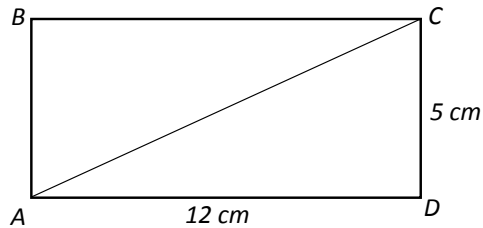


**Answer on Question#38714 - Math - Geometry**

**Question:** Find the acute angle between the diagonal and the longer side of a rectangle with sides 12 *cm* and 5 *cm*.

**Solution.** Let us begin by making a drawing:



Here we have denoted the vertices of the rectangle as  $A, B, C, D$ , supposing that  $AD = 12 \text{ cm}$  and  $CD = 5 \text{ cm}$ .

The sought angle between the diagonal and the longer side of  $ABCD$  is  $\angle CAD$ .

Note that the triangle  $ADC$  is a right triangle (since  $\angle ADC$  is an angle of a rectangle and thus  $\angle ADC = 90^\circ$ ). In this triangle, we are given the lengths of adjacent and opposite sides to angle  $\angle CAD$ ; thus, we can find the tangent of this angle using the standard formula:

$$\tan \angle CAD = \frac{CD}{AD} = \frac{5}{12}.$$

The angle  $\angle CAD$  itself can be found using the inverse function:

$$\angle CAD = \tan^{-1}\left(\frac{5}{12}\right) = 22.62^\circ.$$

**Answer.** The acute angle between the diagonal and the longer side of a rectangle with sides 12 *cm* and 5 *cm* equals  $22.62^\circ$ .