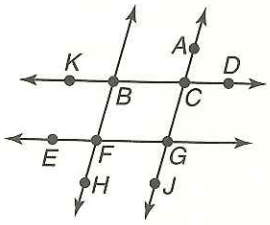
NAME _____ DATE _____ PERIOD ____

3-5 Practice

Proving Lines Parallel

Given the following information, determine which lines, if any, are parallel. State the postulate or theorem that justifies your answer.



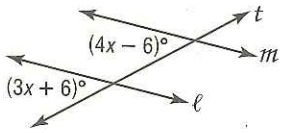
1. $m\angle BCG + m\angle FGC = 180$

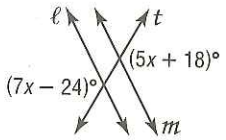
2. $\angle CBF \cong \angle GFH$

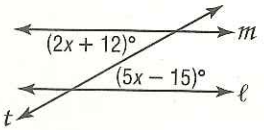
3. $\angle EFB \cong \angle FBC$

4. $\angle ACD \cong \angle KBF$

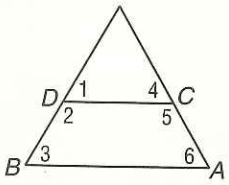
Find x so that $\ell \parallel m$.

5. 

6. 

7. 

8. **PROOF** Write a two-column proof.
Given: $\angle 2$ and $\angle 3$ are supplementary.
Prove: $\overline{AB} \parallel \overline{CD}$



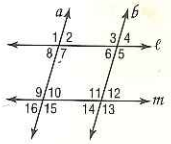
9. **LANDSCAPING** The head gardener at a botanical garden wants to plant rosebushes in parallel rows on either side of an existing footpath. How can the gardener ensure that the rows are parallel?

NAME _____ DATE _____ PERIOD ____

3-5 Skills Practice

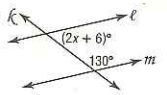
Proving Lines Parallel

Given the following information, determine which lines, if any, are parallel. State the postulate or theorem that justifies your answer.



1. $\angle 3 \cong \angle 7$
   $a \parallel b$; alt. int. ∡
2. $\angle 9 \cong \angle 11$
   $a \parallel b$; corr. ∡
3. $\angle 2 \cong \angle 16$
   $\ell \parallel m$; alt. ext. ∡
4. $m\angle 5 + m\angle 12 = 180$
   $\ell \parallel m$; cons. int. ∡

Find x so that $\ell \parallel m$.

5. 

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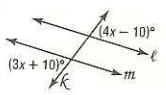
6. 

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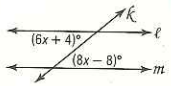
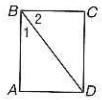
7. 

6

8. **PROOF** Provide a reason for each statement in the proof of Theorem 3.7.

Given: $\angle 1$ and $\angle 2$ are complementary.
$\overline{BC} \perp \overline{CD}$

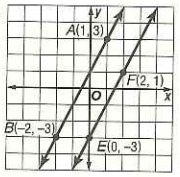
Prove: $\overline{BA} \parallel \overline{CD}$



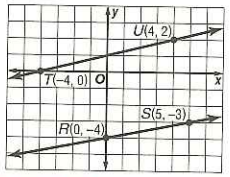
Proof:

Statements	Reasons
1. $\overline{BC} \perp \overline{CD}$	1. Given
2. $m\angle ABC = m\angle 1 + m\angle 2$	2. Angle Addition Postulate
3. $\angle 1$ and $\angle 2$ are complementary.	3. Given
4. $m\angle 1 + m\angle 2 = 90$	4. Definition of complementary angles
5. $m\angle ABC = 90$	5. Transitive Property of Equality
6. $\overline{BA} \perp \overline{BC}$	6. Definition of perpendicular
7. $\overline{BA} \parallel \overline{CD}$	7. If 2 lines are ⊥ to the same line, then lines are ∥.

Determine whether each pair of lines is parallel. Explain why or why not.

9. 

Yes; the slopes are the same.

10. 

No; the slopes are not the same.

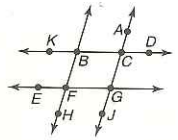
Lesson 3-5

NAME _____ DATE _____ PERIOD ____

3-5 Practice (Average)

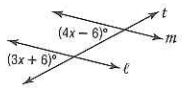
Proving Lines Parallel

Given the following information, determine which lines, if any, are parallel. State the postulate or theorem that justifies your answer.



1. $m\angle BCG + m\angle FGC = 180$
   $\overleftrightarrow{BD} \parallel \overleftrightarrow{EG}$; cons. int. ∡
2. $\angle CBF \cong \angle GFH$
   $\overleftrightarrow{BD} \parallel \overleftrightarrow{EG}$; corr. ∡
3. $\angle EFB \cong \angle FBC$
   $\overleftrightarrow{BD} \parallel \overleftrightarrow{EG}$; alt. int. ∡
4. $\angle ACD \cong \angle KBF$
   $\overleftrightarrow{AJ} \parallel \overleftrightarrow{BH}$; alt. ext. ∡

Find x so that $\ell \parallel m$.

5. 

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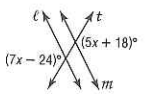
6. 

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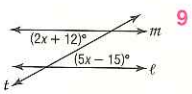
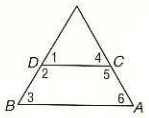
7. 

9

8. **PROOF** Write a two-column proof.

Given: $\angle 2$ and $\angle 3$ are supplementary.

Prove: $\overline{AB} \parallel \overline{CD}$



Proof:

Statements	Reasons
1. $\angle 2$ and $\angle 3$ are supplementary.	1. Given
2. $\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$	2. If consec. int ∡ are suppl., then lines are ∥.
3. $\overline{AB} \parallel \overline{CD}$	3. Segments contained in ∥ lines are ∥.

9. **LANDSCAPING** The head gardener at a botanical garden wants to plant rosebushes in parallel rows on either side of an existing footpath. How can the gardener ensure that the rows are parallel?

Sample answer: If the gardener digs each row at a 90° angle to the footpath, each row will be perpendicular to the footpath. If each of the rows is perpendicular to the footpath, then the rows are parallel.