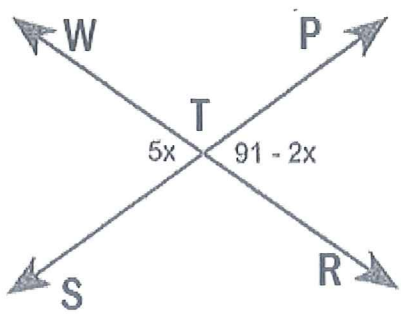


Name: Key

Angle Relationships: Day 2 HW

Directions: Determine what concept you are using, WRITE THE GEOMETRIC SET UP and write the justification as part of your work.

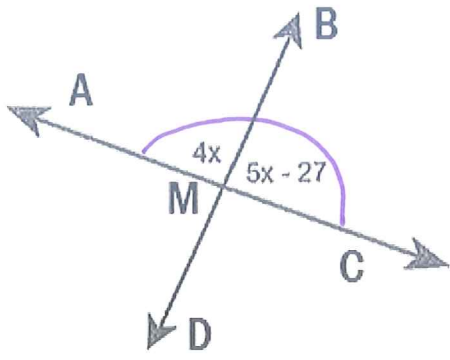
1.) Find x.



Geometry:
 $\angle WTS \cong \angle PTR$
 $5x = 91 - 2x$
 $x = 13$

Justify:
Vertical \angle s
are \cong

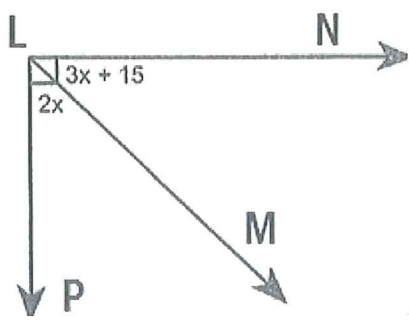
2.) Find x.



Geometry:
 $\angle AMB + \angle BMC = 180^\circ$
 $4x + 5x - 27 = 180$
.....
 $x = 23$

Justify:
linear pairs
are Suppl.

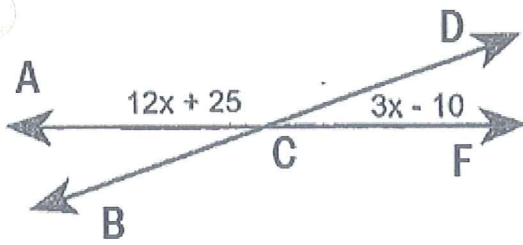
3.) Find x.



Geometry:
 $\angle NLP = 90^\circ$
 $\angle NLM + \angle MLP = \angle NLP$
 $3x + 15 + 2x = 90$
.....
 $x = 15$

Justify:
Def of RT \angle
or
Def of \perp
angle addition

4. Find x.



Geometry:

$$\angle ACD + \angle DCF = 180^\circ$$

$$12x + 25 + 3x - 10 = 180$$

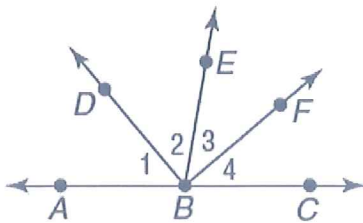
Justify:

linear pairs are
Suppl.

$$x = 11$$

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

5. If $m\angle EBF = 8x^2 - 9x - 5$ 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.



Geometry:

$$\angle EBF \cong \angle CBF$$

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

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

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

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

Oh look this is your warmup!

Justify:

def of
 \angle bisector

$$8 \cdot -9 = -72$$

$$-12 \cdot 6 = -72$$

$$-12 + 6 = -6 \checkmark$$

$$x = 1.5 \quad x = -.75$$

(Now must check to

see if it works

geometrically!)

Check $x = 1.5$

$$\angle EBF = 8(1.5)^2 - 9(1.5) = -0.5$$

$$\angle CBF = 4 - 3(1.5) = -0.5$$

Can't have a neg. \angle measure!

Check $x = -.75$

$$\angle EBF = 8(-.75)^2 - 9(-.75) = 6.25^\circ \checkmark$$

$$\angle CBF = 4 - 3(-.75) = 6.25^\circ \checkmark$$

So $x = -.75$ is an answer!

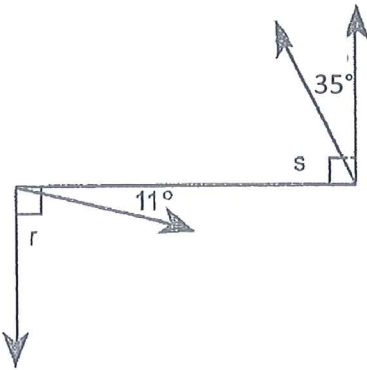
LAST Find

$$\angle EBC = 6.25 + 6.25$$

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

Quick Angles Practice: Find the value of the variables. NO JUSTIFICATIONS NEEDED!

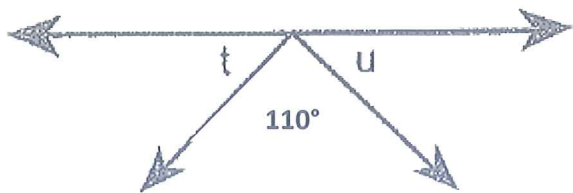
5.



$$r = \underline{79^\circ}$$

$$s = \underline{55^\circ}$$

6.

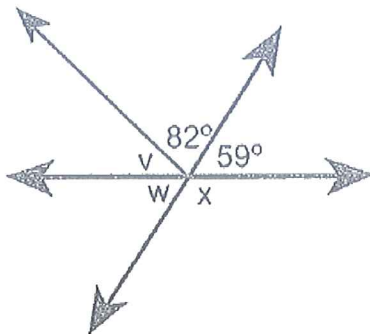


$$\angle t \cong \angle u$$

$$t = \underline{35^\circ}$$

$$u = \underline{35^\circ}$$

7.

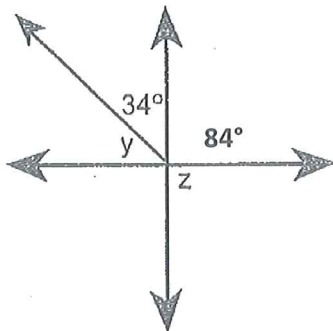


$$v = \underline{39^\circ}$$

$$w = \underline{59^\circ}$$

$$x = \underline{121^\circ}$$

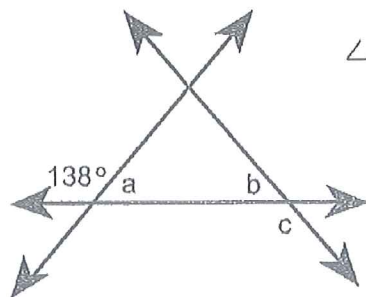
8.



$$y = \underline{62^\circ}$$

$$z = \underline{96^\circ}$$

9.



$\angle a$ is complementary to $\angle b$

$$a = \underline{42^\circ}$$

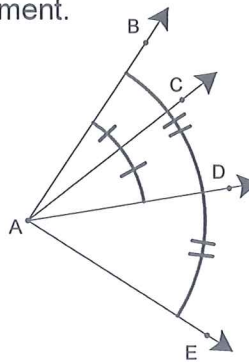
$$b = \underline{48^\circ}$$

$$c = \underline{132^\circ}$$

Angle Bisector Review

For questions 1-5, use the figure at the right to complete each statement.

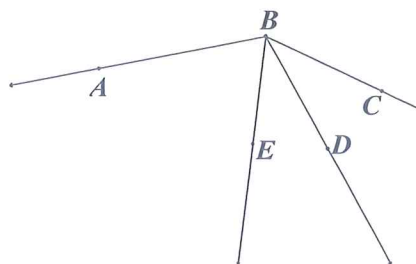
1. A is the Vertex of $\angle BAE$.
2. \overrightarrow{AD} is the ~~A~~ bisector of $\angle BAE$.
3. \overrightarrow{AC} is the ~~A~~ bisector of $\angle BAD$.
4. If $m\angle BAC = 55^\circ$ then $m\angle CAE =$ 165° .
5. $\angle DAB \cong \angle$ DAE



6. \overrightarrow{BE} is an angle bisector of $\angle ABC$ and \overrightarrow{BD} is an angle bisector of $\angle EBC$

If $\angle ABC = 168^\circ$ Find the measures of

- $\angle ABE =$ 84°
 $\angle EBC =$ 84°
 $\angle EBD =$ 42°
 $\angle CBD =$ 42°



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

7. 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.

① Geometry:

Justify:

$\angle 1 \cong \angle 2$
 $3x^2 - 17x + 4 = 10x^2 + 5x + 7$

def. of \angle
 bisector

$0 = 7x^2 + 22x + 3$
 $0 = (x + \frac{21}{7})(x + \frac{1}{7})$

get set = to zero.

③ Check $x = -3$

$\angle 1 = 3(-3)^2 - 17(-3) + 4 = 82^\circ \checkmark$
 $\angle 2 = 10(-3)^2 + 5(-3) + 7 = 82^\circ \checkmark$
 $\angle 1 = \angle 2$ yes!

② $0 = (x + 3)(7x + 1)$
 $x = -3$ $x = -\frac{1}{7}$

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

$\angle 1 = 3(-\frac{1}{7})^2 - 17(-\frac{1}{7}) + 4 = 6.4897.. \checkmark$
 $\angle 2 = 10(-\frac{1}{7})^2 + 5(-\frac{1}{7}) + 7 = 6.4897.. \checkmark$
 yes!!

④ $\angle ABE = 6.4897 + 6.4897$

$\angle ABE = 12.9796^\circ$

