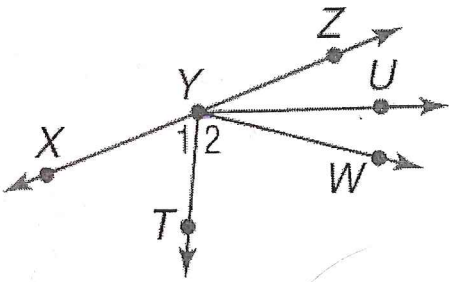
Angle Relationships - Day _____

Name: Key ☺ Hour: _____

Advanced Angle Relationships: Homework #2

In the figure, $\overrightarrow{YX}$ and $\overrightarrow{YZ}$ are opposite rays. $\overrightarrow{YU}$ bisects $\angle ZYW$, and $\overrightarrow{YT}$ bisects $\angle XYW$. Show your work. Justify steps!

1. If $m\angle ZYU = 8p - 10$ and $m\angle UYW = 10p - 20$, find $m\angle ZYU$.



∠ZYU ≅ ∠UYW def of ∠ bisector

$8p-10 = 10p-20$

$p = 5$

$\angle ZYU = 8(5) - 10$

$\angle ZYU = 30°$

2. If the $m\angle 1 = 5x + 10$ and the $m\angle 2 = 8x - 23$, find $m\angle 2$.

$\angle 1 \cong \angle 2$ def of ∠ bisector

$5x + 10 = 8x - 23$

$11 = x$

$\angle 2 = 8(11) - 23$

$\angle 2 = 65°$

3. If $m\angle 1 = y$ and $m\angle XYW = 6y - 24$, find y.

$\angle XYW = \angle 1 + \angle 2$ angle addition

$\angle 1 \cong \angle 2$ def of ∠ bisector

$\angle XYW = \angle 1 + \angle 1$ substitution

$6y - 24 = y + y$

$y = 6$

4. if $m\angle WYZ = 82$ and $m\angle ZYU = 4r + 25$, find r.

$\angle WYZ = \angle ZYU + \angle UYW$ angle addition

$\angle ZYU \cong \angle UYW$ def of ∠ bisector

$\angle WYZ = \angle ZYU + \angle ZYU$ substitution

$82 = 4r + 25 + 4r + 25$

$4 = r$

5. If $m\angle WYX = 2(12b + 7)$ and $m\angle ZYU = 9b - 1$, find $m\angle UYW$

Not on quiz

$\angle WYX + \angle WYU + \angle ZYU = 180$ Angle addition (straight ∠)

$\angle WYU \cong \angle ZYU$ def of ∠ bisector

$\angle WYX + \angle ZYU + \angle ZYU = 180$ Substitution

$2(12b + 7) + 9b - 1 + 9b - 1 = 180$

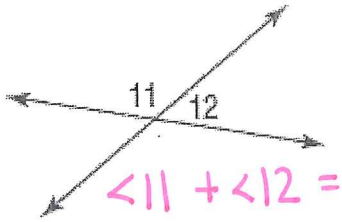
$b = 4$

$\angle UYW = 9(4) - 1$

$\angle UYW = 35°$

Find x and the measure of each angle. Justify steps!

6. $m\angle 11 = 4x$,
$m\angle 12 = 2x - 6$



$\angle 11 + \angle 12 = 180$ linear pairs are suppl.

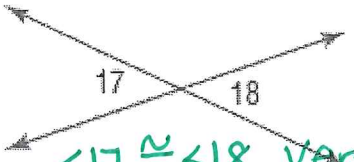
$4x + 2x - 6 = 180$

$x = 31$

$\angle 11 = 124°$

$\angle 12 = 56°$

7. $m\angle 17 = 2x + 7$,
$m\angle 18 = x + 30$



$\angle 17 = 53°$

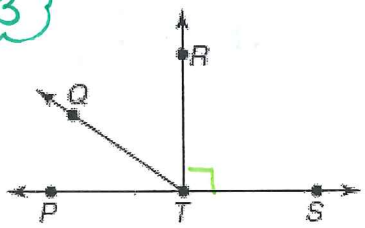
$\angle 18 = 53°$

$\angle 17 \cong \angle 18$ Vertical $\angle$s are $\cong$

$2x + 7 = x + 30$

$x = 23$

8. If $m\angle RTS = 8x + 18$, find x so that $\overline{TR} \perp \overline{TS}$.



$\angle RTS = 90°$ def of $\perp$

$8x + 18 = 90$

$8x = 72$

$x = 9$

9. If $m\angle PTQ = 3y - 10$ and $m\angle QTR = y$, find y so that $\angle PTR$ is a right angle.

$\angle PTR = 90°$ def of right $\angle$

$\angle PTQ + \angle QTR = \angle PTR$ angle addition

$3y - 10 + y = 90°$

$4y - 10 = 90°$

$4y = 100$

$y = 25$

10. Find m<T if m<t is 20 more than four times the measure of its supplement.

$\angle T + x = 180$

$\angle T = 4x + 20$

$4x + 20 + x = 180$

$5x + 20 = 180$

$5x = 160$

$x = 32$

$x = 32°$

$\angle T = 148°$

11. Find the measures of the two complementary angles: <A and <B, if <A is four times less than <B.

This is weird

$\angle A + \angle B = 90°$

$\angle B = 4\angle A$

$5\angle A = 90$

$\angle A = 18°$

$\angle B = 72°$