Name _____ Date _____ Class_____

Section 3.1

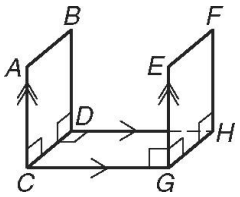
Lines and Angles

Complete the statements by filling in the blanks.

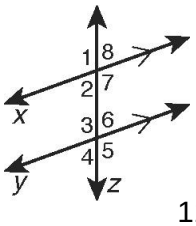
1. _____ lines are not coplanar. They are not parallel and do not intersect.
2. Parallel planes are planes that do not _____.
3. Perpendicular lines (⊥) intersect at _____ angles.
4. _____ lines (||) are coplanar and do not intersect.

For Exercises 5–8, identify each of the following in the figure.

5. a pair of parallel segments
6. a pair of skew segments
7. a pair of perpendicular segments
8. a pair of parallel planes



_____
_____
_____
_____



In Exercises 9-14, give one example of each from the figure.

9. a transversal

_____

10. parallel lines

_____

11. corresponding angles

_____

12. alternate interior angles

_____

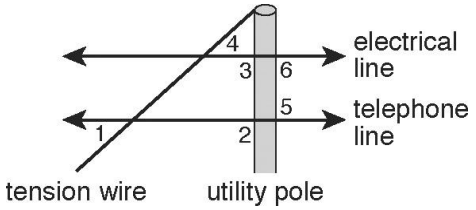
13. alternate exterior angles

_____

14. same-side interior angles

_____

Use the figure for Exercises 15-18. The figure shows a utility pole with an electrical line and a telephone line. The angled wire is a tension wire. For each angle pair given, identify the transversal and classify the angle pair. (*Hint:* Think of the utility pole as a line for these problems.)



15. ∠5 and ∠6

_____

_____

16. ∠1 and ∠4

_____

_____

17. ∠1 and ∠2

_____

18. ∠5 and ∠3

_____

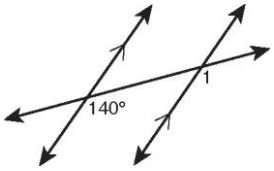
Name _____ Date _____ Class_____

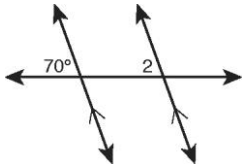
Section 3.2

Angles Formed by Parallel Lines and Transversals

1. The Corresponding Angles Postulate states that if two parallel lines are cut by a transversal, then the pairs of corresponding angles are _____.
2. Congruent angles have _____ measures.

Find each angle measure.

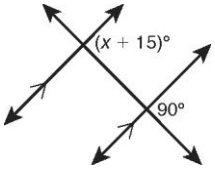


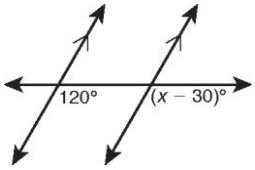


3. m∠1 _____

4. m∠2 _____

Find *x*.

5. 

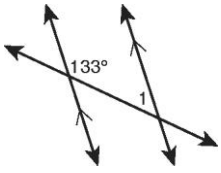
6. 

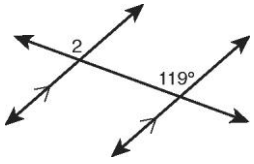
_____ _____

Fill in the blanks to complete these theorems about angle pairs.

7. If two _____ lines are cut by a _____, then the two pairs of alternate interior angles are congruent.
8. If two parallel lines are cut by a transversal, then the two pairs of same-side interior angles are _____.
9. If two parallel lines are cut by a transversal, then the two pairs of alternate exterior angles are _____.

Find each angle measure.

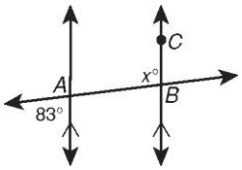


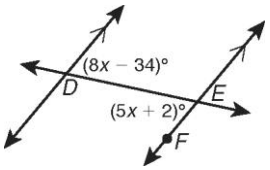


10. m∠1 _____

11. m∠2 _____

Name _____ Date _____ Class _____





12. m∠*ABC* _____ 13. m∠*DEF* _____

Section 3.3

Proving Lines Parallel

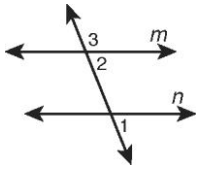
Fill in the blanks to complete these theorems about parallel lines.

1. If two coplanar lines are cut by a _____ so that a pair of alternate interior angles are _____, then the two lines are parallel.
2. If two coplanar lines are cut by a transversal so that a pair of same-side interior angles are _____, then the two lines are parallel.
3. If two coplanar lines are cut by a transversal so that a pair of alternate exterior angles are congruent, then the two lines are _____.
4. Complete the two-column proof with the statements and reasons provided.

Given: ∠1 and ∠3 are supplementary.

Prove: *m* || *n*

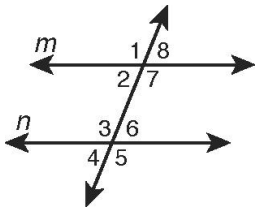
Proof:



Statements	Reasons
1. ∠1 and ∠3 are supplementary.	1. _____
1. ∠2 and ∠3 are supplementary.	2. _____
3. ∠1 ≅ ∠2	3. _____
4. _____	4. Conv. of Corr. ∡s Post.

Name _____ Date _____ Class_____

Use the figure for Exercises 5-12. Tell whether lines* m *and* n *must be parallel from the given information. If they are, state your reasoning. (*Hint: *The angle measures may change for each exercise, and the figure is for reference only.)



5. $\angle 7 \cong \angle 3$

6. $m\angle 3 = (15x + 22)°$, $m\angle 1 = (19x - 10)°$, $x = 8$

7. $\angle 7 \cong \angle 6$

8. $m\angle 2 = (5x + 3)°$, $m\angle 3 = (8x - 5)°$, $x = 14$

9. $m\angle 8 = (6x - 1)°$, $m\angle 4 = (5x + 3)°$, $x = 9$

10. $\angle 5 \cong \angle 7$

11. $\angle 1 \cong \angle 5$

12. $m\angle 6 = (x + 10)°$, $m\angle 2 = (x + 15)°$