

Key

Section 1- Vocab (1, 2)

Angles

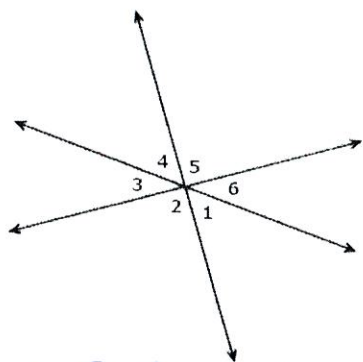
- Vertical: across from each other
- Linear pair: next to and make a line
- Complementary: adds to 90
- Supplementary: adds to 180
- Adjacent: next to each other
- Straight: 1 angle that measures is 180
- Obtuse: 1 angle that is between 90 and 180
- Right: 1 angle that measures 90
- Acute: 1 angle that is between 0 and 90

Lines

- Lines: both directions and has arrows
- Segment: has 2 endpoints
- Ray: Has 1 endpoint and 1 arrow

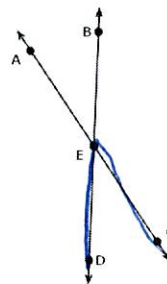
Practice:

1. Which angle is congruent to $\angle 3$?



$\angle 3 \cong \angle 6$ Vertical

2. Which angle is adjacent to $\angle CED$?

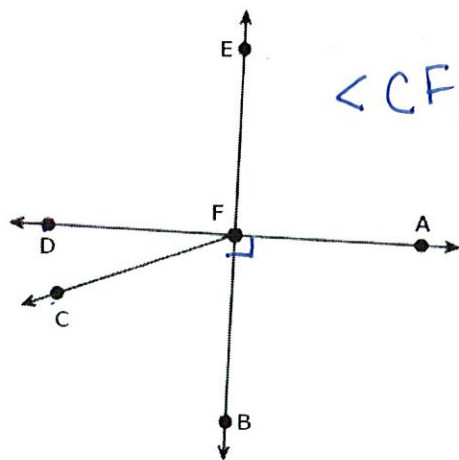


$\angle BEA$

$\angle AEB$

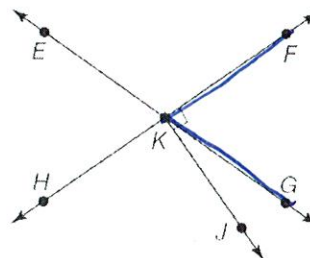
$\angle DEC$

3. Which angle is complementary to $\angle CFD$?



$\angle CFB$

4. Name an angle supplementary to $\angle FKG$



$\angle FKE$
or
 $\angle GKH$

Part 2 - Finding Measures Angles Questions (3, 4, 5, 10)

Determine the relationship of each expression, then complete the algebraic equations.

Set Equal: If you have vertical angles

Add to 180: if a linear pair or supplementary

Add to 90: if complementary

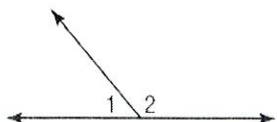
Set Equal: If it says bisectors

*Don't forget to look at what you are trying to find!

Practice:

Find the x in each problem given below.

1. $m\angle 1 = x + 10$
 $m\angle 2 = 3x + 18$

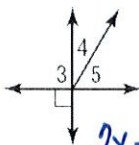


$$x + 10 + 3x + 18 = 180$$

$$4x + 28 = 180$$

$$4x = 152 \quad x = 38$$

2. $m\angle 4 = 2x - 5$
 $m\angle 5 = 4x - 13$

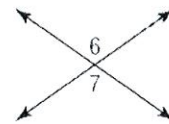


$$2x - 5 + 4x - 13 = 90$$

$$6x - 18 = 90$$

$$6x = 108 \quad x = 18$$

3. $m\angle 6 = 7x - 24$
 $m\angle 7 = 5x + 14$

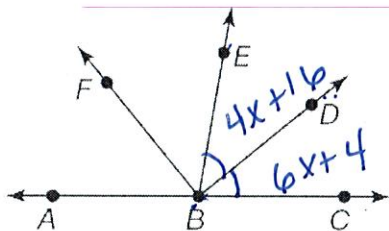


$$7x - 24 = 5x + 14$$

$$2x - 24 = 14$$

$$2x = 38$$

4. Given in the figure below that \overline{BD} bisects $\angle EBC$. If $m\angle EBD = 4x + 16$ and $m\angle DBC = 6x + 4$ find $m\angle EBD$.



$$m\angle EBD = 4x + 16$$

$$m\angle EBD = 4(6) + 16$$

$$m\angle EBD = 40^\circ$$

$$4x + 16 = 6x + 4$$

$$\begin{array}{r} -4x \quad -4x \\ \hline 16 = 2x + 4 \\ -4 \quad -4 \\ \hline 12 = 2x \\ \frac{12}{2} = \frac{2x}{2} \\ 6 = x \end{array}$$

$$6 = x$$

Part 3 – Segments (8, 9)

Determine the relationship of each expression, then complete the algebraic equations.

Segment Addition: part + part = whole

Bisect: both segment parts are =

Practice:

Find the value of x and KL if K is between J and L .



1. $JK = 6x$, $KL = 3x$, and $JL = 27$

$$JK + KL = JL$$

$$6x + 3x = 27$$

$$\frac{9x}{9} = \frac{27}{9}$$

$$x = 3$$

$$KL = 3x$$

$$KL = 3(3)$$

$$KL = 9$$

$x = 3 \quad KL = 9$

2. $JK = 2x$, $KL = x + 2$, and $JL = 5x - 10$

$$2x + x + 2 = 5x - 10$$

$$3x + 2 = 5x - 10$$

$$\begin{array}{r} -3x \\ \hline 2 = 2x - 10 \\ +10 \quad +10 \\ \hline 12 = 2x \end{array}$$

$$\frac{12}{2} = \frac{2x}{2}$$

$$x = 6$$

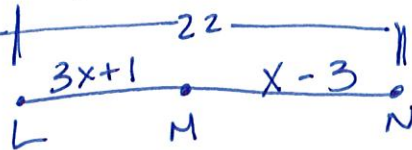
$$KL = x + 2$$

$$KL = 6 + 2$$

$$KL = 8$$

$x = 6 \quad KL = 8$

3. L , M , and N are collinear. M is between L and N . $LM = 3x + 1$, $MN = x - 3$, and $LN = 22$. Use the Segment Addition Postulate to solve for x . Then determine the length of \overline{LM} .



$$\frac{3x+1}{P_1} + \frac{x-3}{P_2} = \frac{22}{W}$$

$$4x - 2 = 22$$

$$\begin{array}{r} +2 \quad +2 \\ \hline 4x = 24 \\ \frac{4x}{4} = \frac{24}{4} \end{array}$$

$$x = 6$$

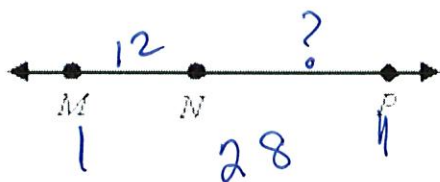
$$LM = 3x + 1$$

$$LM = 3(6) + 1$$

$$LM = 19$$

$x = 6$

4. If $MN = 12$ and $MP = 28$, find the length of \overline{NP} .



$$MN + NP = 28$$

$$12 + NP = 28$$

$$\begin{array}{r} -12 \quad -12 \\ \hline NP = 16 \end{array}$$

$NP = 16$