

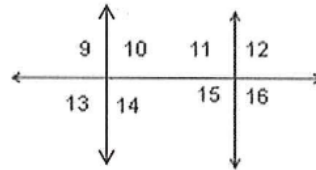
Worksheet #3 (Parallel Lines Cut by a Transversal)

Name: _____ Date: _____ Period: _____

Use the figure at the right to answer problems 1- 8.

Classify each pair of angles as one of the following:

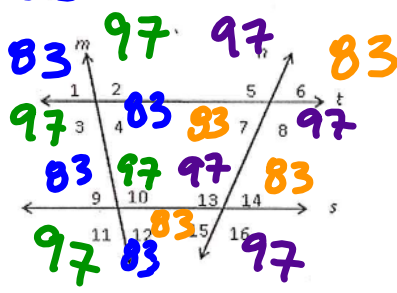
- (a) alternate interior angles
- (b) corresponding angles
- (c) alternate exterior angles
- (d) vertical angles
- (e) supplementary angles
- (f) none



- 1. c $\angle 9$ & $\angle 16$
- 2. e $\angle 15$ & $\angle 11$
- 3. a $\angle 10$ & $\angle 15$
- 4. d $\angle 12$ & $\angle 15$
- 5. b $\angle 9$ & $\angle 11$
- 6. f $\angle 9$ & $\angle 15$
- 7. e $\angle 13$ & $\angle 14$
- 8. a $\angle 14$ & $\angle 11$

$$\begin{array}{r} 180 \\ - 97 \\ \hline 83 \end{array}$$

- 9. $m\angle 2 = 97^\circ$ $m\angle 6 = 83^\circ$
- $m\angle 3 = 97$ $m\angle 5 = 97$
- $m\angle 10 = 97$ $m\angle 7 = 83$
- $m\angle 9 = 83$ $m\angle 16 = 97$

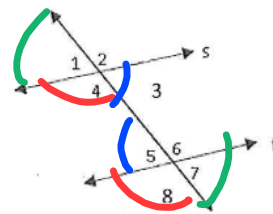


Find the value of x given that s // t

- 10. $m\angle 4 = 77^\circ$, $m\angle 8 = 4x + 57$

$$\begin{array}{r} 77 = 4x + 57 \\ - 57 \\ \hline 20 = 4x \\ \frac{20}{4} = \frac{4x}{4} \\ x = 5 \end{array}$$

corresponding



alt.
int.

- 11. $m\angle 3 = 5x + 13$, $m\angle 5 = 53^\circ$

$$\begin{array}{r} 5x + 13 = 53 \\ - 13 \\ \hline 5x = 40 \\ \frac{5x}{5} = \frac{40}{5} \\ x = 8 \end{array}$$

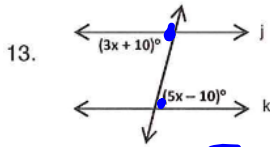
alt
ext

- 12. $m\angle 1 = 6x - 5$, $m\angle 7 = 115^\circ$

$$\begin{array}{r} 6x - 5 = 115 \\ + 5 \quad + 5 \\ \hline 6x = 120 \\ \frac{6x}{6} = \frac{120}{6} \\ x = 20 \end{array}$$

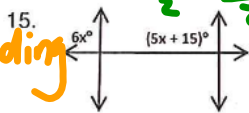
Find the value of x that makes j || k.

alt. int.



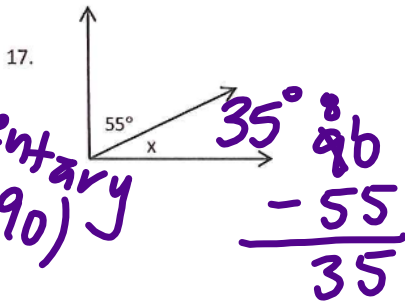
$$\begin{aligned}
 3x + 10 &= 5x - 10 \\
 -3x &\quad -3x \\
 10 &= 2x - 10 \\
 +10 &\quad +10 \\
 20 &= 2x \\
 \frac{20}{2} &= \frac{2x}{2} \quad \boxed{x=10}
 \end{aligned}$$

corresponding



$$\begin{aligned}
 6x &= 5x + 15 \\
 -5x &\quad -5x \\
 x &= 15 \quad \boxed{x=15}
 \end{aligned}$$

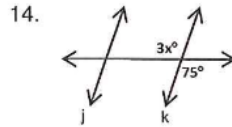
Determine the missing angles.



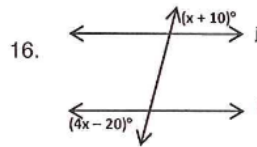
complementary (add to 90)

$$\begin{aligned}
 90 & \\
 -55 & \\
 \hline
 35 &
 \end{aligned}$$

vertical

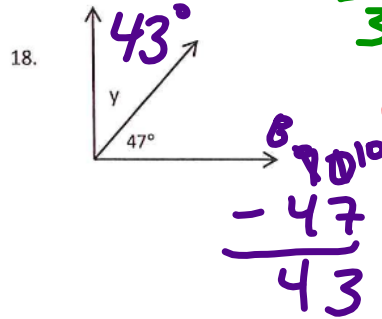


$$\begin{aligned}
 3x &= 75 \\
 \frac{3x}{3} &= \frac{75}{3} \\
 \boxed{x=25}
 \end{aligned}$$



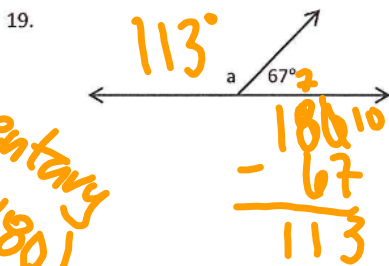
alt. ext.

$$\begin{aligned}
 x + 10 &= 4x - 20 \\
 -x &\quad -x \\
 10 &= 3x - 20 \\
 +20 &\quad +20 \\
 30 &= 3x \\
 \frac{30}{3} &= \frac{3x}{3} \\
 \boxed{x=10}
 \end{aligned}$$

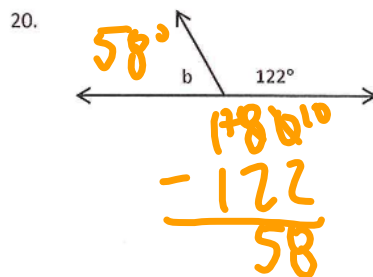


$$\begin{aligned}
 90 & \\
 -47 & \\
 \hline
 43 &
 \end{aligned}$$

Supplementary (add to 180)



$$\begin{aligned}
 180 & \\
 -67 & \\
 \hline
 113 &
 \end{aligned}$$



$$\begin{aligned}
 180 & \\
 -122 & \\
 \hline
 58 &
 \end{aligned}$$