

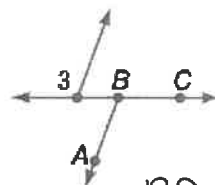
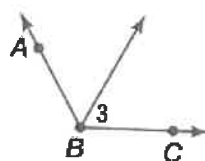
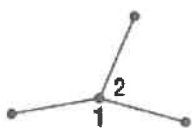
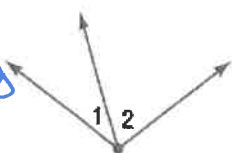
1.5 Angle Relationships
Geometry

Adjacent Angles: are 2 angles that lie in the same plane and have a common vertex and a common side but no common interior points

Examples $\angle 1$ and $\angle 2$ are adjacent angles.

Nonexamples $\angle 3$ and $\angle ABC$ are nonadjacent angles

define supplementary first



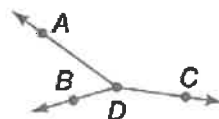
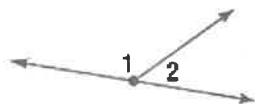
overlapping

no common side or vertex

Linear Pair: is a pair of adjacent angles that are supplementary

Example $\angle 1$ and $\angle 2$

Nonexample $\angle ADB$ and $\angle ADC$

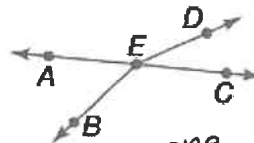
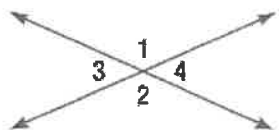


not supplementary

Vertical Angles: are two nonadjacent angles formed by 2 intersecting lines

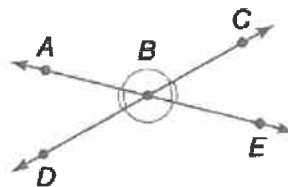
Examples $\angle 1$ and $\angle 2$; $\angle 3$ and $\angle 4$

Nonexample $\angle AEB$ and $\angle DEC$

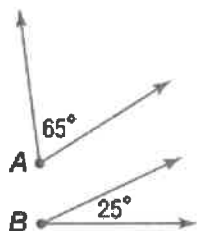
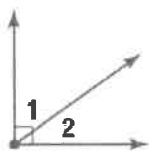


one line intersected by 2 rays

Vertical angles are congruent

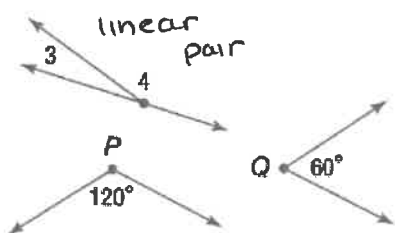


Complementary Angles: two angles with measures that have a sum of 90°

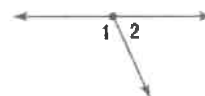


$$65^\circ + 25^\circ = 90^\circ$$

Supplementary Angles: two angles with measures that have a sum of 180°



$$120^\circ + 60^\circ = 180^\circ$$

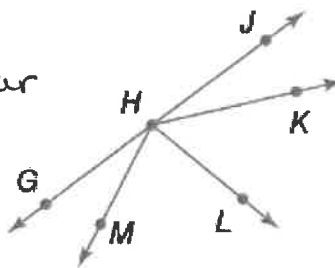


The angles in a linear pair are supplementary

NEVER ASSUME ANYTHING!!!

Can

J, H, and G are collinear
 intersections
 adjacent angles
 linear pair
 all points are coplanar



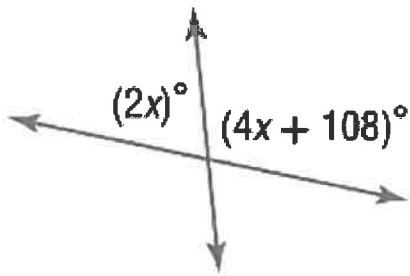
Can't

angles congruent
 90° angles
 perpendicular lines
 congruent segments

Examples:

1. Find the value of each variable:

a.



linear pair \rightarrow supplementary \rightarrow add to 180°

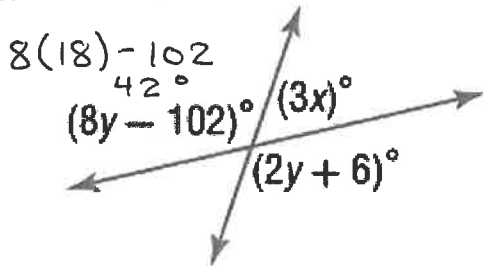
$$2x + 4x + 108 = 180$$

$$6x + 108 = 180$$

$$6x = 72$$

$$\boxed{x = 12}$$

b.



* group variables together
angles w/ y are vertical $\rightarrow \cong$

$$8y - 102 = 2y + 6$$

$$6y = 108$$

$$\boxed{y = 18}$$

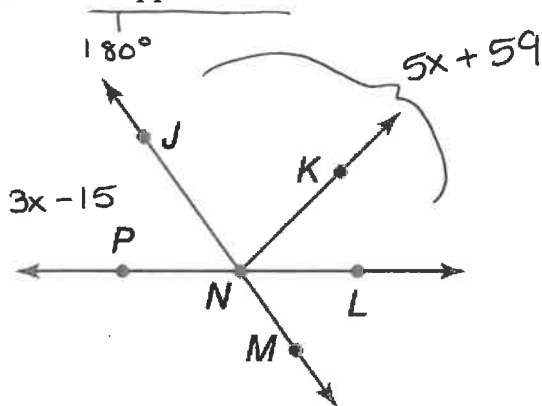
linear pair \rightarrow supp.

$$42^\circ + 3x = 180$$

$$3x = 138$$

$$\boxed{x = 46}$$

2. If $m\angle JNP = 3x - 15$ and $m\angle JNL = 5x + 59$ find the value of x so that $\angle JNP$ and $\angle JNL$ are supplements of each other.



$$\angle JNP + \angle JNL = 180^\circ$$

$$3x - 15 + 5x + 59 = 180$$

$$8x + 44 = 180$$

$$8x = 136$$

$$\boxed{x = 17}$$

PSAT:

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If $f(x - 1) = 2x + 3$ for all values of x , what is the value of $f(-3)$?

A) -7

B) -5

C) -3

D) -1

$$-3 = x - 1$$

$$-2 = x$$

$$f(-3) = 2(-2) + 3$$

$$-1$$

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Which of the following is equivalent to $(s - t)\left(\frac{s}{t}\right)$?

A) $\frac{s}{t} - s$

$$\frac{s-t}{1} \cdot \frac{s}{t}$$

B) $\frac{s}{t} - st$

$$\frac{s^2 - st}{t}$$

C) $\frac{s^2}{t} - s$

$$\frac{s^2}{t} - \frac{st}{t}$$

D) $\frac{s^2}{t} - \frac{s}{t^2}$

$$\frac{s^2}{t} - s$$