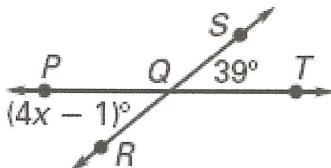


Name: Kyle

Accelerated Angle Relationships Homework #1

Find the value of the variable and find the $m\angle PQR$. Justify steps!

1.



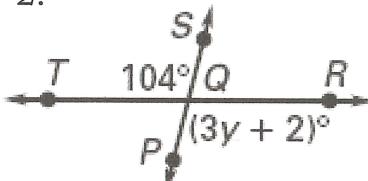
$\angle PQR \cong \angle SQT$ vertical angles are \cong

$$4x - 1 = 39$$

$$x = 10$$

$\angle PQR = 39^\circ$

2.



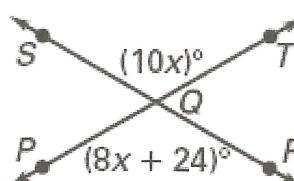
$\angle SQT \cong \angle RQP$ vertical angles are \cong

$$104 = 3y + 2$$

$$34 = y$$

$\angle PQR = 104^\circ$

3.



$\angle SQT \cong \angle RQP$ vertical angles are \cong

$$10x = 8x + 24$$

$$x = 12$$

$\angle PQR = 120^\circ$

\overrightarrow{BA} and \overrightarrow{BC} are opposite rays. \overrightarrow{BF} bisects $\angle CBE$ and \overrightarrow{BD} bisects $\angle ABE$. Justify your steps.

4. If $m\angle EBF = 8x^2 - 9x - 5$ and $m\angle CBF = 4 - 3x$, find the possible value(s), if any, of the $m\angle EBC$. You must check your work for credit.

$\angle EBF \cong \angle CBF$ def of \angle bisector

$$8x^2 - 9x - 5 = 4 - 3x$$

$$+3x - 4 -4 +3x$$

$$8x^2 - 6x - 9 = 0$$

$$\left(\frac{x-12}{8}\right)\left(\frac{x+6}{8}\right) = 0$$

Now Simplify the fractions!

$$\left(x - \frac{3}{2}\right)\left(x + \frac{3}{4}\right) = 0$$

$$(2x-3)(4x+3) = 0$$

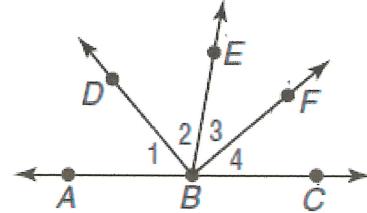
$$x = \frac{3}{2} \quad x = -\frac{3}{4}$$

$$\therefore x = 1.5$$

$$x = -\frac{3}{4}$$

$$x = -0.75$$

$$\begin{aligned} 8 \cdot 9 &= -72 \\ \boxed{-12} \cdot \boxed{6} &= -72 \\ -12 + 6 &= -6 \end{aligned}$$



Check $x = \frac{3}{2}$:

$$\angle EBF = 8\left(\frac{3}{2}\right)^2 - 9\left(\frac{3}{2}\right) - 5 = -0.5$$

$$\angle CBF = 4 - 3\left(\frac{3}{2}\right) = -0.5$$

can't have neg. \angle 's $\times 7 \frac{3}{2}$

Check $x = -\frac{3}{4}$

$$\angle EBF = 8\left(-\frac{3}{4}\right)^2 - 9\left(-\frac{3}{4}\right) - 5 = 6.25^\circ \checkmark$$

$$\angle CBF = 4 - 3\left(-\frac{3}{4}\right) = 6.25^\circ \checkmark$$

$$\angle EBC = \angle EBF + \angle CBF$$

$$\angle EBC = 6.25 + 6.25$$

$$m\angle EBC = 12.5^\circ$$

Name: _____

\overrightarrow{BA} and \overrightarrow{BC} are opposite rays. \overrightarrow{BF} bisects $\angle CBE$ and \overrightarrow{BD} bisects $\angle ABE$. Justify your steps.

5. If $m\angle 2 = 10x^2 + 5x + 7$ and $m\angle 1 = 3x^2 - 17x + 4$, find the possible value(s), if any, of $m\angle ABE$. You must check your work.

$$\angle 1 \cong \angle 2 \text{ def of } \angle \text{ bisector}$$

$$3x^2 - 17x + 4 = 10x^2 + 5x + 7$$

$$-3x^2 + 17x - 4 - 3x^2 + 17x - 4$$

$$0 = 7x^2 + 22x + 3$$

$$0 = \left(\frac{x+21}{7} \right) \left(\frac{x+1}{7} \right)$$

$$0 = (x+3)(7x+1)$$

$$\boxed{x = -3} \quad \boxed{x = -\frac{1}{7}}$$

$$21 + 1 = 21$$

$$21 + 1 = 22$$

Check $x = -3$

$$\angle 1 = 3(-3)^2 - 17(-3) + 4 = 82^\circ \checkmark \text{ yes!}$$

$$\angle 2 = 10(-3)^2 + 5(-3) + 7 = 82^\circ \checkmark$$

$$\boxed{x = -3} \text{ AND } \angle ABE = 82 + 82$$

$$m\angle ABE = 164^\circ$$

Check $x = -\frac{1}{7}$

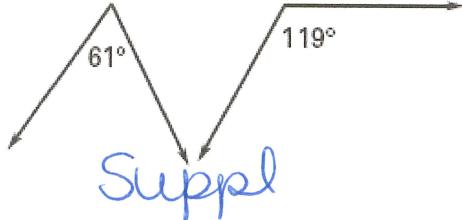
$$\angle 1 = 3\left(-\frac{1}{7}\right)^2 - 17\left(-\frac{1}{7}\right) + 4 = 6.4897\dots$$

$$\angle 2 = 10\left(-\frac{1}{7}\right)^2 + 5\left(-\frac{1}{7}\right) + 7 = 6.4897\dots$$

$m\angle ABE \approx 12.9796^\circ$

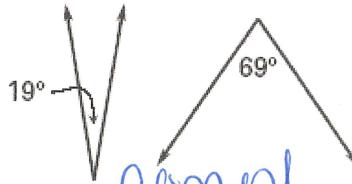
6. Determine whether the angles are complementary, supplementary, or neither.

a.



Suppl

b.



Compl.

7. a. $\angle A$ is a supplement of $\angle B$, and $m\angle B = 42^\circ$. Find $m\angle A$. 138°
- b. $\angle C$ is a complement of $\angle D$, and $m\angle C = 42^\circ$. Find $m\angle D$. 48°

Decide whether the statement is true or false. If the statement is false, reword the statement so it is true.

8. Two angles are complementary if the sum of their measures is 180° F

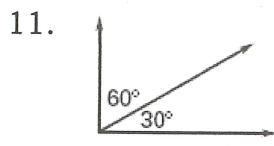
9. Two angles are supplementary if the sum of their measures is 180° T

10. Two angles are adjacent angles if they share a common vertex.

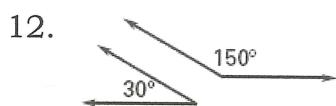
and share a common side w/no points in the int. F

Name: _____

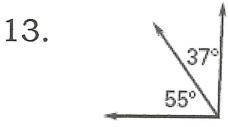
Determine whether the angles are complementary, supplementary or neither.



compl.

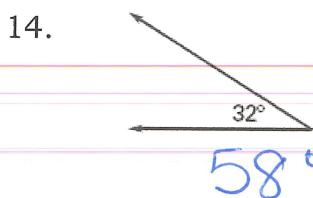


Suppl.

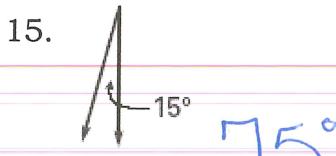


Nope!

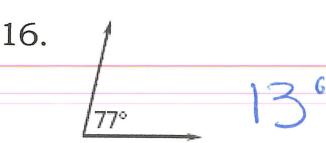
Find the measure of the complement of the given angle.



58°

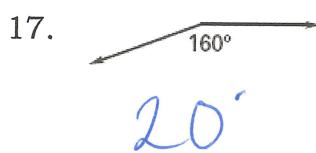


75°

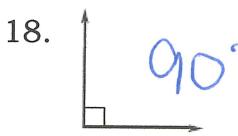


13°

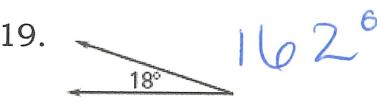
Find the measure of the supplement of the given angle.



20°

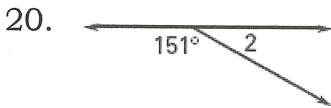


90°



162°

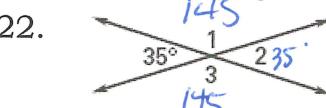
Find the measure of EACH numbered angle. Justify steps!



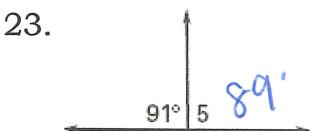
linear Pairs
are Suppl.



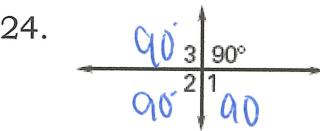
vert. LS \cong



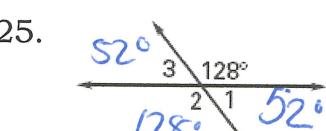
(Both)
linear
Pairs are
Suppl.
+
Vertical
 \angle s are \cong



Linear Pairs
are Suppl.



(Both)



(Both)