Name _____ Date _____

# Day 3 – Angles and Angle Addition

## Naming Angles and Lines

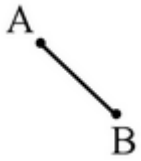
**Point**

•

A

Points are named with capital letters.

**Line Segment**




Two points are connected with a straight line. This line segment can be named $\overline{AB}$ or $\overline{BA}$.

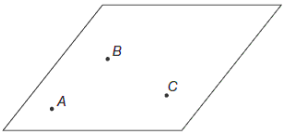
**Line**


A line does not have a beginning or end point. Lines are named using two points on the line. This line can be named $\overleftrightarrow{VW}$ or $\overleftrightarrow{WV}$.

**Ray**

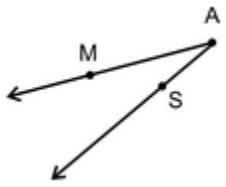

Rays start with a point but continue to infinity in one direction. Rays are named using its starting point and one other point on the ray. The ray can be named $\overrightarrow{AB}$ but **NOT** $\overrightarrow{BA}$.

**Plane**




A plane is a flat, two-dimensional surface that extends indefinitely far.

**Angle**



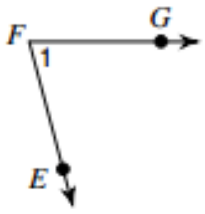

Angles are made up of two rays that have the same beginning point. The point is called the vertex and the two rays are called the side of the angle. Angles can be name in ways:

One Letter (<u>if the vertex is not shared</u>): $\angle A$

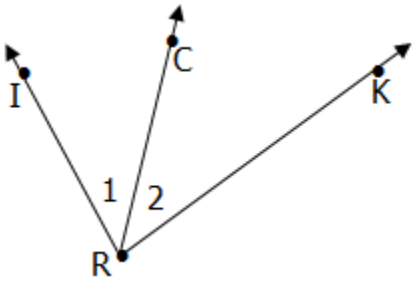
Number (if given): $\angle 1$

Three Letters (vertex is middle letter): $\angle MAS$ or $\angle SAM$

a. Name the angle in four ways:




b. Name angle 1 as many ways as possible:



## Types of Angles

**Acute Angles**
Acute angles have measures between ____ & ____.

**Obtuse Angles**
Obtuse Angles have measures between ____ & ___.

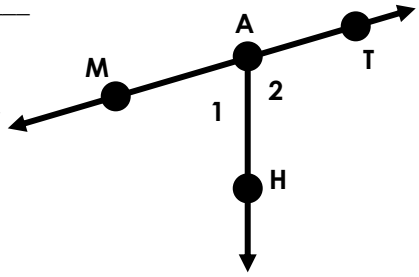
**Right Angles**
Right Angles measure exactly _____.

**Straight Angles**
Straight Angles measure exactly _____.

## Practice

Complete the following:

1. Give an example of each: A line segment _____ A line _____ A ray _____
2. Name the angle represented with the number 1 using 3 letters. _____
3. Why can't you name it angle A? _____
4. Is this angle an obtuse, acute, or right angle? _____
5. If angle 1 is 60 degrees, what is the measure of angle 2? _____




## Angle Vocabulary

**Complementary Angles**: Two or more angles whose sum of measures equals _____.

40° and 50° angles are complementary angles because 40° + 50° = 90°.

Example: A 30° angle is called the complement of the 60° angle.
Similarly, the 60° angle is the complement of the 30° angle.

**Practice**: Find the **complement** of each angle.

a. 35°

b. $\angle 1$ and $\angle 2$ are complementary. Find the value of x and the measure of both angles.
$\angle 1 = 5x + 2$
$\angle 2 = 2x + 4$

c. One of two complementary angles is 16 degrees less than its complement. Find the measure of both angles.

**Supplementary Angles**: Two or more angles whose sum of measures equals _____.

60° and 120° angles are supplementary angles because 60° + 120° = 180°.

Example: A 70° angle is called the supplement of the 110° angle.
Similarly, the 110° angle is the supplement of the 70° angle.

**Practice**: Find the **supplement** of each angle.

a. 126°

b. ∠1 and ∠2 are supplementary. Find the value of x and the measure of both angles.
∠1 = 12x + 4
∠2 = 9x + 8

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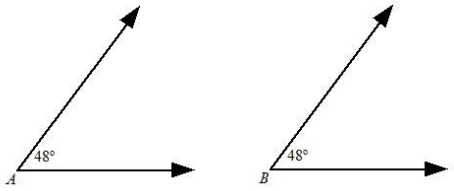
**Congruent Angles:** Two or more angles with the _____ measure. The geometric symbol that represents congruency is _____.




∠A and ∠B are congruent angles.

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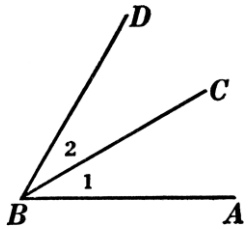
**Adjacent Angles:** Two angles with a common _____ and _____ but no common _____ _____.




∠1 and ∠2 are adjacent angles.

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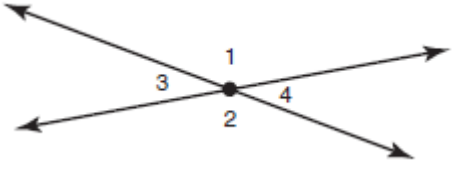
**Linear Pair:** Two adjacent (next to) angles whose noncommon sides are opposite rays. A linear pair also forms a line. LINEAR PAIRS ARE _____ .

a. Name all the linear pairs in the diagram below:

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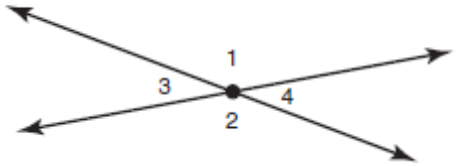
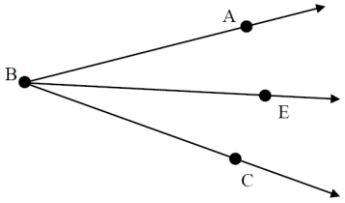
**Vertical Angles:** Two nonadjacent angles that are formed by two intersecting lines. VERTICAL ANGLES ARE _____.

a. Name all the vertical angles in the diagram below:




**Angle Bisector**: A ray that divides an angle into two _____ angles (two angles with equal measure).

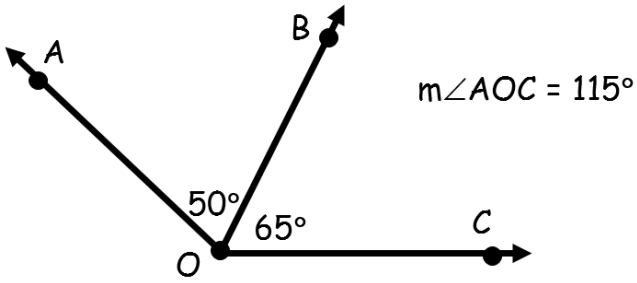
a. $\overrightarrow{BE}$ is an angle bisector.




6. If m∠ABE = 40°, then m∠EBC = _____.

7. If m∠ABC = 4x-12 & m∠ABE = 24°, then x = _____.

**Angle Addition Postulate:** If point B lies in the interior of ∠AOC, then m∠AOB + m∠BOC = m∠AOC.




m∠AOC = 115°