

TOPIC 2: Warm Up → Angle Relationships—Introduction

An **angle** is a geometric figure formed by two rays with a common endpoint.

The endpoint where the rays meet is called the vertex of the angle.

Angles are measured in degrees.

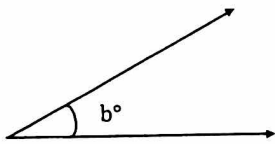
A protractor is used to measure angles.

Angles with the **same measure** are called congruent, the symbol is ≅.

Naming an Angle:

Angles can be named 3 different ways.

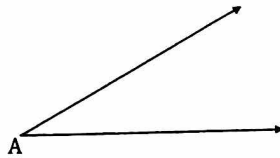
a.



Naming by the arc.

$\angle b^\circ$

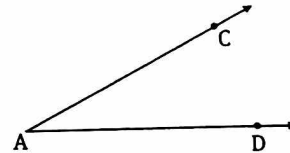
b.



Naming by the vertex.

$\angle A$

c.



Naming by three points.

$\angle CAD$ OR $\angle DAC$

Classifying an Angle:

Angles can be classified by their measures.

An acute angle measures between 0° and 90° .

A right angle measures exactly 90° . *Look for the box in the corner!

An obtuse angle measures greater than 90° but less than 180° .

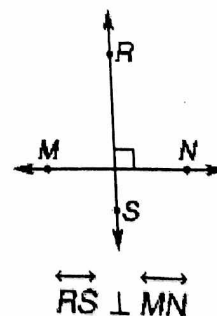
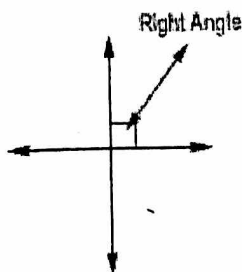
A straight angle measures exactly 180° .

A reflex angle measures greater than 180° but less than 360° .




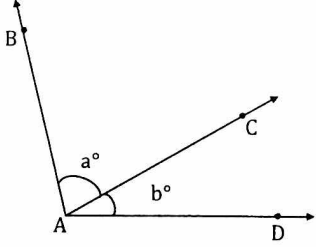
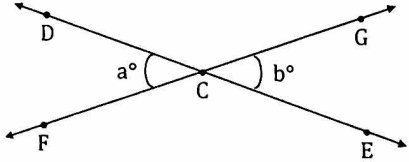
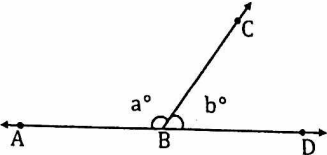
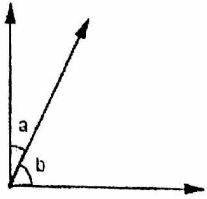
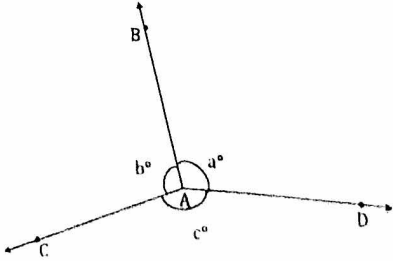
Perpendicular Lines:

Perpendicular lines: → Lines that intersect to form 4 right angles



TOPIC 2: Angle Relationships—Introduction

ANGLE RELATIONSHIPS

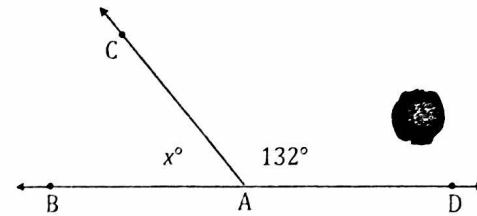
Angle Relationship	Angle Fact	Diagram
	<p>FYI: <u>Adjacent angles</u> share a common vertex and a common side, but do not overlap.</p> <p>Examples: --Angles a° and b° are adjacent angles; --$\angle BAC$ and $\angle CAD$ are adjacent angles.</p>	
<p>Vertical Angles</p>	<p>When two lines intersect, two pairs of opposite angles are formed—these angles are called <u>vertical angles</u>.</p> <p>Vertical angles are <u>congruent</u>.</p> <p>Example: --Angles a° and b° are vertical angles.</p>	
<p>Supplementary Angles</p>	<p><u>Supplementary angles</u> are two or more angles that add up to give a straight angle, 180°.</p> <p>Example: --Angles a° and b° are supplementary angles.</p>	
<p>Complementary Angles</p>	<p><u>Complementary angles</u> are two or more angles that add up to give a right angle, 90°.</p> <p>Example: --Angles a° and b° are complementary angles.</p>	
<p>Angles at a Point</p>	<p>The measure of all angles formed by three or more rays with the same vertex is 360°.</p> <p>Example: --Angles a°, b° and c° are angles at a point.</p>	

Example 1:

a: Identify the **angle relationship** in the diagram.

Supplementary

b: **Write an algebraic equation** for the angle relationship shown in the figure and solve for x.



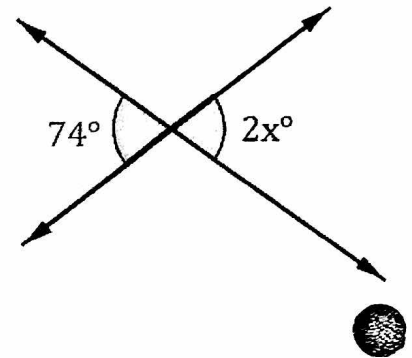
$$\begin{array}{r} x + 132 = 180 \\ -132 \quad -132 \\ \hline x = 48^\circ \end{array}$$

Example 2:

a: Identify the **angle relationship** in the diagram.

Vertical

b: **Write an algebraic equation** for the angle relationship shown in the figure and solve for x.



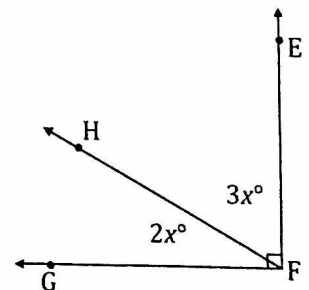
$$\begin{array}{r} 74 = 2x \\ \frac{74}{2} = \frac{2x}{2} \\ \hline 37 = x \end{array}$$

Example 3: In the diagram to the right, the **ratio** of $\angle GFH$ to $\angle EFH$ is 2:3.

a: Identify the **angle relationship** in the diagram.

Complementary

b: **Write an algebraic equation** for the angle relationship shown in the figure and solve for x.



$$\begin{array}{r} 2x + 3x = 90 \\ 5x = 90 \\ \frac{5x}{5} = \frac{90}{5} \end{array}$$

$$x = 18$$

c: Find the missing angles.

$$\angle GFH \quad 2x \quad 2(18) = 36^\circ$$

$$\angle EFH \quad 3x \quad 3(18) = 54^\circ$$