

CHAPTER 6 – INEQUALITIES

Objectives/Goals

6-1 – Inequalities

Be able to state and apply properties of inequalities

6-2 – Inverses and Contrapositives

Be able to state the contrapositive and inverse of a conditional statement

6-3 – Indirect Proof

Be able to prove through contradiction

6-4 – Inequalities for One Triangle

Be able to understand and use inequality theorems and corollaries for one triangle

6-5 – Inequalities for Two Triangles

Be able to understand and use inequality theorems and corollaries for two triangles

Essential Questions

- 1.) Which conditional statements are logically equivalent?
- 2.) How does the measure of an exterior angle compare to each remote interior angle?
- 3.) How do you apply the triangle inequality theorem?
- 4.) What is the process for an indirect proof?
- 5.) What is the relationship between an angles measure and the side opposite to it?

Chapter 6 terms to know

Inequality symbols
Venn diagram
Logically equivalent
Inverse
Contrapositive
Indirect proof

CHAPTER 6

- Theorem 6-1 The Exterior Angle Inequality Theorem – the measure of an exterior angle of a triangle is greater than the measure of either remote interior angle.
- Theorem 6-2 If one side of a triangle is longer than a second side, then the angle opposite the first side is larger than the angle opposite the second side.
- Theorem 6-3 If one angle of a triangle is larger than a second angle, then the side opposite the first angle is longer than the side opposite the second angle.
- Corollary 1 The perpendicular segment from a point to a line is the shortest segment from the point to the line.
- Corollary 2 The perpendicular segment from a point to a plane is the shortest segment from the point to the plane.
- Theorem 6-4 The Triangle Inequality Theorem – The sum of the lengths of any two sides of a triangle is greater than the length of the third side.
- Theorem 6-5 SAS inequality – If two sides of one triangle are congruent to two sides of another triangle, but the included angle of the first triangle is larger than the included angle of the second, then the third side of the first triangle is longer than the third side of the second triangle.
- Theorem 6-6 SSS inequality – If two sides of one triangle are congruent to two sides of another triangle, but the third side of the first triangle is longer than the third side of the second, then the included angle of the first triangle is larger than the included angle of the second.