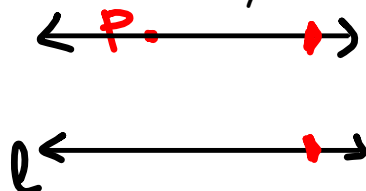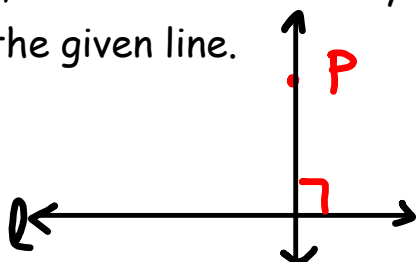3.6   Using Perpendicular and Parallel Lines

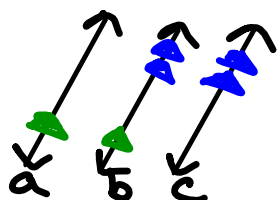Objective: Use properties of parallel and perpendicular lines.

Parallel Postulate: If there is a line and a point not on the line, then there is exactly one line through the point parallel to the given line.

Perpendicular Postulate: If there is a line and a point not on the line, then there is exactly one line through the point perpendicular to the given line.
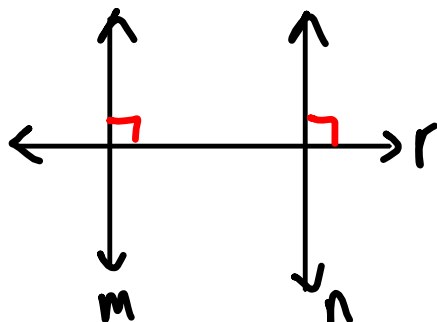
Theorem: If two lines are parallel to the same line, then they are parallel to each other.

a ‖ b   b ‖ c

a ‖ c

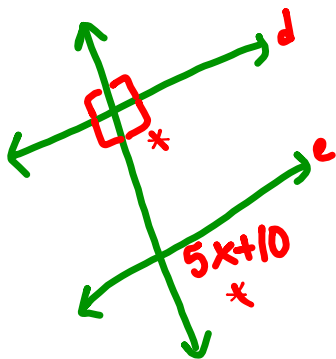Theorem: In a plane, if two lines are perpendicular to the same line, then they are parallel to each other.

m ⊥ r   n ⊥ r

m ‖ n

Checkpoint on the top of page 146.

2. a || c because if 2 lines are ||
to the same line, then they are ||
to each other.

3.

If 2 lines are ⊥, then they
intersect to form 4 right ∠s.

5x+10

*

$5x + 10 = 90$

$-10 \quad -10$

$\dfrac{5x}{5} = \dfrac{80}{5}$

$x = 16$

Converse of the Corresponding
∠s Thm

WAYS TO SHOW THAT TWO LINES ARE PARALLEL:

1. Converse of the Corresponding Angles Postulate $\cong$

2. Converse of the Alternate Interior Angles Theorem $\cong$

3. Converse of the Alternate Exterior Angles Theorem $\cong$

4. Converse of the Same-Side Interior Angles Theorem

SSS   Supplementary

5. If two lines are parallel to the same line, then they are parallel to

   each other.   ///

6. In a plane, if two lines are perpendicular to the same line, then

   they are parallel to each other.