

**Angles** are geometric shapes formed by two rays that begin at the same point

### How to measure angles using a protractor?

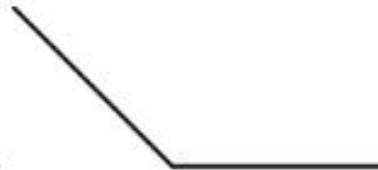
#### Types of Angles



Acute angles equal  
0-89 degrees.

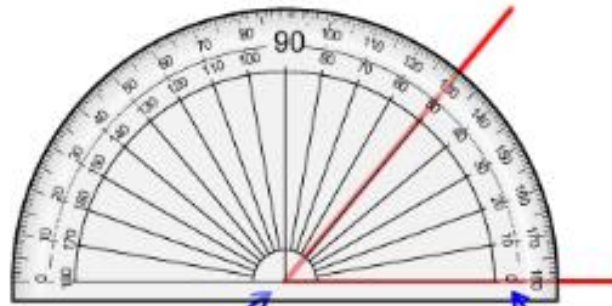


Right angles equal  
exactly 90 degrees.



Obtuse angles equal  
91-179 degrees.

Line up the bottom of the protractor with bottom line of the angle.

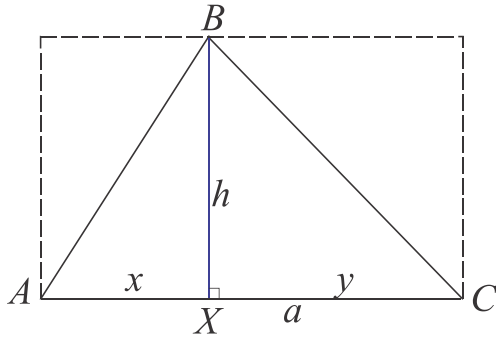


Don't forget to make  
sure the vertex of the  
angle is lined up with  
the center of the  
protractor.

Start at the zero  
and read up.

Double check your measurement.  
Does your answer match the type of angle you are measuring?

**Area of a triangle.**



$$S_{\Delta} = \frac{1}{2}h \times a$$

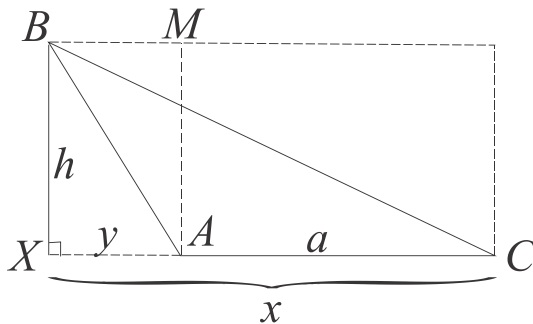
The area of a triangle is equal to half of the product of its height and the base, corresponding to this height.

For the acute triangle it is easy to see.

$$S_{\square} = h \times a = x \times h + y \times h$$

$$S_{\Delta ABX} = \frac{1}{2}h \times x, \quad S_{\Delta XBC} = \frac{1}{2}h \times y, \quad S_{\Delta ABC} = S_{\Delta ABX} + S_{\Delta XBC}$$

$$S_{\Delta ABC} = \frac{1}{2}h \times x + \frac{1}{2}h \times y = \frac{1}{2}h(x + y) = \frac{1}{2}h \times a$$



For an obtuse triangle, for one out of the three heights, it is not so obvious.

$$S_{\Delta XBC} = \frac{1}{2}h \times x, \quad S_{\Delta XBA} = \frac{1}{2}h \times y$$

$$\begin{aligned} S_{\Delta ABC} &= S_{\Delta XBC} - S_{\Delta XBA} = \frac{1}{2}h \times x - \frac{1}{2}h \times y \\ &= \frac{1}{2}h \times (x - y) = \frac{1}{2}h \times a \end{aligned}$$