**An angle** is a figure formed by two non collinear rays that have a common endpoint.

The common endpoint is called **the vertex**, and the two rays that make up the angle are called **the sides of the angle**.

There are several ways to name the angle.

|  |  |  |
| --- | --- | --- |
|  | Use the vertex and a point from each side. |  |
| Use the vertex only. |  |
| Use a number. |  |

Angles are measured in units called degrees. The symbol for degree is °.

**Angles Measure Postulate**

|  |  |
| --- | --- |
|  | **For every angle, there is a unique positive number between 0 and 180 called the degree measure of the angle.** |
|  |
|  |

**Protractor Postulate** Describes the relationship between angle measures and numbers.

|  |  |
| --- | --- |
| **°** | On a plane, given and a number between 0 and  180, there is exactly one ray with endpoint extending on each side of such that the degree measure of the angle formed is .  A protractor can be used to approximate the measure of an angle. |

How to use the protractor:

1. Place the notch of the protractor at the vertex of the angle.

2. Place the edge of the protractor along a side of the angle so that the scale reads 0.

3. Read the angle size by reading the degree measure that corresponds to the second side of the angle.

**Types of Angles**

|  |  |  |  |
| --- | --- | --- | --- |
| **Acute Angle** | **Right Angle** | **Obtuse Angle** | **Straight Angle** |
|  |  |  |  |
|  |  |  |  |

**Sample Problem 1**: **Find the measure of each angle. Then classify each angle.**

|  |  |  |  |
| --- | --- | --- | --- |
| **a.** | https://lh6.googleusercontent.com/d3-Z8ZYWIAYnzZam0k-3jKFlLrIk1cWbXDKohgIE0AaQHE_iFku1j63EeRZeEY-lqgmCiTWhbR1Dx6UAwFE2JROY53czHWpWV_XkYEaJkzlPjiB76PB8K7So4h8ttc8730E1qeRl9oM | **b.** | https://lh6.googleusercontent.com/d3-Z8ZYWIAYnzZam0k-3jKFlLrIk1cWbXDKohgIE0AaQHE_iFku1j63EeRZeEY-lqgmCiTWhbR1Dx6UAwFE2JROY53czHWpWV_XkYEaJkzlPjiB76PB8K7So4h8ttc8730E1qeRl9oM |
|  | **Angle measures 45°**  **Acute angle** |  | **Angle measures °**  **Obtuse angle** |

**Sample Problem 2**: **Use a protractor to draw each angle. Then classify each angle.**

|  |  |  |  |
| --- | --- | --- | --- |
| **a.** |  | **b.** |  |
|  | https://lh6.googleusercontent.com/d3-Z8ZYWIAYnzZam0k-3jKFlLrIk1cWbXDKohgIE0AaQHE_iFku1j63EeRZeEY-lqgmCiTWhbR1Dx6UAwFE2JROY53czHWpWV_XkYEaJkzlPjiB76PB8K7So4h8ttc8730E1qeRl9oM |  | https://lh6.googleusercontent.com/d3-Z8ZYWIAYnzZam0k-3jKFlLrIk1cWbXDKohgIE0AaQHE_iFku1j63EeRZeEY-lqgmCiTWhbR1Dx6UAwFE2JROY53czHWpWV_XkYEaJkzlPjiB76PB8K7So4h8ttc8730E1qeRl9oM |
|  | **Acute angle** |  | **Obtuse angle** |

**Angle Addition Postulate**

|  |  |
| --- | --- |
|  | **If is in the interior of , then the measure of is equal to the sum of the measures of and .** |
|  |

**Sample Problem 3**: **Find the indicated angle measures.**

|  |  |  |
| --- | --- | --- |
| **a.** |  |  |
| **b.** |  |  |

**The bisector of an angle** is the ray with its endpoint at the vertex of the angle extending into the interior of the

angle. The bisector separates the angle into two angles of equal measure.

**Sample Problem 4**: **Find the indicated angle measures.**

|  |  |  |
| --- | --- | --- |
| **a.** | **If bisects and , find and** |  |
| **b.** | **If bisects and , find and** |  |