

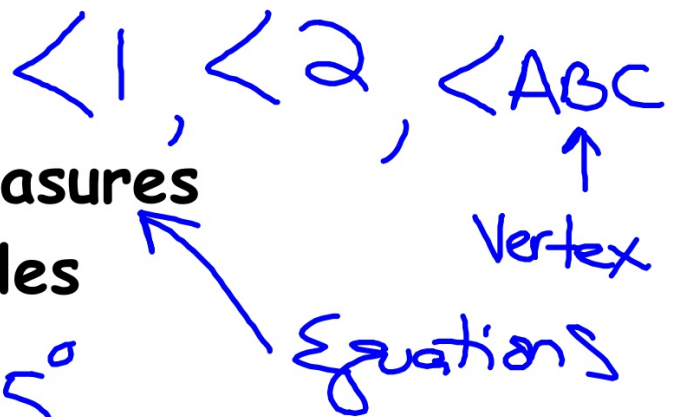
7.1 Adjacent and Vertical Angles

Learning Targets

- Naming Angles
- Finding Angle Measures
- Constructing Angles



$$m\angle < 95^\circ$$



Important Vocabulary

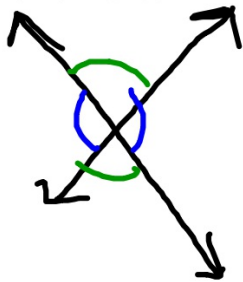
Complimentary Angles Have a sum 90°

Supplimentary Angles Have sum 180°

Congruent Angles Exactly same measure

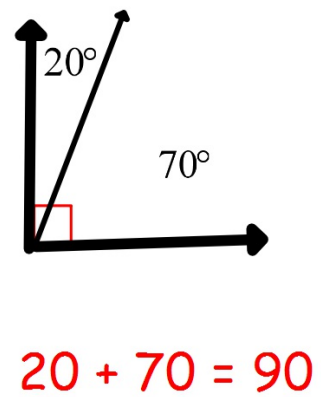
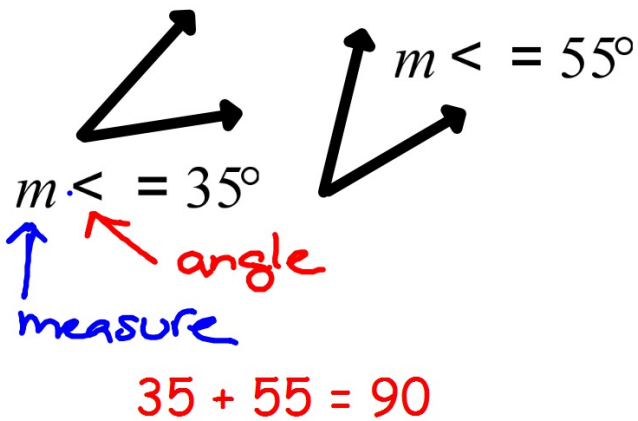
Adjacent Angles Share a side & have the same vertex

Vertical Angles "Opposite" angles formed by 2 straight lines. They are congruent.



Complimentary Angles

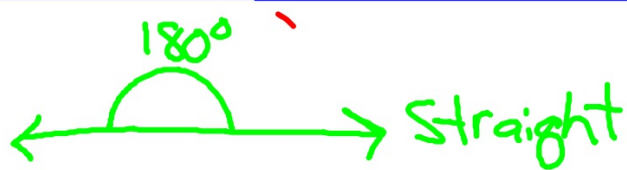
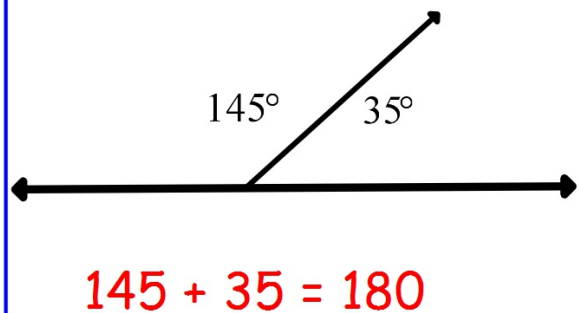
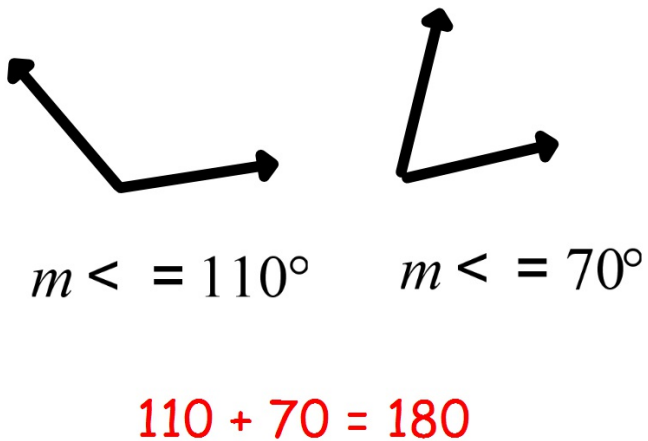
Angles whose measures have a total sum of 90



$m\angle$

Supplementary Angles

Angles whose measures have a total sum of 180

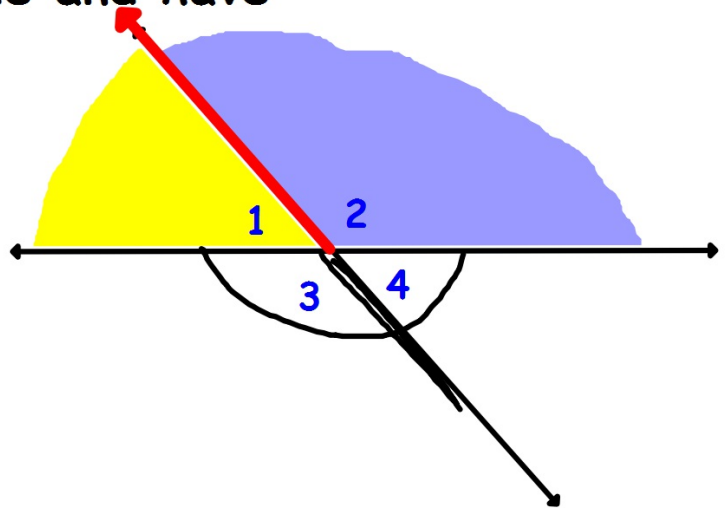


Learning
Target 1

Adjacent Angles "next to"

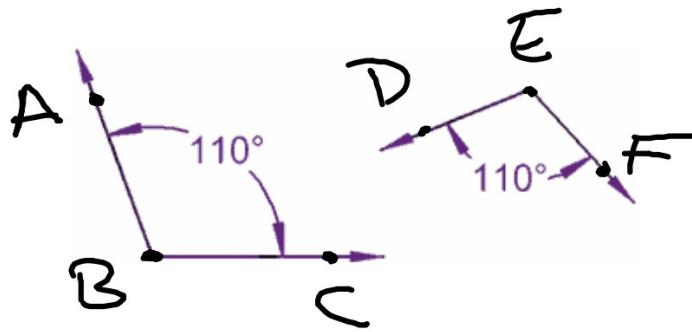
Two angles are **Adjacent Angles** when they share a common side and have the same vertex.

$\angle 1$ and $\angle 2$
 $\angle 1$ and $\angle 3$
 $\angle 2$ and $\angle 4$
 $\angle 3$ and $\angle 4$



Congruent Angles - same size, same shape

Two angles that have exactly the same measure.

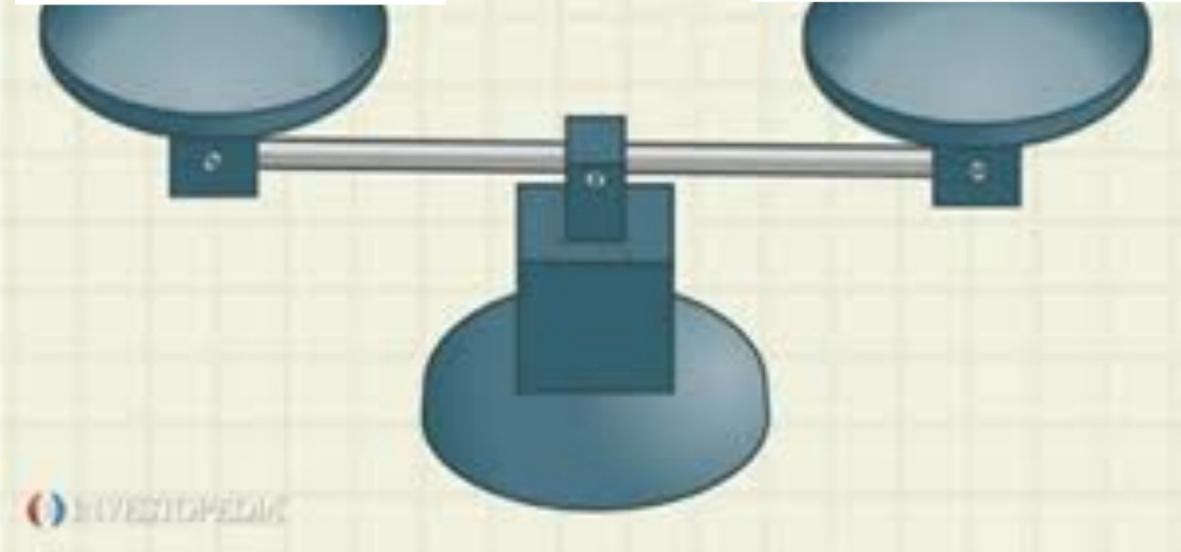


$$\angle ABC \cong \angle DEF$$

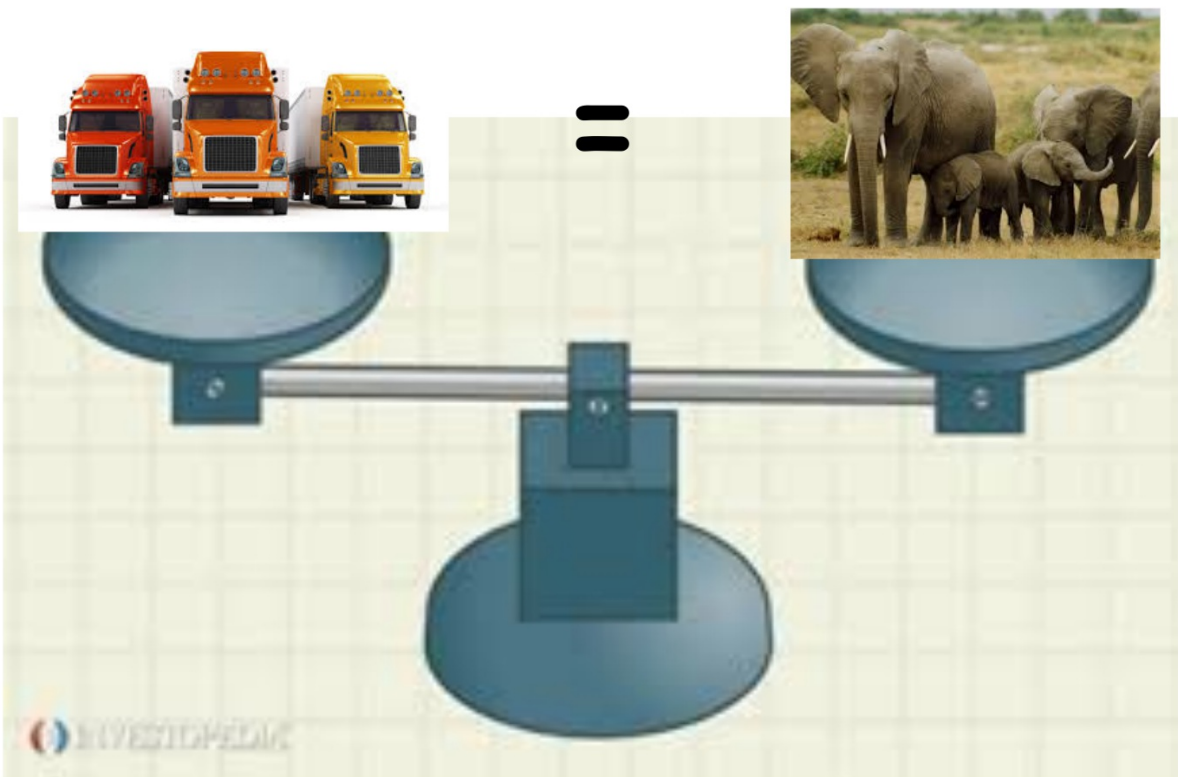
Exactly the Same



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Equal Weight, Not Congruent



Learning
Target 1

Vertical Angles

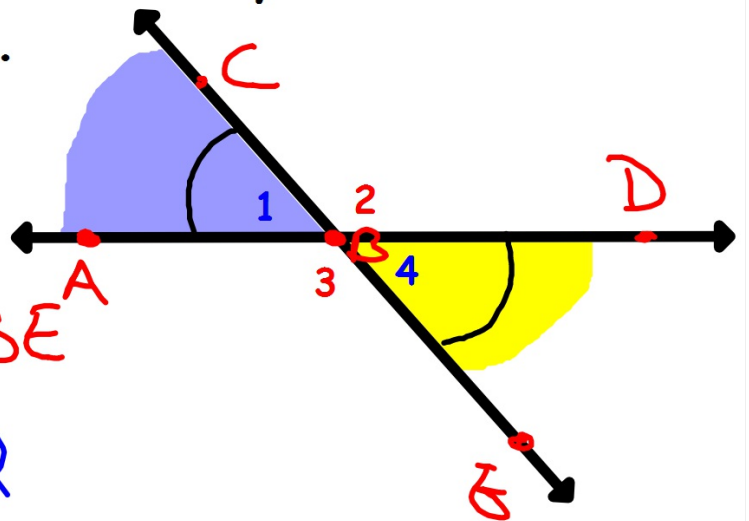
Two angles are **Vertical Angles** when they are opposite angles formed by the intersection of two lines.

$\angle 1$ and $\angle 4$

$\angle ABC$ and $\angle DBE$

$\angle 3$ and $\angle 2$

$\angle ABE$ and $\angle CBD$



Learning
Target 1

Vertical Angles

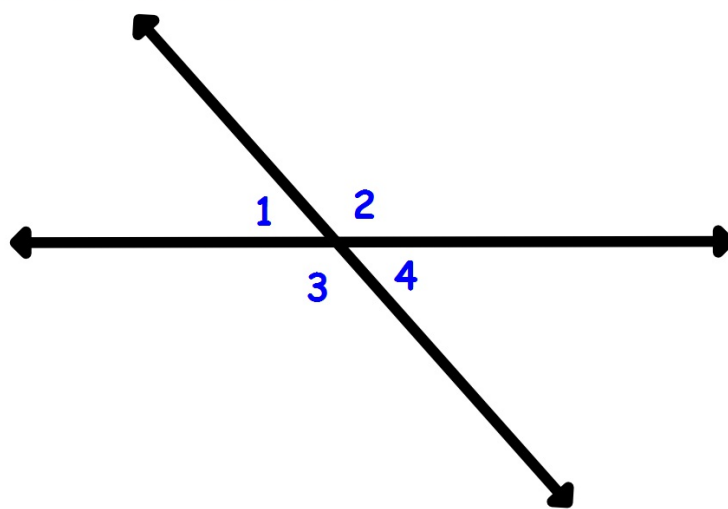
Vertical Angles are **Congruent**
meaning they have the same measure

$$m\angle 1 = m\angle 4$$

$$\angle 1 \cong \angle 4$$

$$m\angle 2 = m\angle 3$$

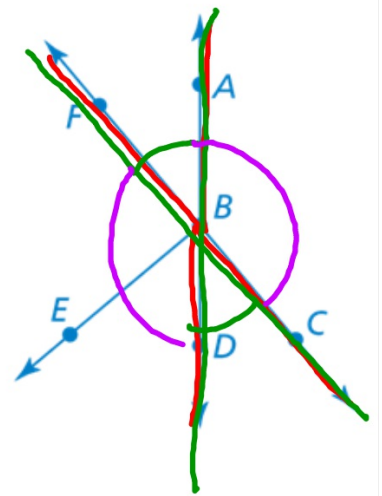
$$\angle 2 \cong \angle 3$$



Use the figure shown.

a. Name a pair of adjacent angles.

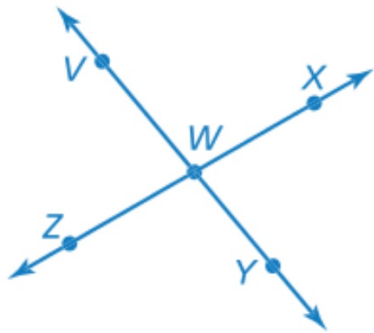
b. Name a pair of vertical angles.



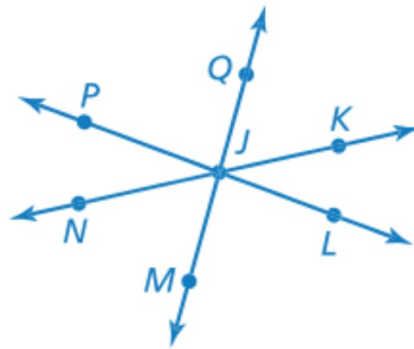
ON YOUR OWN

Name two pairs of adjacent angles and two pairs of vertical angles in the figure.

1.



2.

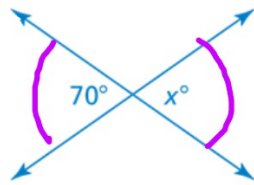


Learning
Target 2

Finding Angle Measures

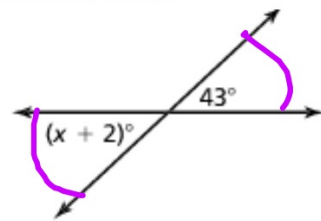
First Type of Equation

Tell whether the angles are *adjacent* or *vertical*. Then find the value of x .



Vertical

$$x = 70^\circ$$



Vertical

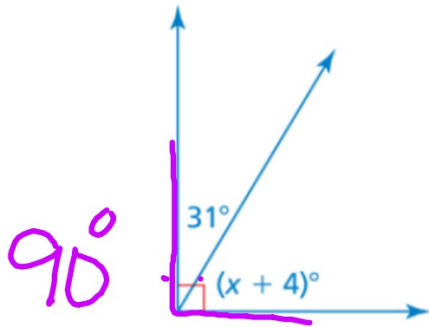
$$x + 2 = 43$$

$$x = 41^\circ$$

Learning
Target 2

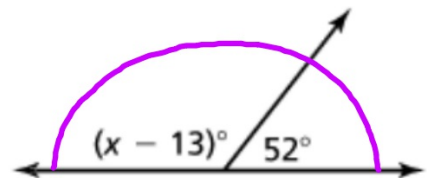
Finding Angle Measures

Second Type of Equation



$$\begin{array}{r} 31 + x + 4 = 90 \\ 35 + x = 90 \\ -35 \quad -35 \\ \hline x = 55^\circ \end{array}$$

Third Type of Equation

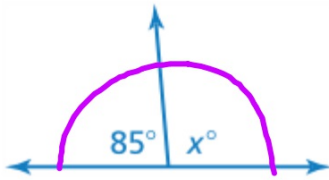


$$\begin{array}{r} x - 13 + 52 = 180 \\ x + 39 = 180 \\ -39 \quad -39 \\ \hline x = 141^\circ \end{array}$$

ON YOUR OWN

Tell whether the angles are *adjacent* or *vertical*. Then find the value of x .

3.

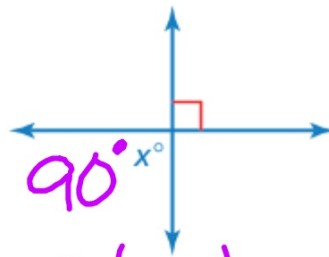


Adj.

$$\begin{array}{r} 85 + x = 180 \\ - 85 \quad \quad \quad \underline{85} \end{array}$$

$$x = 95^\circ$$

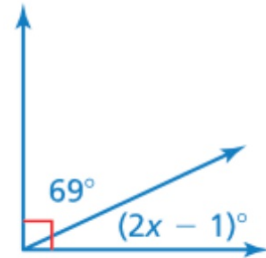
4.



Vertical

$$x = 90$$

5.

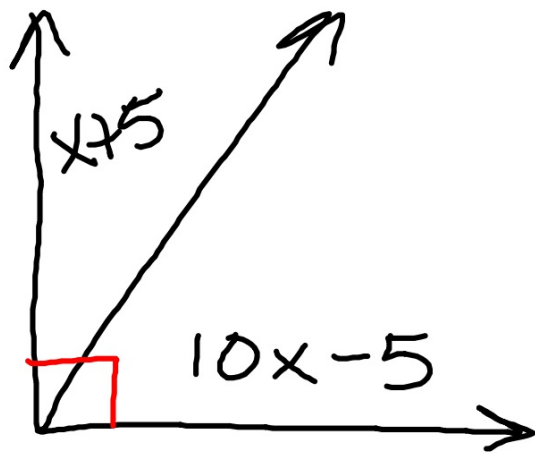


Adj.

$$\begin{array}{r} 69 + 2x - 1 = 90 \\ 68 + 2x = 90 \\ - 68 \quad \quad \quad - 68 \end{array}$$

$$\underline{2x = 22}$$

$$x = 11$$



$$x+5+10x-5=90$$

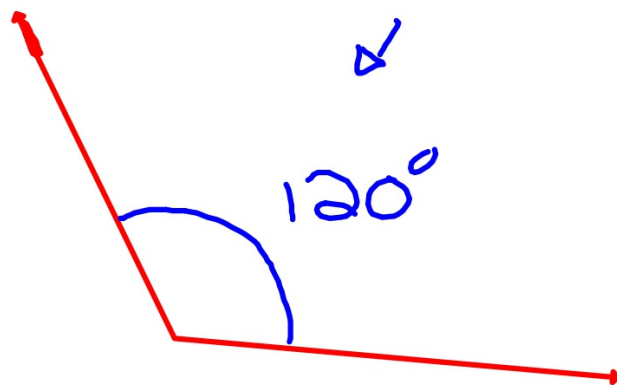
$$\frac{11x}{11} = \frac{90}{11}$$

$$x = \sim$$

Learning
Target 3

Constructing Angles

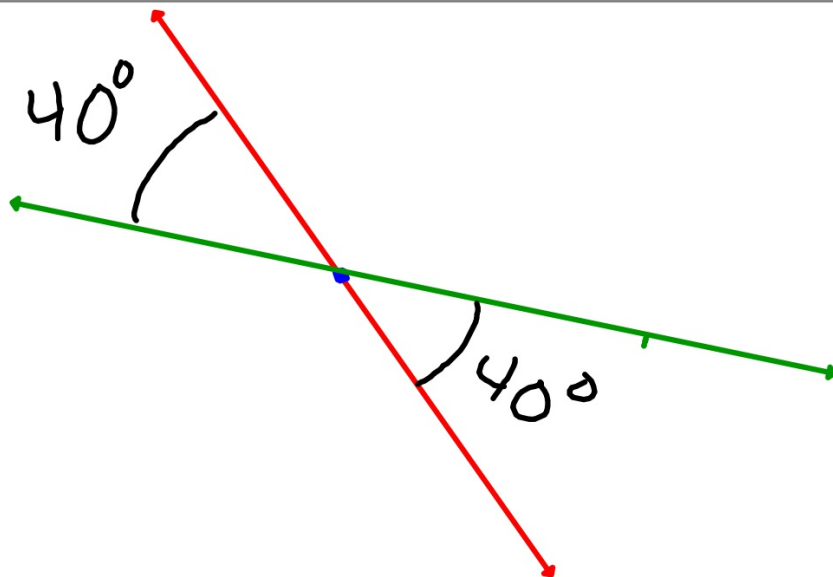
Construct an angle with a measure of 120



Learning
Target 3

Constructing Angles

Draw a pair of vertical angles with a measure of 40° .



Homework

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5, 7, 8-13