<table>
<thead>
<tr>
<th>Time</th>
<th>Strand, Big Idea, &amp; Student Objectives</th>
<th>Instructional Strategies and Model Lessons</th>
<th>Assessment Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>School procedure and pre-testing</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) simplify numerical expressions involving positive exponents, using rational numbers, order of operations, and properties of operations with real numbers; and</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Essential Understandings for Students</strong>&lt;br&gt;● What is the role of the order of operations when simplifying numerical expressions? The order of operations prescribes the order to use to simplify a numerical expression.&lt;br&gt;● How does the different ways rational numbers can be</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**First Nine Weeks at a Glance:**
- 8.1a Properties/Order Operations
- 8.5a Perfect Squares
- 8.4 Evaluate Expressions
- 8.1b Scientific Notation
- 8.2 Subsets of Real Number System
- 8.5b Square Roots
- 8.10a Verify Pythagorean Theorem
- 8.10b Apply Pythagorean Theorem

**Second Nine Weeks at a Glance:**
- 8.3a Solve Practical Problems
- 8.3b Percent of Increase and Decrease
- 8.6a Angles: Vertical, Adjacent, Complementary, Supplementary
- 8.6b measure angles – not tested
- 8.8a Apply Transformations
- 8.8b Identify Transformations
- 8.9 Three-Dimensional Models
- 8.7 a. & b. Volume and Surface Area
- 8.11 Area and Perimeter

**Third Nine Weeks at a Glance:**
- 8.12 Probability
- 8.13a Interpret Graphs
- 8.13b Scatterplots
- 8.14 Relations and Functions
- 8.15a Solve Multistep Linear Equations
- 8.15b Inequalities
- 8.15c Properties of Operations
- 8.16 Graph Linear Equations

**Fourth Nine Weeks at a Glance:**
- 8.17 Function Terminology
- Review for SOL Testing
- Preparation for Algebra

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**Essential Knowledge, Skills, Processes**

**Instructional Strategies and Model Lessons**

**Assessment Items**

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**Suggested Textbook Resources**

**Online Student Edition Textbook**

**Student Edition Workbooks**
http://www.glencoe.com/sites/common_assets/workbooks/math/MAC3VA/m3vasol2.pdf

- Section 1 – 2
- Section 1 – 3
- Section 1 – 4
- Section 1 – 5
- Section 1 – 6
- Section 2 – 8

---

**Pre-test, Post-test, Formative Assessments, Homework, Classwork**
represented help us compare and order rational numbers?

- Numbers can be represented as decimals, fractions, percents, and in scientific notation. It is often useful to convert numbers to be compared and/or ordered to one representation (e.g., fractions, decimals or percents).
- What is a rational number?
- A rational number is any number that can be written in fraction form.
- When are numbers written in scientific notation?
- Scientific notation is used to represent very large and very small numbers.

### Essential Knowledge and Skills (Student Objectives)

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to

- Simplify numerical expressions containing: 1) exponents (where the base is a rational number and the exponent is a positive whole number); 2) fractions, decimals, integers and square roots of perfect squares; and 3) grouping symbols (no more than 2 embedded grouping symbols). Order of operations and properties of operations with real numbers should be used.
- Compare and order no more than five fractions, decimals, percents, and numbers written in scientific notation using positive and negative exponents. Ordering may be in ascending or descending order.

<table>
<thead>
<tr>
<th>8.5</th>
<th>The student will</th>
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</thead>
<tbody>
<tr>
<td>a)</td>
<td>determine whether a given number is a perfect square; and</td>
</tr>
</tbody>
</table>

### Suggested Technology Materials

**Understanding Math: Exponents**
- Section 3: Exponent Rules
- Section 5: Square Root

**Smart Board Activities**


- Section 3 – 1
- Section 3 – 2
### Essential Understandings for Students
- How does the area of a square relate to the square of a number? The area determines the perfect square number. If it is not a perfect square, the area provides a means for estimation.

### Essential Knowledge and Skills (Student Objectives)
The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to
- Identify the perfect squares from 0 to 400.

### Suggested Textbook Resources
**Online Student Edition Textbook**

**Student Edition Workbooks**
http://www.glencoe.com/sites/common_assets/workbooks/math/MAC3VA/m3vasol2.pdf
- Section 1 – 2
- Section 1 – 6
- Section 7 – 1
- Section 7 – 2
- Section 7 – 3
- Section 7 – 5
- Section 7 – 6
- Section 7 – 7
- Section 7 – 8

### Suggested Technology Materials
**Understanding Math: Algebra**

### Essential Understandings for Students
- What is the role of the order of operations when evaluating expressions? Using the order of operations assures only one correct answer for an expression.

### Essential Knowledge and Skills (Student Objectives)
The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to
- Substitute numbers for variables in algebraic expressions and simplify the expressions by using the order of operations. Exponents are positive and limited to whole numbers less than 4. Square roots are limited to perfect squares.
- Apply the order of operations to evaluate formulas. Problems will be
limited to positive exponents. Square roots may be included in the expressions but limited to perfect squares.

### Essential Understandings for Students

- How does the different ways rational numbers can be represented help us compare and order rational numbers? Numbers can be represented as decimals, fractions, percents, and in scientific notation. It is often useful to convert numbers to be compared and/or ordered to one representation (e.g., fractions, decimals or percents).

- What is a rational number? A rational number is any number that can be written in fraction form.

- When are numbers written in scientific notation? Scientific notation is used to represent very large and very small numbers.

### Essential Knowledge and Skills (Student Objectives)

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to

- Compare and order no more than five fractions, decimals, percents, and numbers written in scientific notation.

### Suggested Textbook Resources

**Online Student Edition Textbook**

**Student Edition Workbooks**
http://www.glencoe.com/sites/common_assets/workbooks/math/MAC3VA/m3vasol2.pdf

- Section 2 – 9

**Suggested Technology Materials**

- **Understanding Math: Exponents**
  - Section 4: Scientific Notation

- **Understanding Math: Whole Numbers and Integers**
  - Section 4: The Meaning of Integers

**Smart Board Activities**

<table>
<thead>
<tr>
<th>Week</th>
<th>The student will</th>
<th>Essential Understandings for Students</th>
<th>Essential Knowledge and Skills (Student Objectives)</th>
<th>Suggested Textbook Resources</th>
<th>Suggested Technology Materials</th>
<th>Smart Board Activities</th>
</tr>
</thead>
</table>
| 5 & 6 | 8.1 b) compare and order decimals, fractions, percents, and numbers written in scientific notation. | How does the different ways rational numbers can be represented help us compare and order rational numbers? Numbers can be represented as decimals, fractions, percents, and in scientific notation. It is often useful to convert numbers to be compared and/or ordered to one representation (e.g., fractions, decimals or percents). | The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to\n\n- Compare and order no more than five fractions, decimals, percents, and numbers written in scientific notation. | **Online Student Edition Textbook**
- Section 4: Scientific Notation | **Smart Board Activities**
8.2 The student will describe orally and in writing the relationships between the subsets of the real number system.

Essential Understandings for Students

- The student will describe orally and in writing the relationships between the subsets of the real number system.

Essential Knowledge and Skills (Student Objectives)

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to

- Describe orally and in writing the relationships among the sets of natural or counting numbers, whole numbers, integers, rational numbers, irrational numbers, and real numbers.
- Illustrate the relationships among the subsets of the real number system by using graphic organizers such as Venn diagrams. Subsets include rational numbers, irrational numbers, integers, whole numbers, and natural or counting numbers.
- Identify the subsets of the real number system to which a given number belongs.
- Determine whether a given number is a member of a

- Section 3 - 3
### Essential Understandings for Students

- Why do numbers have both positive and negative roots? 
  The square root of a number is any number which when multiplied by itself equals the number. A product, when multiplying two positive factors, is always the same as the product when multiplying their opposites (e.g., \(7 \cdot 7 = 49\) and \(-7 \cdot -7 = 49\)).

### Essential Knowledge and Skills (Student Objectives)

- Identify the two consecutive whole numbers between which the square root of a given whole number from 0 to 400 lies (e.g., \(\sqrt{57}\) lies between 7 and 8 since \(7^2 = 49\) and \(8^2 = 64\)).
- Define a perfect square.
- Find the positive or positive and negative square roots of a

<table>
<thead>
<tr>
<th>Week 7</th>
<th>8.5</th>
<th>The student will</th>
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<tbody>
<tr>
<td></td>
<td>b)</td>
<td>find the two consecutive whole numbers between which a square root lies.</td>
</tr>
</tbody>
</table>

**Suggested Textbook Resources**

- **Online Student Edition Textbook**
  

- **Student Edition Workbooks**
  
  http://www.glencoe.com/sites/common_assets/workbooks/math/MAC3VA/m3vasol2.pdf

- **Suggested Technology Materials**
  Understanding Math: Exponents
  
  - Section 5: Square Root

- **Smart Board Activities**
  
  http://exchange.smergetech.com/curriculum-list.html?curriculum=enusc01148&grade=enusc01148gr009&subject=enusc01148gr009su005

- Pre-test, Post-test, Formative Assessments, Homework, Classwork
given whole number from 0 to 400. (Use the symbol \( \sqrt{\text{ }} \) to ask for the positive root and \( -\sqrt{\text{}} \) when asking for the negative root.)

<table>
<thead>
<tr>
<th>8.10</th>
<th>The student will</th>
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<tbody>
<tr>
<td>a)</td>
<td>verify the Pythagorean Theorem; and</td>
</tr>
</tbody>
</table>

**Essential Understandings for Students**

- How can the area of squares generated by the legs and the hypotenuse of a right triangle be used to verify the Pythagorean Theorem?

  For a right triangle, the area of a square with one side equal to the measure of the hypotenuse equals the sum of the areas of the squares with one side each equal to the measures of the legs of the triangle.

**Essential Knowledge and Skills (Student Objectives)**

- Identify the parts of a right triangle (the hypotenuse and the legs).
- Verify a triangle is a right triangle given the measures of its three sides.
- Verify the Pythagorean Theorem, using diagrams, concrete materials, and measurement.

<table>
<thead>
<tr>
<th>8.10</th>
<th>The student will</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Section 3 – 4
- Section 3 – 5
- Section 3 – 6
b) apply the Pythagorean Theorem.

### Essential Understandings for Students

- How can the area of squares generated by the legs and the hypotenuse of a right triangle be used to verify the Pythagorean Theorem? For a right triangle, the area of a square with one side equal to the measure of the hypotenuse equals the sum of the areas of the squares with one side each equal to the measures of the legs of the triangle.

### Essential Knowledge and Skills (Student Objectives)

- Find the measure of a side of a right triangle, given the measures of the other two sides.
- Solve practical problems involving right triangles by using the Pythagorean Theorem.

<table>
<thead>
<tr>
<th>Week 8</th>
<th>8.10</th>
<th>The student will</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td>a) verify the Pythagorean Theorem; and</td>
</tr>
</tbody>
</table>

### Suggested Textbook Resources

**Online Student Edition Textbook**

**Student Edition Workbooks**

- Section 3 – 4
- Section 3 – 5
- Section 3 – 6

**Suggested Technology Materials**

**Understanding Math: Exponents**

- Section 6: Pythagorean Theorem

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**Pre-test, Post-test, Formative Assessments, Homework, Classwork**
Essential Knowledge and Skills (Student Objectives)

- Identify the parts of a right triangle (the hypotenuse and the legs).
- Verify a triangle is a right triangle given the measures of its three sides.
- Verify the Pythagorean Theorem, using diagrams, concrete materials, and measurement.

8.10 The student will

b) apply the Pythagorean Theorem.

Essential Understandings for Students

- How can the area of squares generated by the legs and the hypotenuse of a right triangle be used to verify the Pythagorean Theorem? For a right triangle, the area of a square with one side equal to the measure of the hypotenuse equals the sum of the areas of the squares with one side each equal to the measures of the legs of the triangle.

Essential Knowledge and Skills (Student Objectives)

- Find the measure of a side of a right triangle, given the measures of the other two sides.
- Solve practical problems involving right triangles by using the

Smart Board Activities
### Essential Understandings for Students
- **What is the difference between percent increase and percent decrease?** Percent increase and percent decrease are both percents of change measuring the percent a quantity increases or decreases. Percent increase shows a growing change in the quantity while percent decrease shows a lessening change.
- **What is a percent?** A percent is a special ratio with a denominator of 100.

### Essential Knowledge and Skills (Student Objectives)
- The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to
  - Write a proportion given the relationship of equality between two ratios.
  - Solve practical problems by using computation procedures for whole numbers, integers, fractions, percents, ratios, and
proportions. Some problems may require the application of a formula.
- Maintain a checkbook and check registry for five or fewer transactions.
- Compute a discount or markup and the resulting sale price for one discount or markup.
- Compute the percent increase or decrease for a one-step equation found in a real life situation.
- Compute the sales tax or tip and resulting total.
- Substitute values for variables in given formulas. For example, use the simple interest formula \( I = PRT \) to determine the value of any missing variable when given specific information.
- Compute the simple interest and new balance earned in an investment or on a loan for a given number of years.

- Section 5 – 7
- Section 5 – 8
- Section 5 – 8b

**Suggested Technology Materials**

**Understanding Math: Fractions**
- Section 8: Ratios and Proportions
- Section 9: Adding Fractions
- Section 10: Subtracting Fractions
- Section 6: Multiplying Fractions
- Section 7: Problems Involving Percent

**Smart Board Activities**

**Suggested Technology Materials**

**Understanding Math: Percent**
- Section 6: Problems Involving Percent

**Smart Board Activities**

<table>
<thead>
<tr>
<th>Week 12</th>
<th>The student will</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.3</td>
<td>a) solve practical problems involving rational numbers, percents, ratios, and proportions; and</td>
</tr>
<tr>
<td></td>
<td>b) determine the percent increase or decrease for a given situation.</td>
</tr>
</tbody>
</table>

**Essential Understandings for Students**

**Suggested Textbook Resources**

**Online Student Edition Textbook**

**Student Edition Workbooks**

- Section 1 – 4
- Section 2 – 3
- Section 2 – 4

**Pre-test, Post-test, Formative Assessments, Homework, Classwork**
### Essential Knowledge and Skills (Student Objectives)

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to

- Write a proportion given the relationship of equality between two ratios.
- Solve practical problems by using computation procedures for whole numbers, integers, fractions, percents, ratios, and proportions. Some problems may require the application of a formula.
- Maintain a checkbook and check registry for five or fewer transactions.
- Compute a discount or markup and the resulting sale price for one discount or markup.
- Compute the percent increase or decrease for a one-step equation found in a real life situation.
- Compute the sales tax or tip and resulting total.
- Substitute values for variables in given formulas. For example, use the simple interest formula $I = prt$ to determine the value of any missing variable when given specific information.
- Compute the simple interest and new balance earned in an investment or on a loan for a given number of years.

### Suggested Technology Materials

**Smart Board Activities**


- Section 2 – 5
- Section 2 – 6
- Section 2 – 8a
- Section 3 – 3a
- Section 4 – 1
- Section 4 – 2
- Section 4 – 4
- Section 4 -5a
- Section 4 – 6
- Section 4 – 7
- Section 5 – 2
- Section 5 – 3
- Section 5 – 4
- Section 5 – 5a
- Section 5 -5
- Section 5 – 6
- Section 5 – 7
- Section 5 – 8
- Section 5 – 8b
- Section 6 – 1
- PS 12
8.6 The student will

b) measure angles of less than 360°.

### Essential Understandings for Students

- How are vertical, adjacent, complementary and supplementary angles related? Adjacent angles are any two non-overlapping angles that share a common side and a common vertex. Vertical angles will always be nonadjacent angles. Supplementary and complementary angles may or may not be adjacent.

### Essential Knowledge and Skills (Student Objectives)

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to

- Measure angles of less than 360° to the nearest degree, using appropriate tools.

---

<table>
<thead>
<tr>
<th>Week</th>
<th>8.6 The student will</th>
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<tbody>
<tr>
<td>13</td>
<td>a) verify by measuring and describe the relationships among vertical angles, adjacent angles, supplementary angles, and complementary angles; and</td>
</tr>
</tbody>
</table>

### Essential Understandings for Students

- How are vertical, adjacent, complementary and supplementary angles related? Adjacent angles are any two non-overlapping angles that share a common side and a common vertex.

### Suggested Textbook Resources

**Online Student Edition Textbook**

**Student Edition Workbooks**
http://www.glencoe.com/sites/common_assets/workbooks/math/MAC3VA/m3vasol2.pdf

- Section 6 – 1
- PS 12

### Suggested Technology Materials

**Understanding Math: Measurement and Geometry**

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**Pre-test, Post-test, Formative Assessments, Homework, Classwork**
common vertex. Vertical angles will always be nonadjacent angles. Supplementary and complementary angles may or may not be adjacent.

### Essential Knowledge and Skills (Student Objectives)

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to

- Identify and describe the relationships between angles formed by two intersecting lines.
- Identify and describe the relationship between pairs of angles that are vertical.
- Identify and describe the relationship between pairs of angles that are supplementary.
- Identify and describe the relationship between pairs of angles that are complementary.
- Identify and describe the relationship between pairs of angles that are adjacent.
- Use the relationships among supplementary, complementary, vertical, and adjacent angles to solve practical problems.

8.6 The student will

- **b)** measure angles of less than 360°.

### Essential Understandings for Students

- How are vertical, adjacent, complementary and supplementary angles related? Adjacent angles are any two non-overlapping angles that share a common side and a
common vertex. Vertical angles will always be nonadjacent angles. Supplementary and complementary angles may or may not be adjacent.

**Essential Knowledge and Skills (Student Objectives)**

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to

- Measure angles of less than 360° to the nearest degree, using appropriate tools.

<table>
<thead>
<tr>
<th>Week 14 &amp; 15</th>
<th>8.8</th>
<th>The student will</th>
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<tbody>
<tr>
<td></td>
<td>a)</td>
<td>apply transformations to plane figures; and</td>
</tr>
<tr>
<td></td>
<td>b)</td>
<td>identify applications of transformations.</td>
</tr>
</tbody>
</table>

**Essential Understandings for Students**

- How does the transformation of a figure on the coordinate grid affect the congruency, orientation, location and symmetry of an image?
  Translations, rotations and reflections maintain congruence between the pre-image and image but change location. Dilations by a scale factor other than 1 produce an image that is not congruent to the pre-image but is similar. Rotations and reflections change the orientation of the image.

**Essential Knowledge and Skills (Student Objectives)**

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to

<table>
<thead>
<tr>
<th>Suggested Textbook Resources</th>
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</thead>
<tbody>
<tr>
<td><strong>Online Student Edition Textbook</strong></td>
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<tr>
<td><strong>Student Edition Workbooks</strong></td>
</tr>
<tr>
<td><a href="http://www.glencoe.com/sites/common_assets/workbooks/math/MAC3VA/m3vasol2.pdf">http://www.glencoe.com/sites/common_assets/workbooks/math/MAC3VA/m3vasol2.pdf</a></td>
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</tbody>
</table>

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<thead>
<tr>
<th>Suggested Technology Materials</th>
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</thead>
<tbody>
<tr>
<td><strong>Understanding Math: Graphing</strong></td>
</tr>
<tr>
<td>Section 4: Transformations</td>
</tr>
<tr>
<td><strong>Understanding Math: Percent</strong></td>
</tr>
<tr>
<td>Section 4: Ratios and Proportions</td>
</tr>
</tbody>
</table>

| Pre-test, Post-test, Formative Assessments, Homework, Classwork |
### Mathematical Reasoning, Connections, and Representations to
- Demonstrate the reflection of a polygon over the vertical or horizontal axis on a coordinate grid.
- Demonstrate 90°, 180°, 270°, and 360° clockwise and counterclockwise rotations of a figure on a coordinate grid. The center of rotation will be limited to the origin.
- Demonstrate the translation of a polygon on a coordinate grid.
- Demonstrate the dilation of a polygon from a fixed point on a coordinate grid.
- Identify practical applications of transformations including, but not limited to, tiling, fabric, and wallpaper designs, art and scale drawings.
- Identify the type of transformation in a given example.

### Essential Understandings for Students
- How does knowledge of two-dimensional figures inform work with three-dimensional objects? It is important to know that a three-dimensional object can be represented as a two-dimensional model with views of the object from different perspectives.

### Essential Knowledge and Skills (Student Objectives)
- The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to
  - Construct three-dimensional models, given the top or bottom, side, and front views.

### Suggested Textbook Resources
**Online Student Edition Textbook**

**Student Edition Workbooks**
http://www.glencoe.com/sites/common_assets/workbooks/math/MAC3VA/m3vasol2.pdf
- Section 7 – 4a

**Suggested Technology Materials**
*Understanding Math: Measurement and Geometry*
- Section 4: Solids.. Volume and Surface Area

**Smart Board Activities**

<table>
<thead>
<tr>
<th>Week 16</th>
<th>8.9 The student will construct a three-dimensional model, given the top or bottom, side, and front views.</th>
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</thead>
<tbody>
<tr>
<td></td>
<td><strong>Essential Understandings for Students</strong></td>
</tr>
<tr>
<td></td>
<td>- How does knowledge of two-dimensional figures inform work with three-dimensional objects? It is important to know that a three-dimensional object can be represented as a two-dimensional model with views of the object from different perspectives.</td>
</tr>
<tr>
<td></td>
<td><strong>Essential Knowledge and Skills (Student Objectives)</strong></td>
</tr>
<tr>
<td></td>
<td>- The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</td>
</tr>
<tr>
<td></td>
<td>- Construct three-dimensional models, given the top or bottom, side, and front views.</td>
</tr>
<tr>
<td></td>
<td><strong>Suggested Textbook Resources</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Online Student Edition Textbook</strong></td>
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<td><strong>Student Edition Workbooks</strong></td>
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<td></td>
<td><a href="http://www.glencoe.com/sites/common_assets/workbooks/math/MAC3VA/m3vasol2.pdf">http://www.glencoe.com/sites/common_assets/workbooks/math/MAC3VA/m3vasol2.pdf</a></td>
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<td>- Section 7 – 4a</td>
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<td></td>
<td><strong>Suggested Technology Materials</strong></td>
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<tr>
<td></td>
<td><em>Understanding Math: Measurement and Geometry</em></td>
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<tr>
<td></td>
<td>- Section 4: Solids.. Volume and Surface Area</td>
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<tr>
<td></td>
<td><strong>Smart Board Activities</strong></td>
</tr>
</tbody>
</table>

|          | Pre-test, Post-test, Formative Assessments, Homework, Classwork                                |

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*Note: The content is from the Pre-Algebra Curriculum Pacing Guide, 7th/8th grade, 2011-2012.*
**Pre - Algebra**  
**Curriculum Pacing Guide**  
7th/8th grade  
2011 - 2012

<table>
<thead>
<tr>
<th>Week 17, 18 &amp; 19</th>
<th>8.7 The student will</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a) investigate and solve practical problems involving volume and surface area of prisms, cylinders, cones, and pyramids; and</td>
</tr>
<tr>
<td></td>
<td>b) describe how changing one measured attribute of a figure affects the volume and surface area.</td>
</tr>
</tbody>
</table>

**Essential Understandings for Students**

- How does the volume of a three-dimensional figure differ from its surface area? Volume is the amount a container holds. Surface area of a figure is the sum of the area on surfaces of the figure.
- How are the formulas for the volume of prisms and cylinders similar? For both formulas you are finding the area of the base and multiplying that by the height.
- How are the formulas for the volume of cones and pyramids similar? For cones you are finding \( \frac{1}{3} \) of the volume of the cylinder with the same size base and height. For pyramids you are finding \( \frac{1}{3} \) of the volume of the prism with the same size base and height.
- In general what effect does changing one attribute of a prism by a scale factor have on the volume of the prism? When you increase or decrease the length, width or height of a prism by a factor greater than 1, the volume of the prism is also increased by that factor.

**Suggested Textbook Resources**

**Online Student Edition Textbook**

**Student Edition Workbooks**
http://www.glencoe.com/sites/common_assets/workbooks/math/MAC3VA/m3vasol2.pdf
- Section 7 - 5
- Section 7 – 6
- Section 7 – 7
- Section 7 – 8

**Suggested Technology Materials**

**Understanding Math: Measurement and Geometry**
- Section 4: Solids.. Volume and Surface Area
- Section 2: Perimeter and Area of Polygons

**Smart Board Activities**

**Pre-test, Post-test, Formative Assessments, Homework, Classwork**
**Essential Knowledge and Skills (Student Objectives)**

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to

- Distinguish between situations that are applications of surface area and those that are applications of volume.
- Investigate and compute the surface area of a square or triangular pyramid by finding the sum of the areas of the triangular faces and the base using concrete objects, nets, diagrams and formulas.
- Investigate and compute the surface area of a cone by calculating the sum of the areas of the side and the base, using concrete objects, nets, diagrams and formulas.
- Investigate and compute the surface area of a right cylinder using concrete objects, nets, diagrams and formulas.
- Investigate and compute the surface area of a rectangular prism using concrete objects, nets, diagrams and formulas.
- Investigate and compute the volume of prisms, cylinders, cones, and pyramids, using concrete objects, nets, diagrams, and formulas.
- Solve practical problems involving volume and surface area of prisms, cylinders, cones, and pyramids.
- Compare and contrast the volume and surface area of a prism with a given set of attributes with the volume of a prism where one of the attributes has been increased by a factor of 2, 3, 5 or 10.
- Describe the two-dimensional figures that result from slicing three-dimensional figures parallel to the base (e.g., as in plane sections of right rectangular prisms and right rectangular pyramids).†
8.11 The student will solve practical area and perimeter problems involving composite plane figures.

**Essential Understandings for Students**
- How does knowing the areas of polygons assist in calculating the areas of composite figures? The area of a composite figure can be found by subdividing the figure into triangles, rectangles, squares, trapezoids and semi-circles, calculating their areas, and adding the areas together.

**Essential Knowledge and Skills (Student Objectives)**
- The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to
  - Subdivide a figure into triangles, rectangles, squares, trapezoids and semicircles. Estimate the area of subdivisions and combine to determine the area of the composite figure.
  - Use the attributes of the subdivisions to determine the perimeter and circumference of a figure.
  - Apply perimeter, circumference and area formulas to solve practical problems.

<table>
<thead>
<tr>
<th>Week 20 &amp; 21</th>
<th>8.12 The student will determine the probability of independent and dependent events with and without replacement.</th>
</tr>
</thead>
</table>

**Essential Understandings for Students**
- How are the probabilities of dependent and independent events similar? Different? If events are dependent then the second event is considered only if the first event has already occurred. If events are independent, then the second event

**Suggested Textbook Resources**
- **Online Student Edition Textbook**
- **Student Edition Workbooks**
  [http://www.glencoe.com/sites/common_assets/workbooks/math/MAC3VA/m3vassol2.pdf](http://www.glencoe.com/sites/common_assets/workbooks/math/MAC3VA/m3vassol2.pdf)
  - Section 8 – 1
  - Section 8 – 6
  - Section 8 - 7

| Pre-test, Post-test, Formative Assessments, Homework, Classwork |
## Essential Knowledge and Skills (Student Objectives)

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to
- Determine the probability of no more than three independent events.
- Determine the probability of no more than two dependent events without replacement.
- Compare the outcomes of events with and without replacement.

### Suggested Technology Materials

**Understanding Math: Probability**
- Section 1: introduction to Probability
- Section 2: What’s the Chance
- Section 7: Independent Events
- Section 8: Dependent Events

**Smart Board Activities**

### Suggested Textbook Resources

**Online Student Edition Textbook**

**Student Edition Workbooks**
http://www.glencoe.com/sites/common_assets/workbooks/math/MAC3VA/m3vasol2.pdf
- Section 8 – 1
- Section 8 – 6
- Section 8 – 7

**Suggested Technology Materials**

**Understanding Math: Graphing**
- Section 1: Reading and Sketching Graphs
- Section 2: Statistics

**Smart Board Activities**
- Section 9 – 1

## Essential Understandings for Students

- How are the probabilities of dependent and independent events similar? Different? If events are dependent then the second event is considered only if the first event has already occurred. If events are independent, then the second event occurs regardless of whether or not the first occurs.

## Pre - Algebra Curriculum Pacing Guide

**7th/ 8th grade**

### 2011 - 2012

| Week 22 | 8.12 | The student will determine the probability of independent and dependent events with and without replacement. |

### Suggested Technology Materials

**Understanding Math: Probability**
- Section 1: introduction to Probability
- Section 2: What’s the Chance
- Section 7: Independent Events
- Section 8: Dependent Events

**Smart Board Activities**

### Suggested Textbook Resources

**Online Student Edition Textbook**

**Student Edition Workbooks**
http://www.glencoe.com/sites/common_assets/workbooks/math/MAC3VA/m3vasol2.pdf
- Section 8 – 1
- Section 8 – 6
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**Suggested Technology Materials**

**Understanding Math: Graphing**
- Section 1: Reading and Sketching Graphs
- Section 2: Statistics

**Smart Board Activities**
- Section 9 – 1

### Pre-test, Post-test, Formative Assessments, Homework, Classwork
### Essential Understandings for Students

- Why do we estimate a line of best fit for a scatterplot? A line of best fit helps in making interpretations and predictions about the situation modeled in the data set.

- What are the inferences that can be drawn from sets of data points having a positive relationship, a negative relationship, and no relationship? Sets of data points with positive relationships demonstrate that the values of the two variables are increasing. A negative relationship indicates that as the value of the independent variable increases, the value of the dependent variable decreases.

### Essential Knowledge and Skills (Student Objectives)

- Collect, organize, and interpret a data set of no more than 20 items using scatterplots. Predict from the trend an estimate of the line of best fit with a drawing.
- Interpret a set of data points in a scatterplot as having a positive relationship, a negative relationship, or no relationship.

<table>
<thead>
<tr>
<th>8.13</th>
<th>The student will</th>
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<tbody>
<tr>
<td>a)</td>
<td>make comparisons, predictions, and inferences, using information displayed in graphs; and</td>
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</table>

- Section 9 - 2
- Section 9 – 6
- Section 9 – 7
- Section 11 – 6a
- Section 11 – 6
- Section 11 -6 b
- PS2
Pre-Algebra
Curriculum Pacing Guide
7th/8th grade
2011 - 2012

<table>
<thead>
<tr>
<th>Week 23 &amp; 24</th>
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<tbody>
<tr>
<td>8.13</td>
<td>a) make comparisons, predictions, and inferences, using information displayed in graphs; and</td>
</tr>
<tr>
<td></td>
<td>b) construct and analyze scatterplots.</td>
</tr>
</tbody>
</table>

**Essential Understandings for Students**

- Why do we estimate a line of best fit for a scatterplot? A line of best fit helps in making interpretations and predictions about the situation modeled in the data set.

- What are the inferences that can be drawn from sets of data points having a positive relationship, a negative relationship, and no relationship? Sets of data points with positive relationships demonstrate that the values of the two variables are increasing. A negative relationship indicates that as the value of the independent variable increases, the value of the dependent variable decreases.

**Essential Knowledge and Skills (Student Objectives)**

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to

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**Suggested Textbook Resources**

- **Online Student Edition Textbook**
  

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  - Section 9 – 1
  - Section 9 - 2
  - Section 9 – 6
  - Section 9 – 7
  - Section 11 – 6
  - Section 11 – 6a
  - Section 11 – 6b
  - PS2

**Suggested Technology Materials**

- **Smart Board Activities**
  

**Pre-test, Post-test, Formative Assessments, Homework, Classwork**
<table>
<thead>
<tr>
<th>Week 25 &amp; 26</th>
<th>8.14</th>
<th>The student will make connections between any two representations (tables, graphs, words, and rules) of a given relationship.</th>
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<tbody>
<tr>
<td><strong>Essential Understandings for Students</strong></td>
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<tr>
<td>• What is the relationship among tables, graphs, words, and rules in modeling a given situation? Any given relationship can be represented by all four.</td>
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<td><strong>Essential Knowledge and Skills (Student Objectives)</strong></td>
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<tr>
<td>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</td>
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<tr>
<td>• Graph in a coordinate plane ordered pairs that represent a relation.</td>
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<tr>
<td>• Describe and represent relations and functions, using tables, graphs, words, and rules. Given one representation, students will be able to represent the relation in another form.</td>
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<td>• Relate and compare different representations for the same relation.</td>
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<td>• Section 11 – 2</td>
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<td>• Section 11 – 3a</td>
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<td>• Section 11 - 3</td>
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<td><strong>Understanding Math: Graphing</strong></td>
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<tr>
<td>• Section 5: Relations, Equations, and Functions</td>
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<tr>
<td>• Section 6: Linear Relations</td>
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<tr>
<td><strong>Understanding Math: Equations</strong></td>
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<td>• Section 5: Problem Solving</td>
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<td><strong>Understanding Math: Algebra</strong></td>
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<tr>
<td>• Section 3: Patterns, Patterns, Patterns</td>
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<tr>
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<thead>
<tr>
<th>Week 27 &amp; 28</th>
<th>8.15</th>
<th>The student will a) solve multistep linear equations in one variable on one and two sides of the equation; b) solve two-step linear inequalities and graph the results on a number line; and</th>
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<td>• Section 10 – 2</td>
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</table>
### Essential Understandings for Students

- How does the solution to an equation differ from the solution to an inequality? While a linear equation has only one replacement value for the variable that makes the equation true, an inequality can have more than one.

### Essential Knowledge and Skills (Student Objectives)

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to:

- Solve two- to four-step linear equations in one variable using concrete materials, pictorial representations, and paper and pencil illustrating the steps performed.
- Solve two-step inequalities in one variable by showing the steps and using algebraic sentences.
- Graph solutions to two-step linear inequalities on a number line.
- Identify properties of operations used to solve an equation from among:
  - the commutative properties of addition and multiplication;
  - the associative properties of addition and multiplication;
  - the distributive property;
  - the identity properties of addition and multiplication;
  - the zero property of multiplication;
  - the additive inverse property; and
  - the multiplicative inverse property.

### Suggested Technology Materials

**Understanding Math: Equations**
- Section 2: Solving One Step Equations
- Section 3: Solving Two Step Equations
- Section 4: Solving Multi Step Equations
- Section 7: Inequalities

**Smart Board Activities**
<table>
<thead>
<tr>
<th>Week 29</th>
<th>8.16</th>
<th>The student will graph a linear equation in two variables.</th>
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<tr>
<td><strong>Essential Understandings for Students</strong></td>
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<td>Any situation with a constant rate can be represented by a linear equation.</td>
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<td><strong>Essential Knowledge and Skills (Student Objectives)</strong></td>
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<td>Construct a table of ordered pairs by substituting values for ( x ) in a linear equation to find values for ( y ).</td>
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<td>Plot in the coordinate plane ordered pairs ((x, y)) from a table.</td>
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<td>Connect the ordered pairs to form a straight line (a continuous function).</td>
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<td>Interpret the unit rate of the proportional relationship graphed as the slope of the graph, and compare two different proportional relationships represented in different ways.</td>
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<td>Section 6: Linear Relations</td>
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<td>Section 8: Equation of a Straight Line</td>
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The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to
- Construct a table of ordered pairs by substituting values for \( x \) in a linear equation to find values for \( y \).
- Plot in the coordinate plane ordered pairs \((x, y)\) from a table.
- Connect the ordered pairs to form a straight line (a continuous function).
- Interpret the unit rate of the proportional relationship graphed as the slope of the graph, and compare two different proportional relationships represented in different ways.

**8.17** The student will identify the domain, range, independent variable or dependent variable in a given situation.

**Essential Understandings for Students**

- What are the similarities and differences among the terms domain, range, independent variable and dependent variable? The value of the dependent variable changes as the independent variable changes. The domain is the set of all input values for the independent variable. The range is the set of all possible values for the dependent variable.

**Essential Knowledge and Skills (Student Objectives)**

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to
- Apply the following algebraic terms appropriately: domain, range, independent variable, and dependent variable.
<table>
<thead>
<tr>
<th>Week 30</th>
<th>Number and Number Sense, Computation and Estimation Strand – 14 questions 8.1, 8.2, 8.3, 8.4, 8.5</th>
<th>Teacher-Made Strand Tests, Released Tests, Jefferson Labs, E-Pat, materials from math PASS Coach,</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 31</td>
<td>Measurement and Geometry – 18 questions 8.6, 8.7, 8.8, 8.9, 8.10, 8.11</td>
<td>Teacher-Made Strand Tests, Released Tests, Jefferson Labs, E-Pat, materials from math PASS Coach,</td>
</tr>
<tr>
<td>Week 32</td>
<td>Probability, Statistics, Patterns, Functions, and Algebra – 22 questions 8.12, 8.13, 8.14, 8.15, 8.16, 8.17</td>
<td>Teacher-Made Strand Tests, Released Tests, Jefferson Labs, E-Pat, materials from math PASS Coach,</td>
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<tr>
<td>Week 33</td>
<td>Probability, Statistics, Patterns, Functions, and Algebra – 22 questions 8.12, 8.13, 8.14, 8.15, 8.16, 8.17</td>
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<tr>
<td>Week 34</td>
<td>Individualized instruction and individualized remediation</td>
<td>Individualized tests and quizzes based on data from SIMs test and students’ identified weakness(es)</td>
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<tr>
<td>Week 35</td>
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<tr>
<td>Week 36</td>
<td>Introduction to Algebra I</td>
<td>Suggested Topics: Slope</td>
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