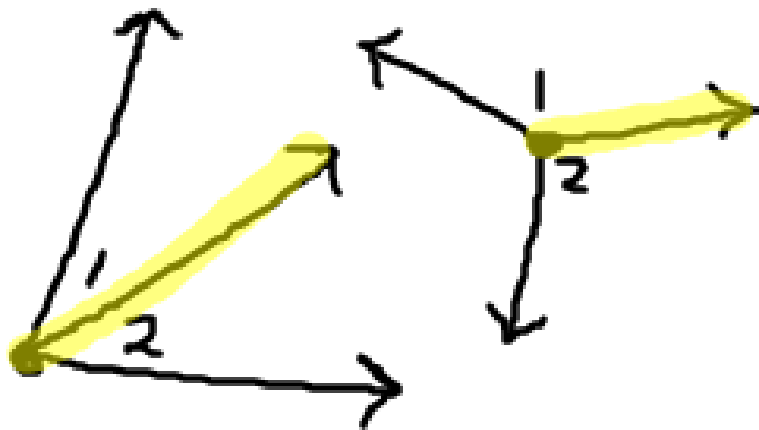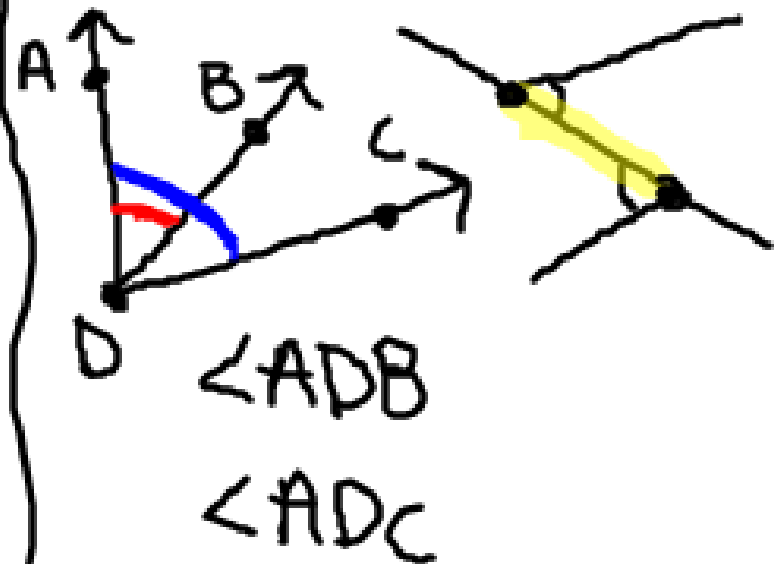# 1 - 5
Angle Relationships

adjacent angles: two angles that ★ ★ ★
lie in the same plane, have a common ★
vertex and common side, but no
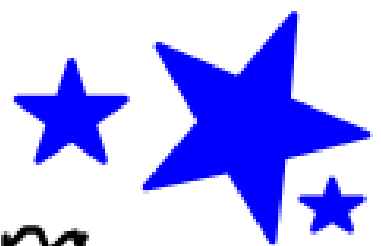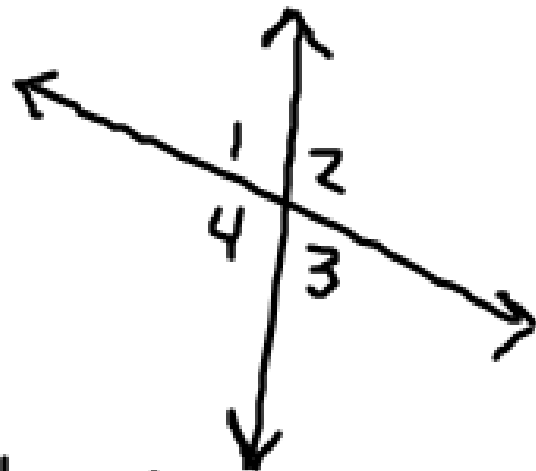common interior points

Examples:

Non-Examples:

∠ADB

∠ADC
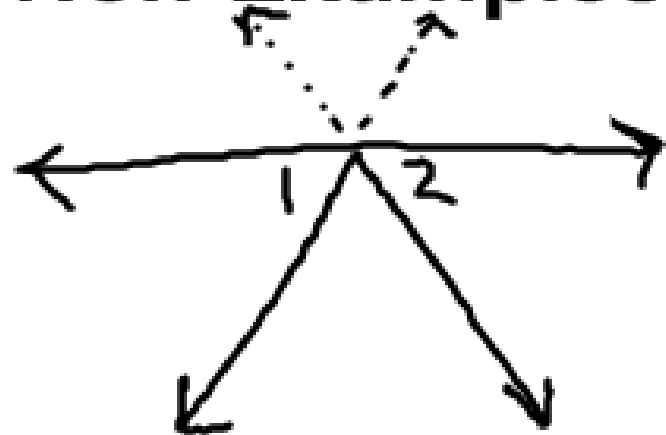
vertical angles: 2 nonadjacent angles formed by 2 intersecting lines

Examples:

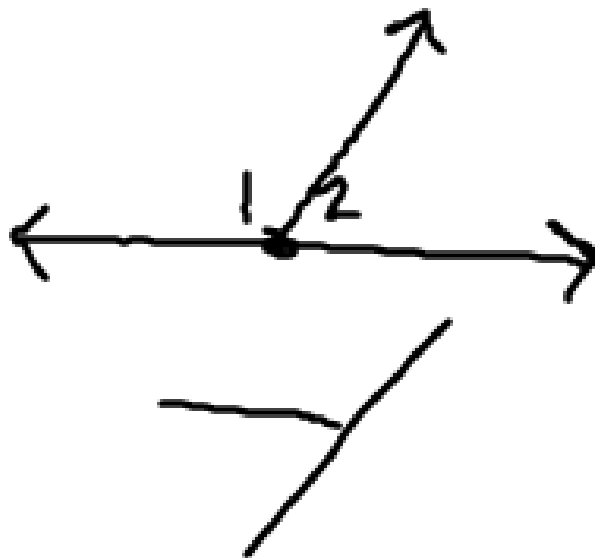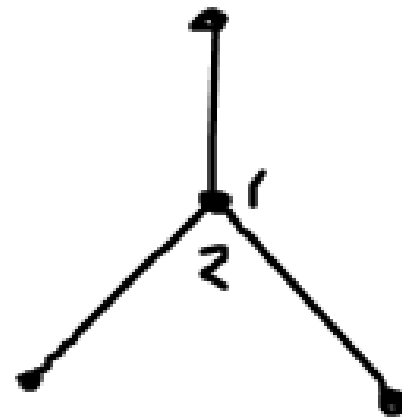∠1 and ∠3   ∠2 and ∠4

Non-Examples:

linear pair: 2 adjacent angles whose noncommon sides are opposite rays
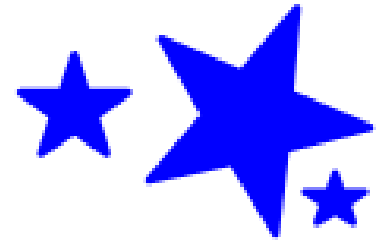
Examples:

Non-Examples:

Ex:
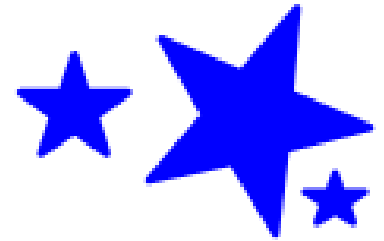
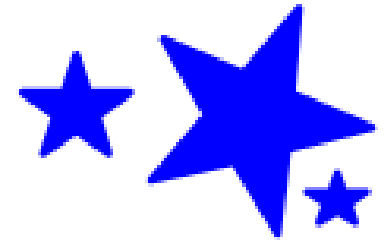a.) name two obtuse vertical angles

∠VZX ∠WZY

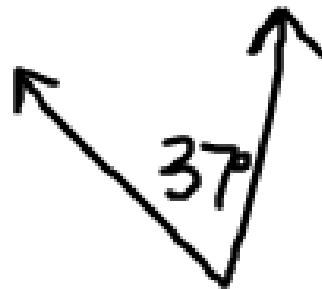b.) name two acute adjacent angles

∠YZT ∠TZW
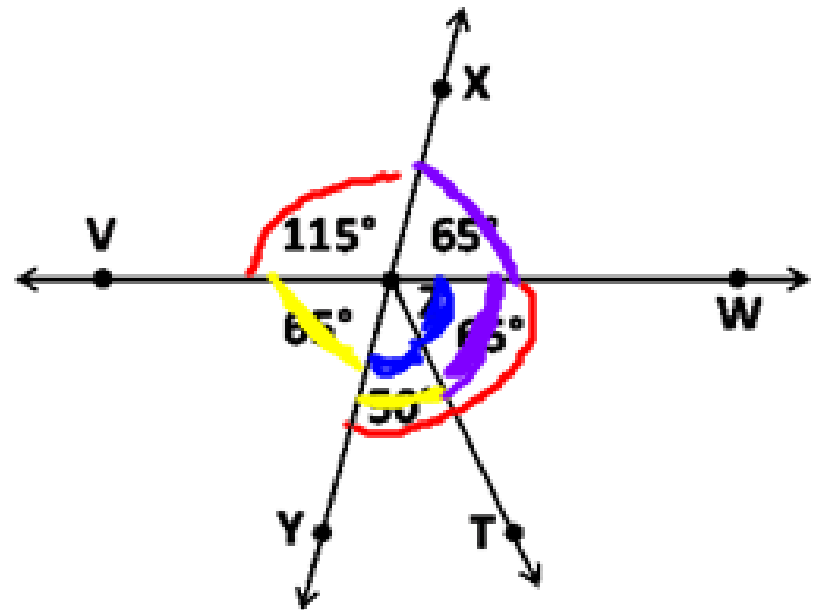
complementary angles:

2 angles with sum of 90

Examples:
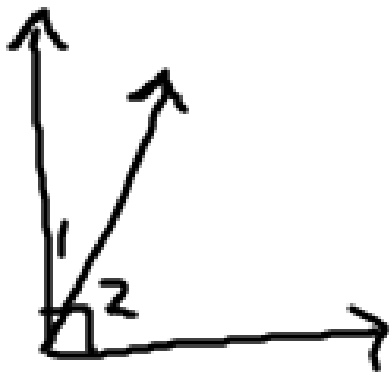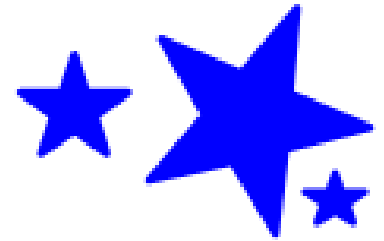
supplementary angles:
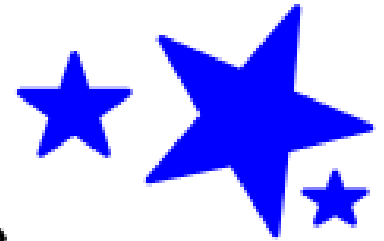
2 angles with sum of 180°

Examples:

1 2

120°

60°

Ex: Find the measures of two complementary angles if the difference in the measures of the two angles is 12.

$$(90-x) - (x) = 12$$

$$90 - 2x = 12$$
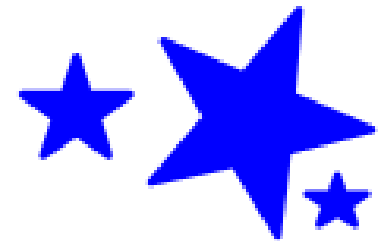$$-90 \qquad -90$$
$$\frac{-2x}{-2} = \frac{-78}{-2}$$
$$\boxed{x = 39}$$

$$\boxed{\begin{array}{c} 39° \\ 51° \end{array}}$$

Ex: The measure of an angle's supplement is 44 less than the measure of the angle. Find the measure of the angle and its supplement.
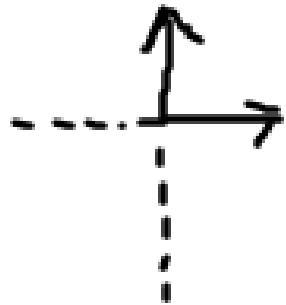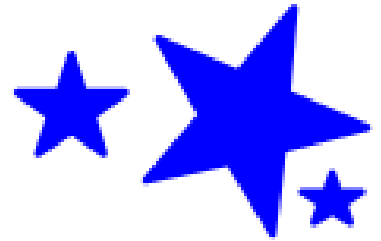
x

$x - 44$

$$112°$$
$$68°$$

$x + x - 44 = 180$

$2x - 44 = 180$
$+44 \quad +44$

$\dfrac{2x}{2} = \dfrac{224}{2}$

$x = 112$

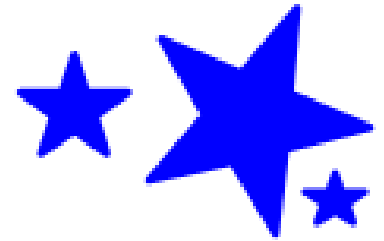**perpendicular:** lines that form right angles

1.) Perpendicular lines intersect to form _four_ _right_ _angles_ .

2.) Perpendicular lines intersect to form _congruent_ _adjacent_ _angles_ .
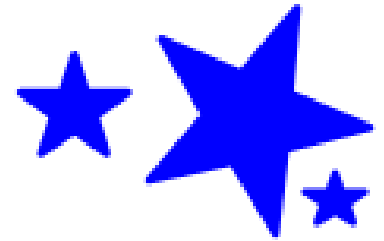
3.) _Segments_ and _rays_ can be perpendicular to lines or to other _segments_ and _rays_.

4.) Don't just assume two lines are perpendicular! You need to be given the _angle_ _measures_ or a _right_ _angle_ _symbol_.

Ex: Find x and y so that $\overleftrightarrow{BE}$ and $\overleftrightarrow{AD}$ are perpendicular.
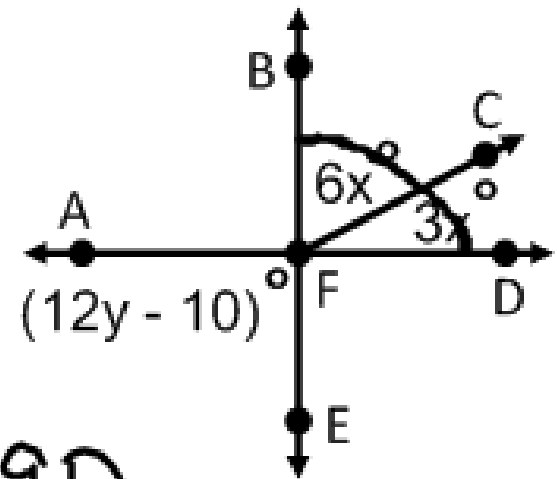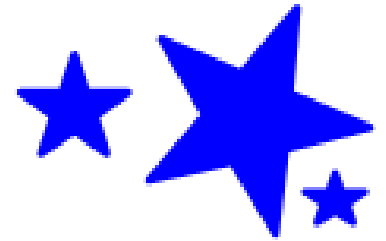
$$6x + 3x = 90$$

$$9x = 90$$

$$\boxed{x = 10}$$

B, C, A, 6x, 3x, F, D, (12y - 10), E

$$12y - 10 = 90$$
$$+ 10 + 10$$
$$\frac{12y}{12} = \frac{100}{12}$$
$$\boxed{y = 8.3}$$

Homework:

p.42 #11-21 odd, 27, 28, 29