CHAPTER 2 - USING DEDUCTIVE REASONING

Objectives/Goals

2-1 – If-Then Statements; Converses

Recognize the hypothesis and conclusion of a conditional statement. Write the converse of a conditional statement.

2-2 – Properties from Algebra

Use properties from algebra and properties of congruence in proofs.

2-3 – Proving Theorems

Use the Midpoint Theorem and the Angle Bisector Theorem.

2-4 – Special Pairs of Angles

Use special angle pairs to find angle measures and variable values.

2-5 – Perpendicular Lines

Use properties of perpendicular lines to make conclusions and solve problems.

2-6 – Planning a Proof

Know the kinds of reasons that can be used in proofs.

Essential Questions

1.) How do you change a conditional statement to its various forms?

- 2.) Which properties of algebra are appropriate for use in Geometry?
- 3.) What are the relationships between pairs of angles?
- 4.) What are some ways to determine perpendicularity?
- 5.) What are the essential parts of a proof?

Chapter 2 terms to know

Conditional statements Counterexample Biconditional Two-column proofs Deductive reasoning Corollaries Complementary angles Supplementary angles Vertical angles Perpendicular lines

CHAPTER 2

Theorem 2-1 **Midpoint Theorem** – If M is the midpoint of AB, then $AM = \frac{1}{2}AB$ and $MB = \frac{1}{2}AB$.

- Theorem 2-2 Angle Bisector Theorem If BX is the bisector of <ABC, then $m < ABX = \frac{1}{2} m < ABC$ and $m < XBC = \frac{1}{2} m < ABC$.
- Theorem 2-3 Vertical angles are congruent.
- Theorem 2-4 If two lines are perpendicular, then they form congruent adjacent angles.
- Theorem 2-5 If two lines form congruent adjacent angles, then the lines are perpendicular.
- Theorem 2-6 If the exterior sides of two adjacent acute angles are perpendicular, then the angles are complementary.
- Theorem 2-7 If two angles are supplements of congruent angles (or the same angle), then the two angles are congruent.
- Theorem 2-8 If two angles are complements of congruent angles (or the same angle), then the two angles are congruent.