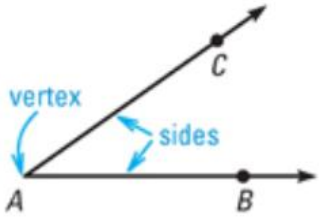
1.4 Measure and Classify Angles

An **angle** consists of two different rays with the same endpoint. The rays are the **sides** of the angle. The endpoint is the **vertex** of the angle.

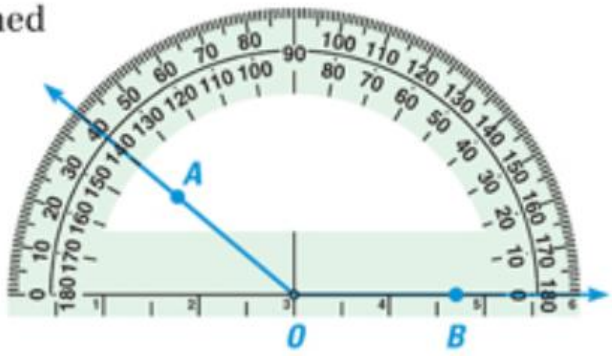
The angle with sides $\overrightarrow{AB}$ and $\overrightarrow{AC}$ can be named $\angle BAC$, $\angle CAB$, or $\angle A$. Point A is the vertex of the angle.



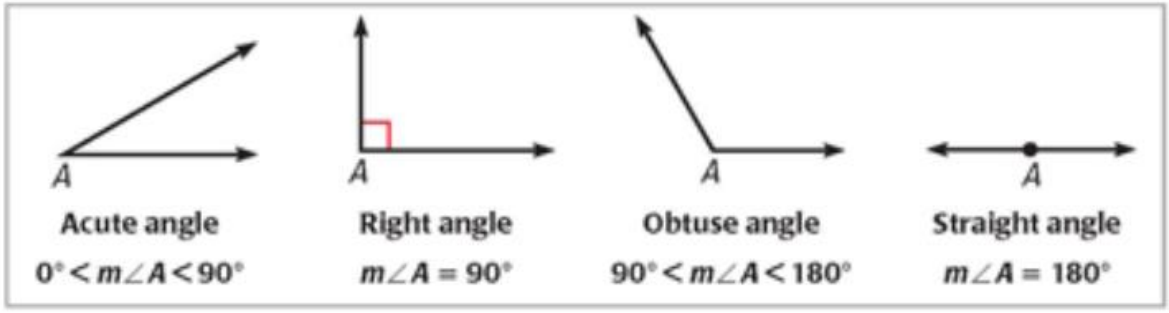
POSTULATE 3 Protractor Postulate

Consider $\overleftrightarrow{OB}$ and a point A on one side of $\overleftrightarrow{OB}$. The rays of the form $\overrightarrow{OA}$ can be matched one to one with the real numbers from 0 to 180.

The **measure** of $\angle AOB$ is equal to the absolute value of the difference between the real numbers for $\overrightarrow{OA}$ and $\overrightarrow{OB}$.

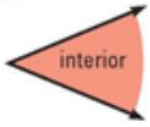


CLASSIFYING ANGLES Angles can be classified as **acute**, **right**, **obtuse**, and **straight**, as shown below.



READ DIAGRAMS

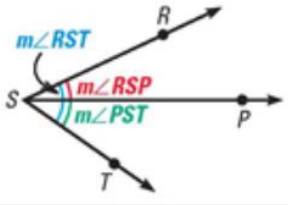
A point is in the *interior* of an angle if it is between points that lie on each side of the angle.



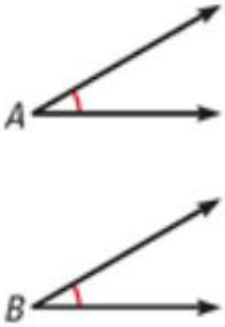
POSTULATE 4 Angle Addition Postulate

Words If P is in the interior of $\angle RST$, then the measure of $\angle RST$ is equal to the sum of the measures of $\angle RSP$ and $\angle PST$.

Symbols If P is in the interior of $\angle RST$, then $m\angle RST = m\angle RSP + m\angle PST$.



CONGRUENT ANGLES Two angles are **congruent angles** if they have the same measure. In the diagram below, you can say that "the measure of angle A is equal to the measure of angle B," or you can say "angle A *is congruent to* angle B."



Angle measures are equal.

$m\angle A = m\angle B$

"is equal to"

Angles are congruent.

$\angle A \cong \angle B$

"is congruent to"

An **angle bisector** is a ray that divides an angle into two angles that are congruent. In the activity on the previous page, $\overrightarrow{BD}$ bisects $\angle ABC$. So, $\angle ABD \cong \angle DBC$ and $m\angle ABD = m\angle DBC$.