔABC, if we take a point D on BC, then we get three triangles, namely ΔADB, ΔADC and ΔABC.

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ANSWER:

(i) No
If the two angles are 90° each, then the sum of two angles of a triangle will be 180°, which is not possible.
(ii) No
For example, let the two angles be 120° and 150°. Then, their sum will be 270°, which cannot form a triangle.
(iii) Yes
For example, let the two angles be 50° and 60°, which on adding, gives 110°. They can easily form a triangle whose third angle is $180^\circ - 110^\circ = 70^\circ$.
(iv) No
For example, let the two angles be 70° and 80°, which on adding, gives 150°. They

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cannot form a triangle whose third angle is $180^\circ - 150^\circ = 30^\circ$, which is less than 60°.

(v) No

For example, let the two angles be 50° and 40°, which on adding, gives 90°. Thus, they cannot form a triangle whose third angle is $180^\circ - 90^\circ = 90^\circ$, which is greater than 60°.

(vi) Yes

Sum of all angles = $60^\circ + 60^\circ + 60^\circ = 180^\circ$

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ANSWER:

(i) A triangle has 3 sides 3 angles and 3 vertices.
(ii) The sum of the angles of a triangle is 180°.
(iii) The sides of a scalene triangle are of different lengths.
(iv) Each angle of an equilateral triangle measures 60°.
(v) The angles opposite to equal sides of an isosceles triangle are equal.
(vi) The sum of the lengths of the sides of a triangle is called its perimeter.

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ANSWER:

Correct option: (c)
A triangle has 6 parts: three sides and three angles.

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ANSWER:

Correct option: (b)
(a) Sum = $30^\circ + 60^\circ + 70^\circ = 160^\circ$
This is not equal to the sum of all the angles of a triangle.
(b) Sum = $50^\circ + 70^\circ + 60^\circ = 180^\circ$
Hence, it is possible to construct a triangle with these angles.
(c) Sum = $40^\circ + 80^\circ + 65^\circ = 185^\circ$
This is not equal to the sum of all the angles of a triangle.
(d) Sum = $72^\circ + 28^\circ + 90^\circ = 190^\circ$
This is not equal to the sum of all the angles of a triangle.

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ANSWER:

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(b) 80°
Let the measures of the given angles be $(2x)^\circ$, $(3x)^\circ$ and $(4x)^\circ$.
$\therefore\therefore (2x)^\circ + (3x)^\circ + (4x)^\circ = 180^\circ$
$\Rightarrow (9x)^\circ = 180^\circ$
$\Rightarrow x = 180 / 9$
$\Rightarrow x = 20^\circ$
$\therefore\therefore 2x = 40^\circ, 3x = 60^\circ, 4x = 80^\circ$

Hence, the measures of the angles of the triangle are 40°, 60°, 80°.
Thus, the largest angle is 80°.

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ANSWER:

Correct option: (d)
The measure of two angles are complimentary if their sum is 90° degrees.
Let the two angles be *x* and *y,* such that $x + y = 90^\circ$.
Let the third angle be *z.*
Now, we know that the sum of all the angles of a triangle is 180°.
$x + y + z = 180^\circ$
$\Rightarrow 90^\circ + z = 180^\circ$
$\Rightarrow z = 180^\circ - 90^\circ$
$= 90^\circ$
The third angle is 90°.

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ANSWER:

Correct option: (c)
Let $\angle A = 70^\circ$
The triangle is an isosceles triangle.
We know that the angles opposite to the equal sides of an isosceles triangle are equal.
$\therefore\therefore \angle B = 70^\circ$
We need to find the vertical angle $\angle C$.
Now, sum of all the angles of a triangle is 180°.
$\angle A + \angle B + \angle C = 180^\circ$
$\Rightarrow 70^\circ + 70^\circ + \angle C = 180^\circ$
$\Rightarrow 140^\circ + \angle C = 180^\circ$

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$\Rightarrow \angle C = 180^\circ - 140^\circ$
$\Rightarrow \angle C = 40^\circ$

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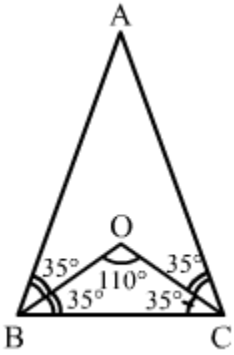
ANSWER:

Correct option: (c)
A triangle having sides of different lengths is called a scalene triangle.

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ANSWER:

Correct option: (a)



In the isosceles ABC, the bisectors of $\angle B$ and $\angle C$ meet at point O.
Since the triangle is isosceles, the angles opposite to the equal sides are equal.
$\angle B = \angle C$
$\therefore \angle A + \angle B + \angle C = 180^\circ$
$\Rightarrow 40^\circ + 2\angle B = 180^\circ$
$\Rightarrow 2\angle B = 140^\circ$
$\Rightarrow \angle B = 70^\circ$
Bisectors of an angle divide the angle into two equal angles.
So, in ΔBOC:
$\angle OBC = 35^\circ$ and $\angle OCB = 35^\circ$
$\angle BOC + \angle OBC + \angle OCB = 180^\circ$
$\Rightarrow \angle BOC + 35^\circ + 35^\circ = 180^\circ$
$\Rightarrow \angle BOC = 180^\circ - 70^\circ$
$\Rightarrow \angle BOC = 110^\circ$

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ANSWER:

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Correct option: (b)
The sides of a triangle are in the ratio 3:2:5.
Let the lengths of the sides of the triangle be (3x), (2x), (5x).
We know:
Sum of the lengths of the sides of a triangle = Perimeter
$(3x) + (2x) + (5x) = 30$
$\Rightarrow 10x = 30$
$\Rightarrow x = \frac{30}{10}$
$\Rightarrow x = 3$
First side = 3x = 9 cm
Second side = 2x = 6 cm
Third side = 5x = 15 cm
The length of the longest side is 15 cm.

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ANSWER:

Correct option: (d)
Two angles of a triangle measure 30° and 25°, respectively.
Let the third angle be x.
$x + 30^\circ + 25^\circ = 180^\circ$
$x = 180^\circ - 55^\circ$
$x = 125^\circ$

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ANSWER:

Correct option: (c)
Each angle of an equilateral triangle measures 60°.

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ANSWER:

Correct option: (c)
Point P lies on ΔABC.

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