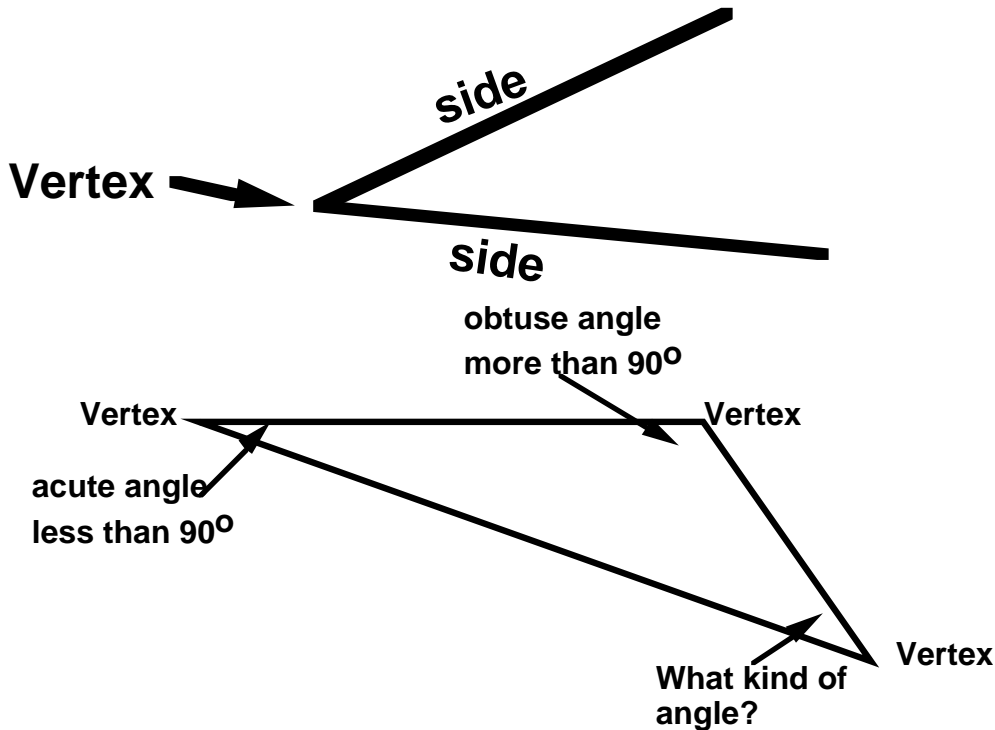


## Measuring Angles Using a Protractor

If you haven't used a protractor for a while, take a minute to review.

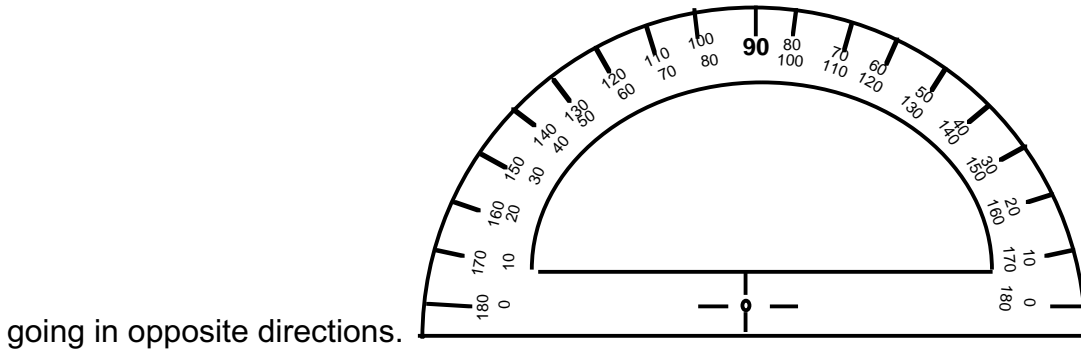
Every angle has two sides and a vertex (point). If the angle is part of a triangle, the corner of the triangle is the vertex.



You should be able to tell whether an angle is acute or obtuse just by looking. Sometimes you will need to measure an angle that is even more than 180°, but not often.

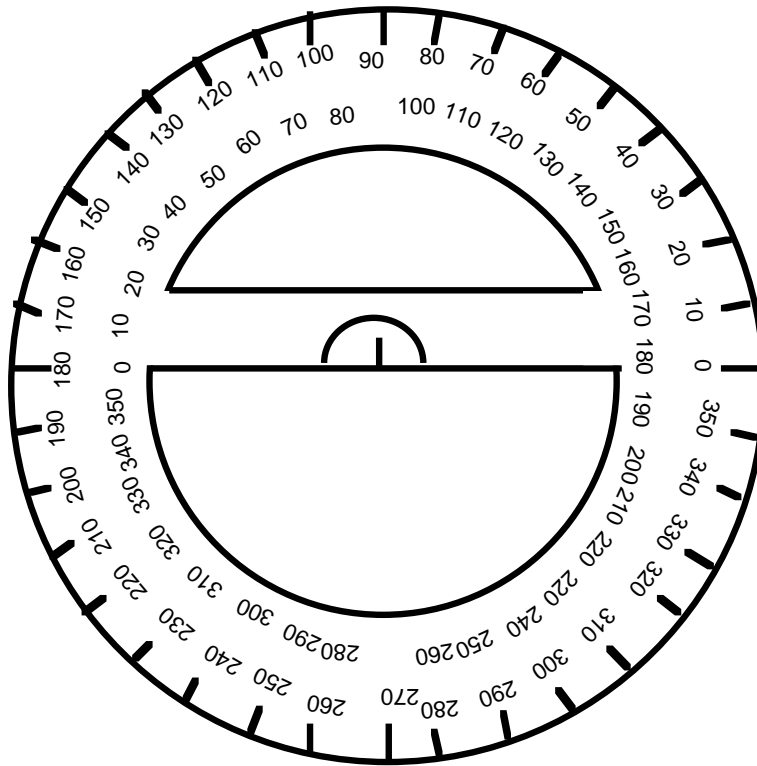
To measure an angle, you really need a protractor. Typically protractors are plastic. They are available at the college bookstore and at most supermarkets and drugstores. There are several basic designs.

Most protractors cover 180° and look like the following. They have two scales,



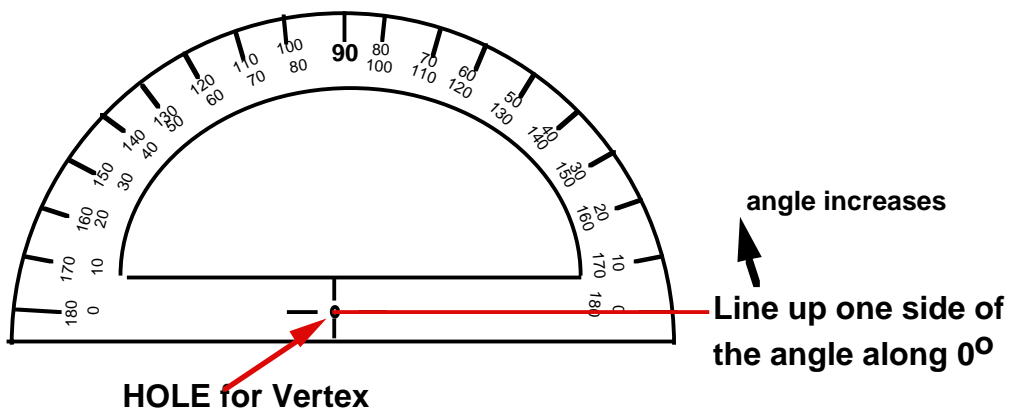
going in opposite directions.

Other calculators cover 360° and also have two scales going in opposite directions

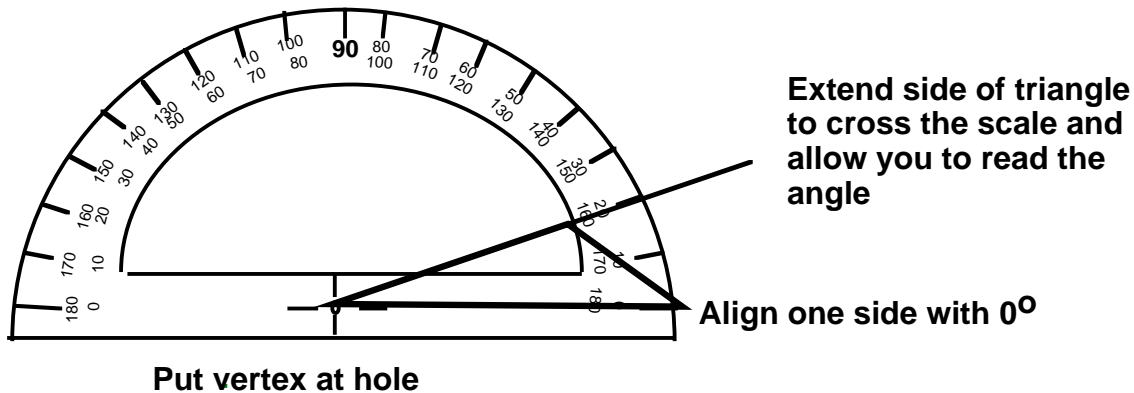


### Using the 180° Protractor.

Usually these have a hole where the vertex belongs. Others have a mark on the flat side where the vertex needs to go, It really matters that you place the vertex correctly and line one side of the angle along the 0° direction.



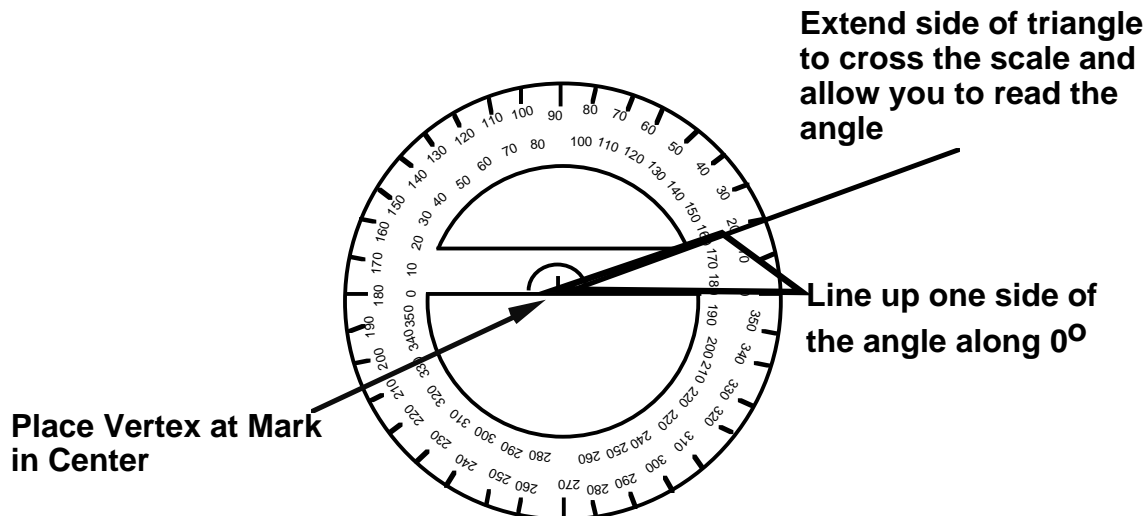
Put the hole on the vertex (point) of the angle and line the 0° along one side of the angle. If the sides of the angle are not long enough to reach the scale on the protractor, extend the sides of the angle by drawing along the sides with a ruler. DON'T estimate where the line will come out on the scale. The example below shows what to do.



Read the angle measurement based on where the extended line crosses the scale. Since this angle is acute (less than  $90^\circ$ ), be sure to read from the scale that shows less than  $90^\circ$  for the size.

### Using the 360° Protractor.

Place the vertex (point) of the angle on the mark in the middle of the protractor. Line up the protractor with the  $0^\circ$  along one side of the angle and read the angle off of one of the scales. If the sides of the angle are too small to cross the marks on the outside of the protractor, extend them by drawing lines with a ruler. **DO NOT ESTIMATE** the angle by guessing where the side will cross the scale.



Read the angle measurement based on where the extended line crosses the scale. Since this angle is acute (less than  $90^\circ$ ), be sure to read from the scale that shows less than  $90^\circ$  for the size.