

1-4 Angles

An **angle** (\angle) is the figure formed by two rays that have the same endpoint. The two rays are called the **sides** of the angle, and their common endpoint is the **vertex** of the angle.

The sides of the angle shown are \overrightarrow{BA} and \overrightarrow{BC} . The vertex is point B . The angle can be called $\angle B$, $\angle ABC$, $\angle CBA$, or $\angle 1$. If three letters are used to name an angle, the middle letter must name the vertex.

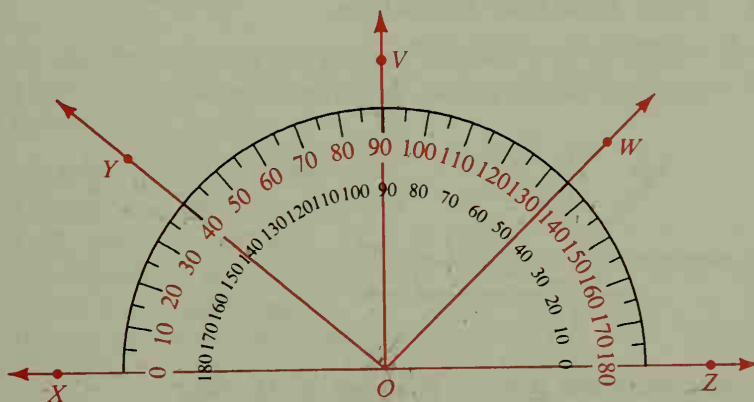
When you talk about this $\angle B$, everyone knows what angle you mean. But if you tried to talk about $\angle E$ in the diagram at the right, people wouldn't know which angle you meant. There are three angles with vertex E . To name any particular one of them you need to use either three letters or a number.

$\angle 2$ could also be called $\angle RES$ or $\angle SER$.

$\angle 3$ could also be called $\angle SET$ or $\angle TES$.

$\angle RET$ could also be called $\angle TER$.

You can use a protractor like the one shown below to find the *measure in degrees* of an angle. Although angles are sometimes measured in other units, this book will always use degree measure. Using the outer (red) scale of the protractor, you can see that $\angle XOY$ is a 40° angle. You can indicate that the (degree) measure of $\angle XOY$ is 40 by writing $m\angle XOY = 40$.



Using the inner scale of the protractor, you find that:

$$m\angle YOZ = 140 \quad m\angle WOZ = 45 \quad m\angle YOW = 140 - 45 = 95$$

Angles are classified according to their measures.

Acute angle: Measure between 0 and 90

Right angle: Measure 90

Obtuse angle: Measure between 90 and 180

Straight angle: Measure 180

Examples: $\angle XOY$ and $\angle VOW$

Examples: $\angle XOY$ and $\angle VOZ$

Examples: $\angle XOW$ and $\angle YOW$

Example: $\angle XOZ$

