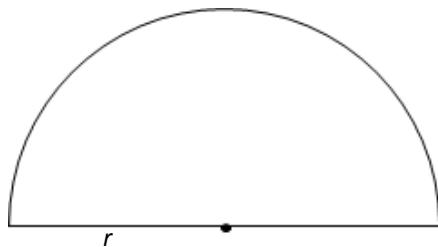


Answer on Question#38224 - Math - Geometry

Question: If perimeter of a semi-circular park is 72 m, find its area and radius.

Solution. Let us begin by making a drawing:



Here r is the radius of the circle.

Now, let us consider what makes up the perimeter of the park.

$$P = \frac{c}{2} + 2r,$$

where c is the length of the full circle.

However, we know that the length of a circle can be found by using the formula

$$c = 2\pi r.$$

Let us substitute this into the formula for the perimeter above:

$$P = \frac{c}{2} + 2r = \frac{2\pi r}{2} + 2r = (\pi + 2)r.$$

Thus, we can find the radius of the park:

$$r = \frac{P}{\pi + 2} \approx \frac{72}{3.14 + 2} \approx 14.003 \approx 14 \text{ (m)}.$$

We can now find the area of the park. To do this, recall the formula for the area of a circle and divide the result by 2:

$$S = \frac{1}{2}(\pi r^2) \approx \frac{3.14 * 14^2}{2} \approx 308 \text{ (m}^2\text{)}.$$

Answer. The radius of the park is approximately 14 m. The area of the park is approximately 308 m^2 .