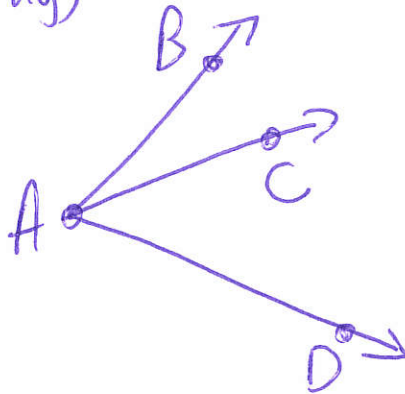# Angle Relationships classwork

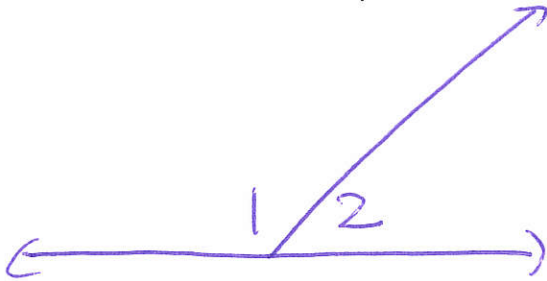KEY

- *Adjacent angles:* angles in a plane that have a common <u>Vertex</u> and a common <u>side</u> (or, ray), but no common interior points. Please draw an example:
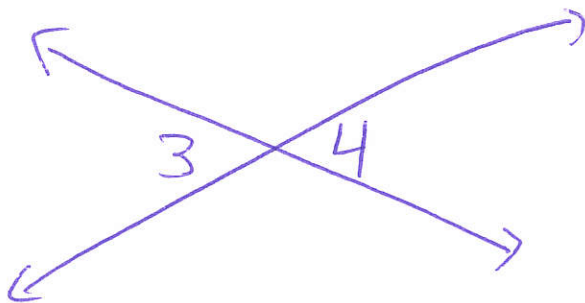
∠BAC adjacent to ∠CAD

- *Linear pair:* adjacent angles whose non-common sides are opposites rays. Please draw an example:

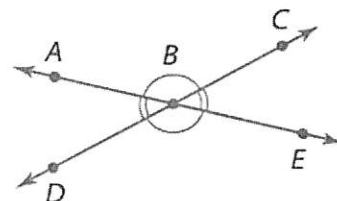- *Vertical angles:* two nonadjacent angles formed by two intersecting lines. Please draw an example:

∠3 ≅ ∠4

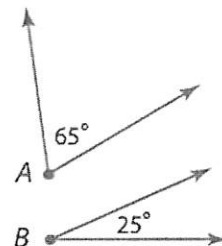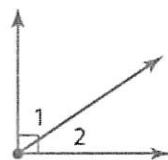vertical angles are always ≅

KeyConcept Angle Pair Relationships

Vertical angles are congruent.

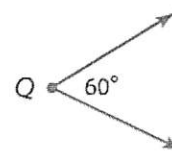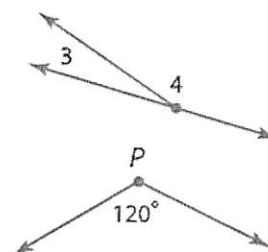Examples $\angle ABC \cong \angle DBE$ and $\angle ABD \cong \angle CBE$

Complementary angles are two angles with measures that have a sum of 90.

Examples $\angle 1$ and $\angle 2$ are complementary.
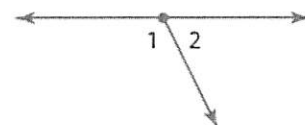$\angle A$ is complementary to $\angle B$.

Supplementary angles are two angles with measures that have a sum of 180.

Examples $\angle 3$ and $\angle 4$ are supplementary.
$\angle P$ and $\angle Q$ are supplementary.

The angles in a linear pair are supplementary.

Example $m\angle 1 + m\angle 2 = 180$

Ex #1: Find the measures of two complementary angles if the difference in the measures of the two angles is 12.

first angle : X
second angle : X +12
Complementary = 90

$X + (X+12) = 90$
$2X + 12 = 90$
$2X = 78$
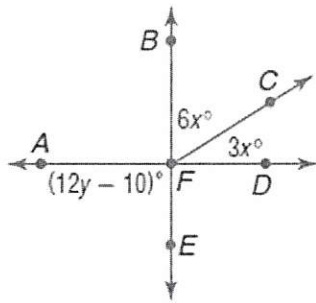$X = 39$
thus, X+12 = 51

the angles are 39 ¿ 51

Ex #2: Find x and y so that $\overleftrightarrow{BE}$ and $\overleftrightarrow{AD}$ are perpendicular.

B

C

6x°

A

3x°

(12y – 10)° F   D

E

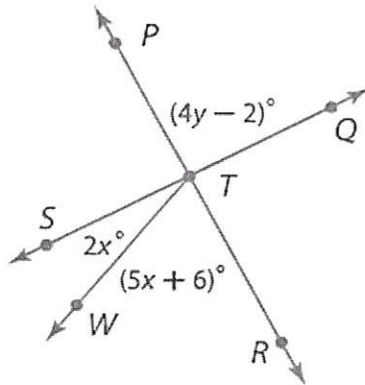$6x + 3x = 90$

$9x = 90$

$\boxed{x = 10}$

$12y - 10 = 90$

$12y = 100$

$y = \frac{100}{12}$

$\boxed{y = \frac{25}{3}}$

Perpendicular Lines: lines that intersect to form right angles. The symbol is: ⊥

Ex#3: Find x and y so that $\overleftrightarrow{PR}$ and $\overleftrightarrow{SQ}$ are perpendicular.

P

$(4y - 2)°$

Q

T

S

$2x°$

$(5x + 6)°$

W

R

$2x + 5x + 6 = 90$

$7x + 6 = 90$

$7x = 84$

$\boxed{x = 12}$

$4y - 2 = 90$

$4y = 92$

$\boxed{y = 23}$