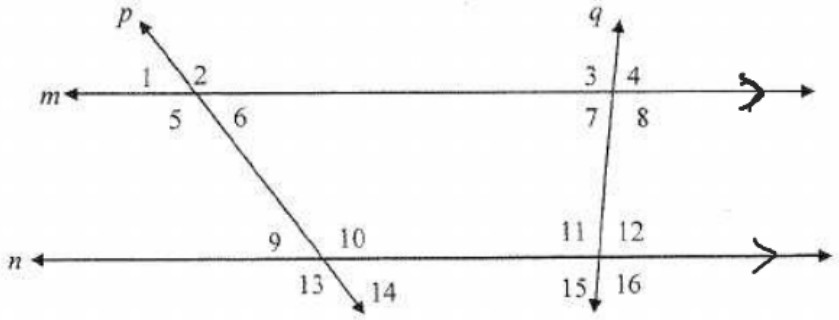
Name _____
Math 3

DO NOW

Given $m \parallel n$ with transversals p and q, identify the relationship between the two indicated angle:



1) $\angle 1$ *and* $\angle 5$
Linear Pair Supplementary

2) $\angle 3$ *and* $\angle 8$
Vertical ∠'s Congruent

3) $\angle 2$ *and* $\angle 10$
Corresponding ∠'s Congruent

4) $\angle 7$ *and* $\angle 12$
Alternate Interior ≅

5) $\angle 1$ *and* $\angle 14$
Alternate Exterior ≅

6) $\angle 5$ *and* $\angle 9$
Same-Side Interior Supp.

7) $\angle 3$ *and* $\angle 15$
Same-Side Ext Supp.

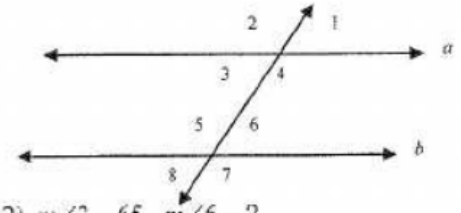
8) $\angle 2$ *and* $\angle 13$
Alternate Exterior ≅.

9) $\angle 6$ *and* $\angle 9$
Alternate Interior ≅

10) $\angle 3$ *and* $\angle 11$
Corresponding ≅

Name _____
Math 3

What are the Parallel Line Theorems?



#1-8: Using the figure at the right, ***find the measure*** *of the angle if a // b :*

1) $m\angle 1 = 45$, $m\angle 6 = ?$

$m\angle 6 = 45^\circ$

2) $m\angle 3 = 65$, $m\angle 6 = ?$

$m\angle 6 = 65^\circ$

3) $m\angle 3 = 35$, $m\angle 5 = ?$

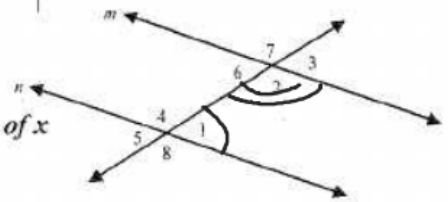
4) $m\angle 4 = 130$, $m\angle 7 = ?$

5) $m\angle 1 = 45$, $m\angle 8 = ?$

6) $m\angle 4 = 126$, $m\angle 6 = ?$

7) $m\angle 2 = 115$, $m\angle 6 = ?$

8) $m\angle 4 = 115$, $m\angle 5 = ?$



#9-12: Using the figure at the right, ***find the value of x and the indicated angle*** *if m // n :*

9) $m\angle 4 = 3x - 10$, $m\angle 2 = x + 80$, $m\angle 4 = ?$

$3x - 10 = x + 80$

$2x - 10 = 80$

$2x = 90$

$x = 45$

$m\angle 4 = 3(45) - 10$

$m\angle 4 = 125^\circ$

10) $m\angle 1 = 3x - 10$, $m\angle 2 = 2x + 40$, $m\angle 3 = ?$

$m\angle 1 + m\angle 2 = 180$

$3x - 10 + 2x + 40 = 180$

$5x + 30 = 180$

$-30 \quad -30$

$5x = 150$

$x = 30$

$m\angle 3 = m\angle 1$

$m\angle 1 = 3(30) - 10$

$m\angle 3 = 80$

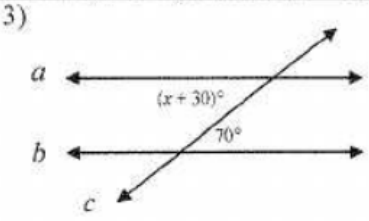
11) $m\angle 7 = 5x - 20$, $m\angle 5 = 4x + 57$, $m\angle 7 = ?$

12) $m\angle 1 = 5x - 40$, $m\angle 3 = 3x$, $m\angle 2 = ?$

#13-18) If $a \parallel b$, and lines a and b are cut by transversal c,

a) Identify the relationship between the angles b) Find x:

13)



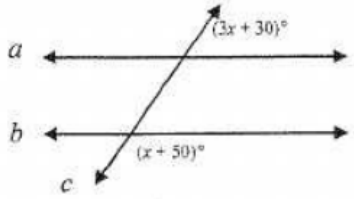
a) Alternate Interior

b) $x + 30 = 70$

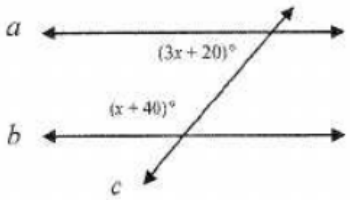
$-30 \quad -30$

$x = 40$

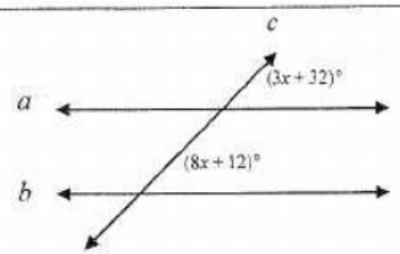
14)



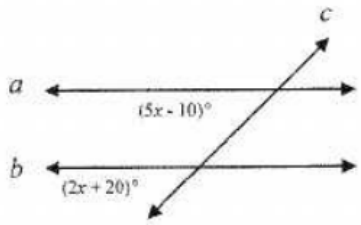
15)



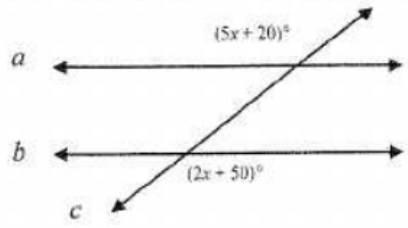
16)



17)

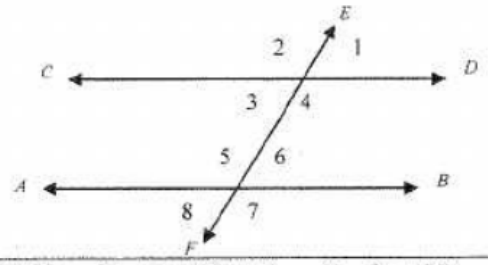


18)



Given $\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$ *with transversal* $\overleftrightarrow{EF}$,

1) What angles are congruent to $\angle 3$?



Use the figure to answer the following questions:

2) If $m\angle 5 = 2x + 10$ and $m\angle 4 = 5x - 50$ then find $m\angle 5$

3) If $m\angle 7 = 5x + 20$ and $m\angle 4 = 2x + 80$ then find $m\angle 4$

4) If $m\angle 5 = 4x + 20$ and $m\angle 3 = x + 50$ then find $m\angle 8$

5) If $m\angle 1 = 5x + 30$ and $m\angle 8 = 2x + 60$ then find $m\angle 7$

6) If $m\angle 4 : m\angle 6 = 5 : 4$ then find $m\angle 3$

7) If $m\angle 8 = \frac{5}{7} m\angle 2$ then find $m\angle 4$