The Triangles and its Properties

Question 1.
A triangle has how many sides :
(a) three
(b) five
(c) four
(d) None of these

Answer: (a) three
A triangle is a closed figure of three sides.

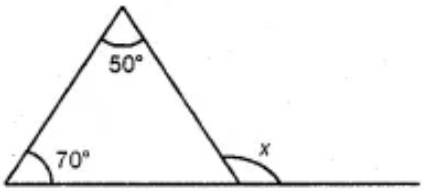
Question 2.
A triangle has medians :
(a) 2
(b) 1
(c) 3
(d) None of these

Answer: (c) 3
A triangle has three vertices and a median connects a vertex of a triangle to the mid-point of the opposite side.

Question 3.
A triangle has altitudes :
(a) 2
(b) 3
(c) 1
(d) None of these

Answer: (b) 3
Perpendicular drawn from vertex is called median and as such there are three vertices in a triangle.

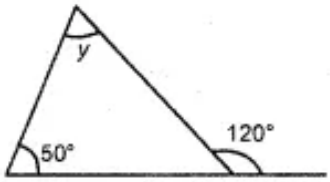
Question 4.
Find the value of x :



(a) 120°
(b) 110°
(c) 100°
(d) None of these

Answer: (a) 120°
Sum of interior opposite angles is equal to exterior angle.

Question 5.
Find the value of y :



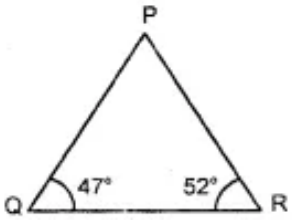
(a) 50°
(b) 70°
(c) 40°
(d) None of these

Answer: (b) 70°
Difference of exterior angle and one interior opposite angle.

Question 6.
Sum of three angles of a triangle is :
(a) 170°
(b) 90°
(c) 180°
(d) None of these

Answer: (c) 180°
Angle sum property.

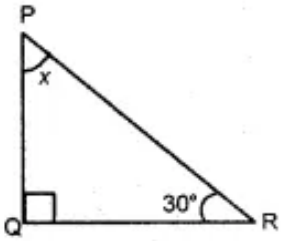
Question 7.
Find the third angle of the given triangle



(a) 71°
(b) 61°
(c) 81°
(d) None of these

Answer: (c) 81°
According to angle sum property first add two given angles and sum is subtracted from 180°.

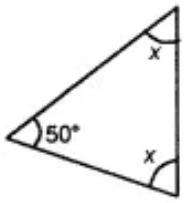
Question 8.
Find the unknown x in the following diagram



(a) 60°
(b) 30°
(c) 90°
(d) None of these

Answer: (a) 60°
One angle is 90° according to diagram and according to angle sum property.

Question 9.
Find the value of x in the given diagram :

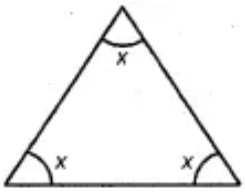


(a) 65°

(b) 50°
(c) 70°
(d) None of these

Answer: (a) 65°
Sum of three angles is 180° and of three angles 2 angles are equal therefore x is one half of 130°.

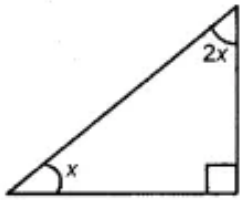
Question 10.
Find the value of x in the given diagram :



(a) 4°
(b) 60°
(c) 80°
(d) None of these

Answer: (b) 60°
All angles are equal therefore 180° is divided by 3.

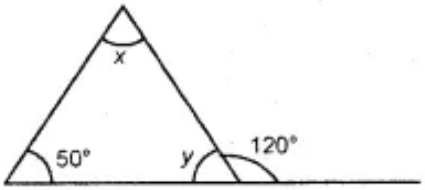
Question 11.
Find the value of x in the given diagram :



(a) 30°
(b) 45°
(c) 60°
(d) None of these

Answer: (a) 30°
Out of three angles one angle is 90°. Sum of remaining two angles is 90° therefore 3x = 90° and x = 30°.

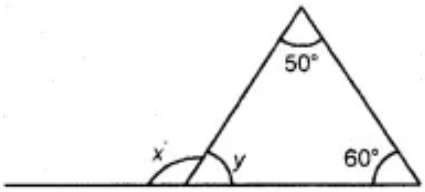
Question 12.
Find the value of x and y in the following diagram



(a) (60, 70)
(b) (50, 70)
(c) (70, 60)
(d) None of these

Answer: (c) (70, 60)
Exterior angle is equal to the sum of interior opposite angles.

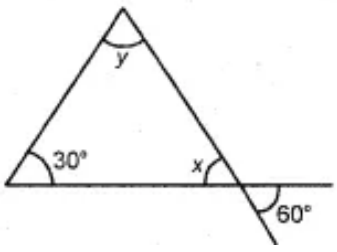
Question 13.
Find the value of x and y in the following diagram



(a) (110, 70)
(b) 70, 110)
(c) (60, 120)
(d) none of these

Answer: (a) (110, 70)
Exterior angle and angle sum property.

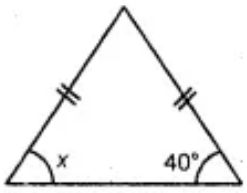
Question 14.
Find the value of x and y in the following diagram :



(a) (60,90)
(b) (90,60)
(c) (60,60)
(d) none of these

Answer: (a) (60,90)
x is vertically opposite angle and value of y according to angle sum property.

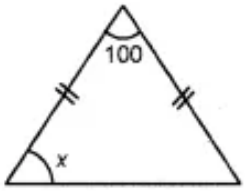
Question 15.
Find the angle x in given diagram :



(a) 30°
(b) 60°
(c) 40°
(d) none of these

Answer: (c) 40°
Two sides are equal and x is opposit^'angle of equal side.

Question 16.
Find the angle x in the given diagram



(a) 40°
(b) 50°
(c) 80°
(d) none of these

Answer: (a) 40°
Two sides are equal and third angle is 100°. Therefore according to angle sum property twice of angle x is 80°.

Question 17.
If two sides of a triangle are added then the result is :
(a) greater than third
(b) less than third
(c) equal to third
(d) none of these

Answer: (a) greater than third
As the sum of the length of any two sides of a triangle is greater than the third side.

Question 18.
In a ΔABC, if AB+BC = 10 cm, BC+CA = 12 cm, CA+AB = 16 cm, then the perimeter of the triangle is ____.
(a) 19cm
(b) 17cm
(c) 28cm
(d) 22cm

Answer: (a) 19cm

Question 19.
In the Pythagoras property, the triangle must be _____ .
(a) obtuse-angled
(b) acute-angled
(c) right-angled
(d) none of these

Answer: (c) right-angled

Question 20.
Which is the longest side in the triangle PQR right angled at P?
(a) PQ
(b) QR
(c) PR
(d) None of these

Answer: (b) QR

Question 21.
If the angles of a triangle are in the ratio 4:5:9. Find all the angles of a the triangle
(a) 40°, 50°, 90°
(b) 90°, 72°, 18°
(c) 9°, 90°, 55°
(d) 45°, 60°, 18°

Answer: (a) 40°, 50°, 90°

Question 22.
How many altitudes can a triangle have?
(a) 1
(b) 2
(c) 3
(d) None of these

Answer: (c) 3

Question 23.
How many medians a triangle can have?
(a) 1
(b) 2
(c) 3
(d) none of these

Answer: (c) 3

Question 24.
The sum of the lengths of any two sides of a triangle is _____ the third side of the triangle.
(a) greater than
(b) half
(c) less than
(d) double

Answer: (a) greater than

Question 25.
The triangle whose lengths of sides are 3 cm, 4 cm, 5 cm is a
(a) obtuse-angled triangle
(b) right-angled triangle
(c) acute-angled triangle
(d) None of these

Answer: (b) right-angled triangle

Question 26.
A triangle in which two sides are of equal lengths is called _____.
(a) scalene

(b) acute-angled
(c) equilateral
(d) isosceles

Answer: (d) isosceles

Question 27.
Aryan wants to plant a flower on the ground in the form of a rhombus. The diagonals of the rhombus measures 42 cm and 56 cm. Find the perimeter of the field.
(a) 150 cm
(b) 140 cm
(c) 130cm
(d) 120cm

Answer: (b) 140 cm

Question 28.
ΔPQR is a triangle right-angled at P. If PQ = 3 cm and PR = 4 cm, find QR.
(a) 8 cm
(b) 5 cm
(c) 7 cm
(d) 3 cm

Answer: (b) 5 cm

Question 29.
In a ΔABC, which of the given condition holds?
(a) $AB - BC > CA$
(b) $AB + BC < CA$
(c) $AB - BC < CA$
(d) $AB + CA < BC$

Answer: (c) $AB - BC<CA$

Question 30.
One of the angles of a triangle is 110° and the other two angles are equal what is the measure of each of these equal angles
(a) 35°,35°
(b) 40°, 40°

(c) 11°, 11°
(d) 80° , 80°

Answer: (a) 35°,35°

Question 31.
Which is the longest side in the triangle ABC right angled at B?
(a) AB
(b) AC
(c) BC
(d) None of these

Answer: (b) AC

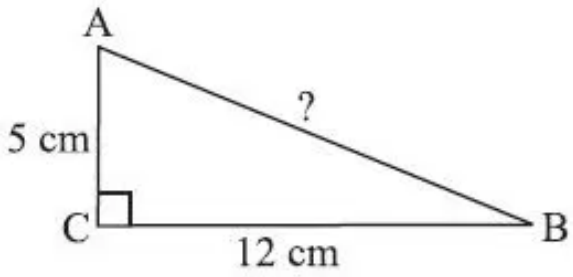
Question 32.
Which is the longest side of a right triangle?
(a) Base
(b) Perpendicular
(c) Hypotenuse
(d) None of these

Answer: (c) Hypotenuse

Question 33.
A/an _____ connect a vertex of a triangle to the mid-point of the opposite side.
(a) altitude
(b) median
(c) vertex
(d) none of these

Answer: (b) median

Question 34.
ΔABC is right-angled at C. If AC = 5 cm and BC = 12 cm find the length of AB.



(a) 13 cm
(b) 11 cm
(c) 20 cm
(d) None of these

Answer:

Question 35.
ABC is an isosceles triangle with AB = AC and AD is altitude, then ____.
(a) ∠B>∠C
(b) ∠B<∠C
(c) ∠B=∠C
(d) None of these

Answer: (c) ∠B=∠C

State whether the given statements are true or false:

Question 1.
A triangle with two right angles.

Answer: false

Question 2.
A triangle with two obtuse angles.

Answer: false

Question 3.
A triangle with two acute angles.

Answer: true

Question 4.
A triangle with all the three angles equal to 60°.

Answer: true

Question 5.
A triangle with all the three angles less than 60°.

Answer: false

Match the following:

Question 1.

1. One angle 90°	a. Obtuse triangle
2. All angles 60°	b. Isosceles triangle
3. Two angles are equal	c. Right angle triangle
4. One angle is greater than 90°	d. Equilateral triangle

Answer:

1. One angle 90°	c. Right angle triangle
2. All angles 60°	b. Isosceles triangle
3. Two angles are equal	d. Equilateral triangle
4. One angle is greater than 90°	a. Obtuse triangle

Question 2.

1. In an isosceles triangle	a. All the angles are equal
2. In an equilateral triangle	b. The third side
3. Sum of three angles	c. Two angles are equal
4. The sum of two sides of a	d. is 180°

Answer:

1. In an isosceles triangle	c. Two angles are equal

2. In an equilateral triangle	a. All the angles are equal
3. Sum of three angles	d. is 180°
4. The sum of two sides of a	b. The third side

Fill in the blanks:

1. Sum of …….. angles of the triangle is 180°.

Answer: three

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2. The sum of any two sides of a triangle is …….. than the third side

Answer: greater

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3. In a right angled triangle, the side opposite to the right angle is called the
the other two sides are called ……. and ……..

Answer: hypotenuse,perpendicular base

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4. In a right angled triangle, the square of the hypotenuse equals the sum of the …… of its sides.

Answer: Square

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4. There are …….. elements of a triangle.

Answer: six

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5. A triangle has ……. medians and …… altitudes.

Answer: three,three

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6. A ……. is a simple closed figure made of three line segments.

Answer: triangle

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7. The line segment that joins a vertex of a triangle to the mid-point of opposite side is called a ……. of a triangle.

Answer: median

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8. Perpendicular line segment from a vertex of a triangle to its opposite side is called an …….. of the triangle.

Answer: Altitude

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9. A triangle is said to be …….. if all its sides are of different lengths

Answer: a scalene triangle

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10. A triangle is said to be …….. if any two of its sides are equal.

Answer: an isosceles triangle

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11. A triangle is said to be …… if all of its sides are equal.

Answer: an equilateral triangle

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12. An accute triangle is if each of its angle is ……. 90°.

Answer: less than

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13. An obtuse triangle is if one of its angle is greater than ……..

Answer: 90°

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14. A ……. is if one of its angle is equal to 90°.

Answer: right triangle

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15. All the angles of a scalene triangle are …….

Answer: unequal

16. All the angles of an equilateral triangle are …….

Answer: equal

Misc. Questions:

Is it possible to have a triangle with the following sides :

Question 1.
2 cm, 3 cm, 5 cm

Answer: yes

Question 2.
3 cm, 6 cm, 7 cm

Answer: yes

Question 3.
6 cm, 3 cm, 2 cm

Answer: no
