Unit Statement: This unit presents variations of the conditional statements and their representations in symbolic form. Deductive reason is introduced along with the laws of logic. The properties of algebra are reviewed and the properties of geometry are used to construct proofs.

Essential Outcomes: (must be assessed for mastery)
Problem solving and higher order thinking components are essential for ‘A’ level mastery. Each outcome can contain problem solving and higher order thinking components (as found in suggested text).

1. TSW analyze conjectures and find counterexamples (2.1 pp.74 - 79).
2. TSW identify, write and analyze the truth value of conditional statements (2.2 pp. 81 - 87).
3. TSW write the inverse, converse, and contrapositive of a conditional statement (2.2 pp. 81 - 87).
4. TSW apply the Law of Detachment and Law of Syllogism in logical reasoning (2.3 pp. 88 - 93).
5. TSW write and analyze biconditional statements (2.4 pp. 96 - 101).
6. TSW use properties of equality and write algebraic statements (2.5 pp. 104 - 109).
7. TSW prove geometric statements and theorems by using deductive reasoning in a two-column proof (2.6 pp.110 – 116)

Introduced and Practiced Outcomes: (taught not assessed)
1. TSW use tables to solve logic problems (2.3 pp.94 -95).
2. TSW prove geometric statements and theorems by using deductive reasoning in flow charts and paragraph proofs (2.7 pp. 118 – 125).

Key Terms and Concepts

- Conditional Statement
- Conclusion
- Conjecture
- Contrapositive
- Deductive Reasoning
- Converse
- Hypothesis
- Counterexample
- Inductive Reasoning
- Inverse
- Negation
- Proof
- Two-column Proof
- Theorem

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**Suggested Assessment Tools and Strategies:**

Attached Rubric or teacher generated rubric that assesses **ALL** essential outcomes (TSWs).

**Suggested Resources:**

- Holt McDougal Geometry, Chapter 2, Sections 1 - 6.
- Holt McDougal Geometry, Problem Solving Workbook
- Holt McDougal Geometry, Practice Worksheets
- Holt McDougal Geometry, Reading Strategies
- Holt McDougal Geometry, Reteach Worksheets
- Holt McDougal Geometry, Challenge Worksheets
- Holt McDougal Geometry, Assessment Resources

**Technology Links:**

- Holt McDougal Geometry, Online Edition, 6-year subscription
- Holt McDougal Geometry, Interactive Answers and Solutions CD-ROM
- Holt McDougal Geometry, Lesson Tutorial Videos DVD-ROM
- Holt McDougal Geometry, Teacher One-Stop DVD
- On Core Mathematics Deluxe Eamview Grades 6-12 CD-ROM
- On Core Mathematics High School Activity Generator CD-ROM
- Follett Destiny WebPath Express (found on school’s automated library system)
- Tenmarks www.tenmarks.com/
- Khan Academy https://www.khanacademy.org/
- PhET Simulations http://phet.colorado.edu/en/simulations/category/math

**EVALUATION RUBRIC FOUND ON FOLLOWING PAGE……………………..**
UNIT EVALUATION RUBRIC

Geometry
Essential Unit 2 (E02)

- To receive a ‘B’, the student must show ‘B’ level mastery on all eight TSW’s.
- To receive an ‘A’, the student must show ‘A’ level mastery in at least 4 of the 6 available TSW’s and ‘B’ level mastery on all of the remaining TSW’s.

<table>
<thead>
<tr>
<th>TSW</th>
<th>‘A’ LEVEL</th>
<th>‘B’ LEVEL</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- use inductive reasoning to identify patterns and make conjectures.</td>
<td>The student can make conjectures based on extending Pascal’s Triangle.</td>
<td>The student is able to use inductive reasoning to identify patterns and make conjectures.</td>
<td></td>
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<tr>
<td>2- analyze conjectures and find counterexamples.</td>
<td>The student can analyze more complicated counterexamples, for example an integer n squared plus n is prime.</td>
<td>The student is able to analyze conjectures and find counterexamples.</td>
<td></td>
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<tr>
<td>3- identify, write and analyze the truth value of conditional statements.</td>
<td>The student can identify, write and analyze the truth value of conditional statements.</td>
<td></td>
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</tr>
<tr>
<td>4- write the inverse, converse, and contrapositive of a conditional statement.</td>
<td>The student can write the inverse, converse, and contrapositive of a conditional statement.</td>
<td></td>
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<tr>
<td>5- apply the Law of Detachment and Law of Syllogism in logical reasoning.</td>
<td>The student is able to extend the laws to determine if complex multiple-statement story problem conjectures are valid.</td>
<td>The student can apply the Law of Detachment and Law of Syllogism in logical reasoning.</td>
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<tr>
<td>6. write and analyze biconditional statements.</td>
<td>The student can relate true biconditional statements in a real-world situation to its corresponding Venn diagrams.</td>
<td>The student is able to write and analyze biconditional statements.</td>
<td></td>
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<tr>
<td>7. use properties of equality and write algebraic statements.</td>
<td>The student can justify steps in complex algebraic proofs.</td>
<td>The student is able to use properties of equality and write algebraic statements.</td>
<td></td>
</tr>
<tr>
<td>8. prove geometric statements and theorems by using deductive reasoning in a two-column proof.</td>
<td>The student is able to make conjectures regarding what can be proved using given information.</td>
<td>The student can prove geometric statements and theorems by using deductive reasoning in a two-column proof.</td>
<td></td>
</tr>
</tbody>
</table>