$\qquad$
$\qquad$ Per $\qquad$

1. Use the diagram on the right and the word bank to answer the following questions.

What type of angle relationship is demonstrated by each pair of angles?
A) $\angle 2$ and $\angle 7$ $\qquad$
B) $\angle 3$ and $\angle 6$ $\qquad$
C) $\angle 5$ and $\angle 8$ $\qquad$
D) $\angle 3$ and $\angle 7$ $\qquad$

E) $\angle 4$ and $\angle 6$ $\qquad$
F) $\angle 1$ and $\angle 2$ $\qquad$


In the diagram above, $a \nVdash b$. If $m \angle 1=78^{\circ}$ and $\mathrm{m} \angle 6=104^{\circ}$, find the measures of all the missing $\angle \mathrm{s}$.
$\mathrm{m} \angle 2=$ $\qquad$ , $\mathrm{m} \angle 3=$ $\qquad$ , $m \angle 4=$ $\qquad$ —, $\mathrm{m} \angle 5=$ $\qquad$ , $\mathrm{m} \angle 6=$ $\qquad$ , $\mathrm{m} \angle 8=$ $\qquad$ ,
$\mathrm{m} \angle 2=$ $\qquad$ , $m \angle 3=$ $\qquad$ , $\mathrm{m} \angle 4=$ $\qquad$
3.


In the diagram above, a || b. If $\mathrm{m} \angle 8=105^{\circ}$, find the measures of all the missing $\angle \mathrm{s}$.
$\qquad$ , $\mathrm{m} \angle 6=$ $\qquad$ , $\mathrm{m} \angle 7=$ $\qquad$ ,

For numbers $5 \mathbf{- 1 2}$, solve for $x$ and state the angle relationship that is demonstrated in the diagram.
4.

5.


8.

10.

7.

9.

11. Find the value of $x$ if ray $E P$ is an angle bisector.

12. Is $a / / b$ ? Explain why or why not with complete sentences, using the following terms: vertical angles, alternate interior angles, or corresponding angles. Show the work that helped lead you to your conclusion.

13. $\angle \mathrm{ABC}$ is translated along $\overleftrightarrow{D E}$. Explain how this transformation demonstrates the following:

If lines are //, then corresponding angles are $\cong$.
If corresponding angles are $\cong$, then lines are //.

14. Given: $\angle 2 \cong \angle 3$

Prove: $\angle 1 \cong \angle 4$


| Statements | Reasons |
| :--- | :--- |
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15. Prove that parallel lines make alternate interior angles congruent. (You cannot use if lines $/ / \rightarrow$ alt interior $\angle \mathrm{s} \cong$, but you can use vertical and corresponding $\angle$ theorems) Given: a//b

Prove: $\angle 7 \cong \angle 3$


| Statements | Reasons |
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