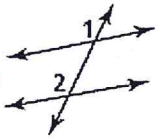
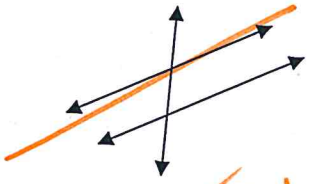
Name Key Class _____ Date _____

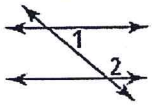
**Practice 3-1** **Properties of Parallel Lines**

Classify each pair of angles as *alternate interior angles, same-side interior angles, corresponding angles, alternate exterior angles, or same-side exterior angles..*

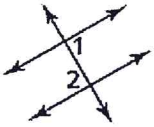
1. 

Corresp.

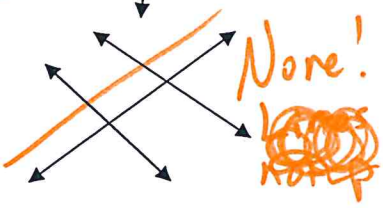
2. 

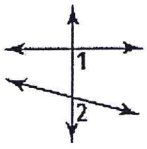
3. 

Same Side Int.

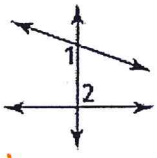
4. 

Alt. Int.

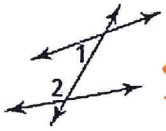
5. 
None!

6. 

Corresp.

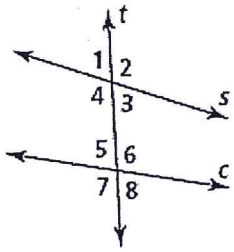
7. 

Alt. Int.

8. 

S.S. Int.

**Use the figure on the right to answer Exercises 7–9.**




9. Name all pairs of corresponding angles formed by the transversal *t* and lines *s* and *c*. ∠1 + ∠5, ∠4 + ∠7, ∠2 + ∠6, ∠3 + ∠8

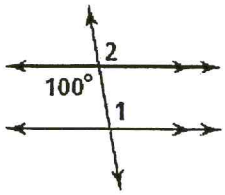
10. Name all pairs of alternate interior angles formed by the transversal *t* and lines *s* and *c*. ∠4 + ∠6, ∠3 + ∠5

11. Name all pairs of same-side interior angles formed by the transversal *t* and lines *s* and *c*. ∠4 + ∠5, ∠3 + ∠6

12. Name all pairs of alternate exterior angles formed by the transversal *t* and lines *s* and *c*. ∠1 + ∠8, ∠7 + ∠2

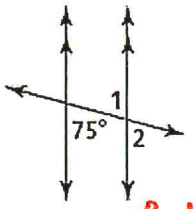
13. Name all pairs of same-side exterior angles formed by the transversal *t* and lines *s* and *c*. ∠1 + ∠7, ∠2 + ∠8

Find $m\angle 1$ and then $m\angle 2$. Justify each answer.

14. 

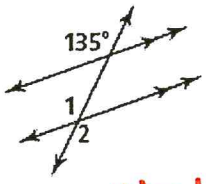

$\angle 1 = 100°$ Alt. Int. $\angle$'s

$\angle 2 = 100°$ Vert. $\angle$'s

15. 


$\angle 1 = 75°$ Alt. Int. $\angle$'s

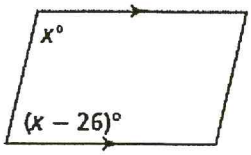
$\angle 2 = 75°$ Corresp. $\angle$'s

16. 


$\angle 1 = 135°$ Corresp. $\angle$'s

$\angle 2 = 135°$ Alt. Ext. $\angle$'s

*Algebra* Find the value of $x$. Then find the measure of each angle.

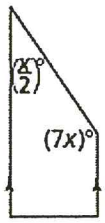
17. 


$x + x - 26 = 180$

$2x - 26 = 180$

$2x = 206$

$x = 103$

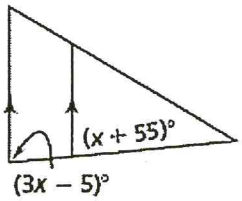
18. 


$2\left(\frac{x}{2} + 7x = 180\right)$

$x + 14x = 360$

$15x = 360$

$x = 24$

19. 


$3x - 5 = x + 55$

$-x + 5 \quad -x + 5$

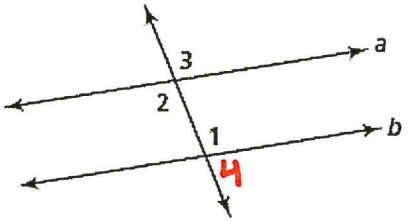
$2x = 60$

$x = 30$

20. Proof

Given: $a \parallel b$

Prove: $\angle 3$ and $\angle 4$ are supplementary without using the Same-Side Exterior Angle Theorem

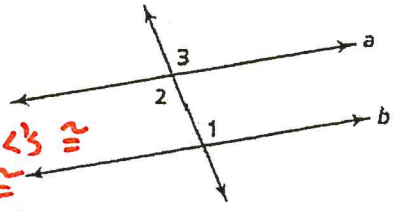



| *Statements* | *Reasons* |
|---|---|
| 1. $a \parallel b$ | 1. Given |
| 2. $m\angle 1 = m\angle 3$ | 2. Corresp. $\angle$'s are $\cong$ |
| 3. $m\angle 1 + m\angle 4 = 180°$ | 3. Linear Pairs are Supp. |
| 4. $m\angle 3 + m\angle 4 = 180°$ | 4. Substitution |
| 5. $\angle 3$ & $\angle 4$ are Supp. | 5. Def. of Supp. $\angle$'s |

21. Developing Proof Supply the missing reasons in this two-column proof.

Given: $a \parallel b$

Prove: $\angle 1 \cong \angle 3$




| *Statements* | *Reasons* |
|---|---|
| 1. $a \parallel b$ | 1. Given |
| 2. $\angle 1 \cong \angle 2$ | a. ? Alt. Int. $\angle$'s $\cong$ |
| 3. $\angle 2 \cong \angle 3$ | b. ? Vert. $\angle$'s $\cong$ |
| 4. $\angle 1 \cong \angle 3$ | c. ? Substitution |