Self-assessment on Geometry and vectors

Angles

1. XYZ is a triangle with angle XYZ as 92 degrees and angle YZX as 27 degrees. Find angle ZXY

1. Angle ABC is a right-angle triangle. Angle CAB is 90 degrees and angle BCA is 34 degrees. Find angle ABC
2. ABC is a triangle; with line AB stretching to make line AB have both an interior and exterior angle. The exterior angle of angle ABC is56 degrees and that of angle CAB is 144 degrees. Find all interior angles
3. What is the obtuse angle from 7 to 12 at 7 o'clock?
4. An angle that is less than a reflex angle is called?

SOLUTIONS

1. Solution
   The sum of all 3 interior angles of a triangle is equal to 180°. Hence
   92 + 27 + x = 180
   Solve for x
   x = 180 - (92 + 27) = 61°
2. Solution
   The sum of all 3 interior angles of the right triangle is equal to 180°. Hence
   y + 34 + 90 = 180
   Solve for y
   y = 180 - (90 + 34) = 56°
3. Solution
   Angle y and angle of measure 56° are supplementary. Hence
   y + 56° = 180°
   Solve for y
   y = 180 - 56 = 124°
   Angle x and angle of measure 144° are supplementary. Hence
   x + 144 = 180°
   Solve for x
   x = 180 - 144 = 36°
   The sum of angles x, y and z of the triangle is equal to 180°
   x + y + z = 180
   Substitute x and y by their values found above.
   36 + 124 + z = 180

Solve for z.

z = 20°

4. 150 degrees
5. Acute angle

Triangles

1. In a triangle, the ratio between the first and second angle is 1 : 2 and the third angle is 72. Find the first and second angle of the triangle.
2. In a triangle, if the second angle is 3 times the sum of the first angle and 3 and the third angle is the sum of 2 times the first angle and 3, find the three angles of the triangle.
3. In a right triangle, apart from the right angle, the other two angles are x + 1 and 2x + 5. find the angles of the triangle.
4. In a triangle, if the second angle is 2 times the first angle and the third angle is 3 times the first angle, find the angles of the triangle.
5. If 3 consecutive positive integers be the angles of a triangle, then find the three angles of the triangle.

SOLUTIONS

1. The ratio of the first angle and second angle is 1 : 2. Then, the first angle = x….The second angle = 2x.We know that, the sum of the three angles of a triangle = 180°x + 2x + 72 = 180°, 3x = 108°…..x = 36°
2. Let "x" be the first angle. Then, the second angle = 3(x + 3),The third angle = 2x + 3.We know that, the sum of the three angles of a triangle = 180°……x + 3(x + 3) + 2x + 3 = 180°……x+ 3x + 9 + 2x + 3 = 180°……6x + 12 = 180°…..6x = 168,the sum of the three angles of a triangle = 180°,90 + (x + 1) + (2x + 5) = 180°,3x + 6 = 90,3x = 84°,x = 28°
3. 90, 29, 61
4. X= 30…..other angles are 60 and 90
5. X= 59…… other angles are 60 and 61

Polygons

1. find the number of sides of a polygon whose sum of interior angles is given as 6 right angles
2. The ratio of the exterior and interior angle of a regular polygon is 2:3. Find the number of sides in the polygon.
3. Find the sum of the interior angles of a polygon with 14 sides
4. What we call to 9-sided polygon?
5. What do you call an eight-sided polygon?

SOLUTIONS

1. 5

2. 5
3. 2160
4. Nonagon
5. Octagon

Circles

A. Find the area and circumference of a circle with diameter of 4 inches
B. A central angle Y in a circle of radius 10 units forms a sector with an area of 2.26 square units. Find the measure of Y.
C. O is the center of a circle. Line /AB/ is a segment which joins with another segment /BC/ to form angle b". Angle AOC is equal to 108 degrees, find angle ABC

SOLUTIONS

A. Now, we are given the diameter and remember from our lesson earlier, radius is half of diameter. Therefore, if we divide the diameter by 2 (4/2) we will get the radius as 2 and area is equal to pie*r^2 i.e. (pie*4) = **12. 57**
B. Area of sector Y is y/360 * pie*r^2. Therefore, equate that to 2.26. if we calculate pie*r^2 we will have 314.15. We now divide both sides of the equation; we then have that y = (360*2.26)/314.15. we then have Y as **3"**
C. We can start by using our pencils to sketch a circle. Then put a point at the center of the circle indicating point O. then draw two segments that join to form angle b. Now draw a line from points A to O and from O to C. Recognize that, of course it's the first rule of circle geometry which you learnt from the lesson. Therefore, angle ABC = 108/2 = **54'**

Vectors

1. Find the unit vector of the following A=2i-3j+6k
2. Write the vector in the form of ai+bj (0,4)
3. Four vectors each of magnitude 89m lie along the sides of a parallelogram the angle between vector A and B is 77 degrees what is the magnitude of the vector sum of the four vectors.
4. Write the vector in the form of ai+bj+ck. (3, -5, 6)
5. Define a vector

SOLUTION

1. $A||=\sqrt{(2)2+(-3)2+(6)2}||\rightarrow A||=\sqrt{4+9+36}||\rightarrow A||=\sqrt{49}||\rightarrow A||=7$
2. i+4j
3.

4. 3i-5j+6k
5. A vector is an object that has both magnitude and direction.