

## Geometry

### Unit: Introduction to Proofs

#### Section: Informal and Two Column Proofs

#### Review Worksheet KEY

1. Fill in the table below to complete the proof.

Given:  $-2x + 25 = 5 + 3(x - 5)$

Prove:  $x = 7$

Statement	Reasons
$-2x + 25 = 5 + 3(x - 5)$	Given
$-2x + 25 = 5 + (3x - 15)$	Distributive Property
$-2x + 25 = (5 - 15) + 3x$	Associative Property of Addition
$-2x + 25 = -10 + 3x$	Substitution Property (since $5 - 15$ equals $-10$ )
$-2x + 25 + 2x = -10 + 3x + 2x$	Additive Property of Equality
$25 + 0 = -10 + 5x$	Substitution Property
$25 = -10 + 5x$	Additive Identity
$15 + 10 = -10 + 5x + 10$	Additive Property of Equality
$35 = 5x + -10 + 10$	Commutative Property
$35 = 5x + 0$	Substitution Property
$35 = 5x$	Additive Identity
$7 = x$	Multiplicative Property of Equality
$x = 7$	Symmetric Property

**\*\*Be sure you know the properties of and definitions that apply to geometric proofs.\*\***

2. What are Euclid's 5 Postulates?

1. A straight line segment can be drawn joining any two points.

2. Any straight line segment can be extended indefinitely in a straight line.

3. Given any straight line segment, a circle can be drawn having the segment as radius and one endpoint as center.

4. All right angles are congruent.

5. If two lines are drawn which intersect a third in such a way that the sum of the inner angles on one side is less than two right angles, then the two lines inevitably must intersect each other on that side if extended far enough. This postulate is equivalent to what is known as the parallel postulate.

3. What is the basic process of a proof by contradiction?

Assume that what you are trying to prove is *false* and then go through the process until you find a contradiction.

4. Give a counterexample to the statement "All juniors drive themselves to school".

One example could be "Dave is a junior that does not ride the bus."