## Lesson 4.5.1: Parallelism and Perpendicularity
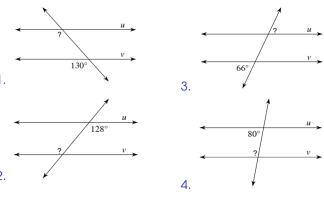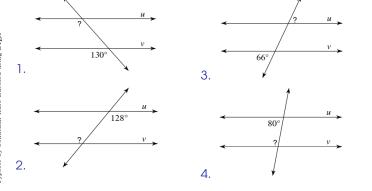
### How to Prove if Two Lines are Parallel?
1. **Corresponding Angles Converse Postulate:** If two lines are cut by a transversal so that corresponding angles are congruent, then the lines are parallel.
2. **Alternate Interior Angles Converse Theorem:** If two lines are cut by a transversal so that alternate interior angles are congruent, then the lines are parallel.
3. **Alternate Exterior Angles Converse Theorem:** If two lines are cut by a transversal so that alternate exterior angles are congruent, then the lines are parallel.
4. **Consecutive Interior Angles Converse Theorem:** If two lines are cut by a transversal so that consecutive interior angles are supplementary, then the lines are parallel.
5. **Consecutive Exterior Angles Converse Theorem:** If two lines are cut by a transversal so that consecutive exterior angles are supplementary, then the lines are parallel.
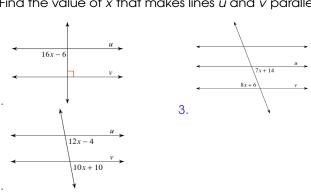
### How to Prove if Two Lines are Perpendicular?
1. If two lines are perpendicular to each other, then they form four right angles.
2. If the angles in a linear pair are congruent, then the lines containing their sides are perpendicular.
3. If two angles are adjacent and complementary, then the non-common sides are perpendicular.

### Practice Exercises 4.5.1

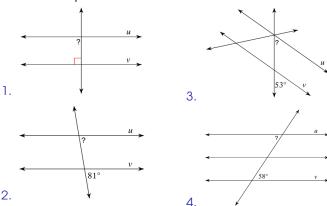A. Find the measure of the indicated angle that makes lines $u$ and $v$ parallel.

1.  $130°$

2.  $128°$

3.  $66°$

4.  $80°$

### B. Find the value of $x$ that makes lines $u$ and $v$ parallel.

1.  $16x - 6$

2.  $12x - 4$ ; $10x + 10$

3.  $7x + 14$ ; $8x + 6$

### Activity 4.5.1

A. Find the measure of the indicated angle that makes lines $u$ and $v$ parallel.

1. 

2.  $81°$

3.  $53°$

4.  $58°$

### B. Find the value of $x$ that makes lines $u$ and $v$ parallel.

1.  $19x - 4$ ; $110°$

2.  $105°$ ; $x + 112$

3.  $11x - 2$ ; $130°$