

**Master 1.1**

## Unit Rubric: Square Roots and the Pythagorean Theorem

	<b>Not Yet Adequate</b>	<b>Adequate</b>	<b>Proficient</b>	<b>Excellent</b>
<b>Conceptual Understanding</b>				
<ul style="list-style-type: none"> <li>Shows understanding by explaining and/or demonstrating:                             <ul style="list-style-type: none"> <li>– if a given number is a perfect square</li> <li>– which factor of a given perfect square is the square root</li> <li>– strategies for determining approximate square root of a non-perfect square</li> <li>– the Pythagorean Theorem</li> </ul> </li> </ul>	little understanding; may be unable to demonstrate or explain: <ul style="list-style-type: none"> <li>– if a given number is perfect square</li> <li>– which factor of a given perfect square is the square root</li> <li>– approximate square root of a non-perfect square</li> <li>– the Pythagorean Theorem</li> </ul>	some understanding; partially able to demonstrate or explain: <ul style="list-style-type: none"> <li>– if a given number is perfect square</li> <li>– which factor of a given perfect square is the square root</li> <li>– approximate square root of a non-perfect square</li> <li>– the Pythagorean Theorem</li> </ul>	shows understanding; able to demonstrate and explain: <ul style="list-style-type: none"> <li>– if a given number is perfect square</li> <li>– which factor of a given perfect square is the square root</li> <li>– approximate square root of a non-perfect square</li> <li>– the Pythagorean Theorem</li> </ul>	shows depth of understanding; in various contexts, demonstrates and explains: <ul style="list-style-type: none"> <li>– if a given number is perfect square</li> <li>– which factor of a given perfect square is the square root</li> <li>– approximate square root of a non-perfect square</li> <li>– the Pythagorean Theorem</li> </ul>
<b>Procedural Knowledge</b>				
<ul style="list-style-type: none"> <li>Accurately determines:                             <ul style="list-style-type: none"> <li>– the square of a given number</li> <li>– square root of a given perfect square</li> <li>– approximate square root of a non-perfect square</li> <li>– whether a given triangle is a right triangle</li> <li>– the measure of the third side of a given triangle, given the measure of two sides</li> </ul> </li> </ul>	limited accuracy; major errors or omissions in determining: <ul style="list-style-type: none"> <li>– square of a number</li> <li>– square root of a perfect square</li> <li>– approximate square root of a non-perfect square</li> <li>– if a triangle is a right triangle</li> <li>– the measure of the third side of a right triangle</li> </ul>	partially accurate; frequent minor errors or omissions in determining: <ul style="list-style-type: none"> <li>– square of a number</li> <li>– square root of a perfect square</li> <li>– approximate square root of a non-perfect square</li> <li>– if a triangle is a right triangle</li> <li>– the measure of the third side of a right triangle</li> </ul>	generally accurate; few errors or omissions in determining: <ul style="list-style-type: none"> <li>– square of a number</li> <li>– square root of a perfect square</li> <li>– approximate square root of a non-perfect square</li> <li>– if a triangle is a right triangle</li> <li>– the measure of the third side of a right triangle</li> </ul>	accurate and precise; rarely makes errors or omissions in determining: <ul style="list-style-type: none"> <li>– square of a number</li> <li>– square root of a perfect square</li> <li>– approximate square root of a non-perfect square</li> <li>– if a triangle is a right triangle</li> <li>– the measure of the third side of a right triangle</li> </ul>
<b>Problem-Solving Skills</b>				
<ul style="list-style-type: none"> <li>Solves problems by applying understanding of squares and square roots, and of the Pythagorean Theorem</li> </ul>	does not successfully solve problems involving applications of squares, square root or the Pythagorean Theorem	partially solves problems involving applications of squares, square root or the Pythagorean Theorem	successfully solves most problems involving applications of squares, square root or the Pythagorean Theorem	effectively solves problems in a range of contexts involving applications of squares, square root or the Pythagorean Theorem
<b>Communication</b>				
<ul style="list-style-type: none"> <li>Records and explains reasoning and procedures clearly and completely, including appropriate terminology</li> </ul>	does not record and explain reasoning and procedures clearly and completely	records and explains reasoning and procedures with partial clarity; may be incomplete	records and explains reasoning and procedures clearly and completely	records and explains reasoning and procedures with precision and thoroughness

**Master 1.3**

**Performance Assessment Rubric:  
The Locker Problem**

	<b>Not Yet Adequate</b>	<b>Adequate</b>	<b>Proficient</b>	<b>Excellent</b>
<b>Conceptual Understanding</b>				
<ul style="list-style-type: none"> <li>Shows understanding of number patterns by:               <ul style="list-style-type: none"> <li>describing the locker chart in terms of perfect squares and developing a rule that works</li> <li>describing and explaining patterns in the chart for square numbers</li> </ul> </li> </ul>	shows very limited understanding by giving inappropriate explanations of: <ul style="list-style-type: none"> <li>the locker pattern</li> <li>a rule that works</li> <li>patterns in the square number chart</li> <li>explanations for answers to part 7</li> </ul>	shows limited understanding by giving appropriate but incomplete explanations of: <ul style="list-style-type: none"> <li>the locker pattern</li> <li>a rule that works</li> <li>patterns in the square number chart</li> <li>explanations for answers to part 7</li> </ul>	shows understanding by giving appropriate explanations of: <ul style="list-style-type: none"> <li>the locker pattern</li> <li>a rule that works</li> <li>patterns in the square number chart</li> <li>explanations for answers to part 7</li> </ul>	shows thorough understanding by giving appropriate and complete explanations of: <ul style="list-style-type: none"> <li>the locker pattern</li> <li>a rule that works</li> <li>patterns in the square number chart</li> <li>explanations for answers to part 7</li> </ul>
<b>Procedural Knowledge</b>				
<ul style="list-style-type: none"> <li>Accurately:               <ul style="list-style-type: none"> <li>constructs and labels charts</li> <li>calculates perfect squares to determine which lockers would be open (for 100 and 400 lockers)</li> <li>determines answers for questions about Pythagorean triples</li> <li>identifies Pythagorean triples</li> </ul> </li> </ul>	limited accuracy; major errors or omissions in: <ul style="list-style-type: none"> <li>constructing and labelling charts</li> <li>determining which lockers would be open</li> <li>answering questions about Pythagorean triples</li> <li>identifying Pythagorean triples</li> </ul>	partially accurate; some errors or omissions in: <ul style="list-style-type: none"> <li>constructing and labelling charts</li> <li>determining which lockers would be open</li> <li>answering questions about Pythagorean triples</li> <li>identifying Pythagorean triples</li> </ul>	generally accurate; few errors or omissions in: <ul style="list-style-type: none"> <li>constructing and labelling charts</li> <li>determining which lockers would be open</li> <li>answering questions about Pythagorean triples</li> <li>identifying Pythagorean triples</li> </ul>	accurate and precise; very few or no errors in: <ul style="list-style-type: none"> <li>constructing and labelling charts</li> <li>determining which lockers would be open</li> <li>answering questions about Pythagorean triples</li> <li>identifying Pythagorean triples</li> </ul>
<b>Problem-Solving Skills</b>				
<ul style="list-style-type: none"> <li>Uses appropriate strategies to solve the problems successfully, and explain the solutions</li> </ul>	uses few effective strategies; does not solve the problems	uses some appropriate strategies, with partial success; may have difficulty explaining the solutions	uses appropriate strategies to successfully solve most of the problems and explain solutions	uses effective and often innovative strategies to successfully solve the problems and explain solutions
<b>Communication</b>				
<ul style="list-style-type: none"> <li>Presents work and explanations clearly, using appropriate mathematical terminology (e.g., perfect square)</li> </ul>	does not present work and explanations clearly, uses few appropriate mathematical terms	presents work and explanations with some clarity, using some appropriate mathematical terms	presents work and explanations clearly, using appropriate mathematical terms	presents work and explanations precisely, using a range of appropriate mathematical terms

**Master 2.1**

**Unit Rubric: Integers**

	<b>Not Yet Adequate</b>	<b>Adequate</b>	<b>Proficient</b>	<b>Excellent</b>
<b>Conceptual Understanding</b>				
<ul style="list-style-type: none"> <li>Shows understanding of integers by explaining and/or demonstrating:               <ul style="list-style-type: none"> <li>– the operation needed to solve a given problem</li> <li>– the processes of multiplying and dividing two integers</li> <li>– a rule for determining the sign of the product or quotient of integers</li> </ul> </li> </ul>	little understanding; may be unable to demonstrate or explain: <ul style="list-style-type: none"> <li>– the operation needed</li> <li>– the processes of multiplying and dividing</li> <li>– a rule for determining the sign of products or quotients</li> </ul>	some understanding; partially able to demonstrate or explain: <ul style="list-style-type: none"> <li>– the operation needed</li> <li>– the processes of multiplying and dividing</li> <li>– a rule for determining the sign of products or quotients</li> </ul>	shows understanding; able to demonstrate and explain: <ul style="list-style-type: none"> <li>– the operation needed</li> <li>– the processes of multiplying and dividing</li> <li>– a rule for determining the sign of products or quotients</li> </ul>	shows depth of understanding; in various contexts, demonstrates and explains: <ul style="list-style-type: none"> <li>– the operation needed</li> <li>– the processes of multiplying and dividing</li> <li>– a rule for determining the sign of products or quotients</li> </ul>
<b>Procedural Knowledge</b>				
<ul style="list-style-type: none"> <li>Accurately:               <ul style="list-style-type: none"> <li>– multiplies two integers (up to 2-digit by 2-digit without technology)</li> <li>– divides integers (2-digit by 2-digit with the use of technology)</li> <li>– uses the order of operations</li> </ul> </li> </ul>	limited accuracy; major errors or omissions in: <ul style="list-style-type: none"> <li>– multiplying integers</li> <li>– dividing integers (with technology)</li> <li>– using order of operations</li> </ul>	partially accurate; frequent minor errors or omissions in: <ul style="list-style-type: none"> <li>– multiplying integers</li> <li>– dividing integers (with technology)</li> <li>– using order of operations</li> </ul>	generally accurate; few errors or omissions in: <ul style="list-style-type: none"> <li>– multiplying integers</li> <li>– dividing integers (with technology)</li> <li>– using order of operations</li> </ul>	accurate and precise; rarely makes errors or omissions in: <ul style="list-style-type: none"> <li>– multiplying integers</li> <li>– dividing integers (with technology)</li> <li>– using order of operations</li> </ul>
<b>Problem-Solving Skills</b>				
<ul style="list-style-type: none"> <li>Solves problems that involve multiplying and dividing integers</li> </ul>	may be unable to solve problems involving multiplication and division of integers	able to partially solve problems involving multiplication and division of integers	successfully solves problems involving multiplication and division of integers	consistently successful in solving problems involving multiplication and division of integers; may be innovative
<b>Communication</b>				
<ul style="list-style-type: none"> <li>Records and explains reasoning and procedures clearly and completely, including appropriate terminology (for example, positive integer, negative integer, opposite integer)</li> </ul>	does not record and explain reasoning and procedures clearly and completely	records and explains reasoning and procedures with partial clarity; may be incomplete	records and explains reasoning and procedures clearly and completely	records and explains reasoning and procedures with precision and thoroughness

**Master 2.3**

## Performance Assessment Rubric: Charity Golf Tournament

	<b>Not Yet Adequate</b>	<b>Adequate</b>	<b>Proficient</b>	<b>Excellent</b>
<b>Conceptual Understanding</b>				
<ul style="list-style-type: none"> <li>Explanations show understanding of integers</li> </ul>	shows very limited understanding; explanations are omitted or inappropriate	shows partial understanding; explanations are often incomplete or somewhat confusing	shows understanding; explanations are appropriate	shows thorough understanding; explanations are effective and thorough
<b>Procedural Knowledge</b>				
<ul style="list-style-type: none"> <li>Accurately:                             <ul style="list-style-type: none"> <li>writes and evaluates integer expressions</li> <li>creates tables from the information given</li> <li>calculates total scores and scores in relation to par (by multiplying or adding integers)</li> <li>compares and orders integers to determine prize-winners</li> </ul> </li> </ul>	limited accuracy; major errors or omissions in: <ul style="list-style-type: none"> <li>writing and evaluating integer expressions</li> <li>creating tables</li> <li>calculating total scores and scores in relation to par</li> <li>comparing and ordering integers</li> </ul>	partially accurate; some errors or omissions in: <ul style="list-style-type: none"> <li>writing and evaluating integer expressions</li> <li>creating tables</li> <li>calculating total scores and scores in relation to par</li> <li>comparing and ordering integers</li> </ul>	generally accurate; few errors or omissions in: <ul style="list-style-type: none"> <li>writing and evaluating integer expressions</li> <li>creating tables</li> <li>calculating total scores and scores in relation to par</li> <li>comparing and ordering integers</li> </ul>	accurate and precise; very few or no errors in: <ul style="list-style-type: none"> <li>writing and evaluating integer expressions</li> <li>creating tables</li> <li>calculating total scores and scores in relation to par</li> <li>comparing and ordering integers</li> </ul>
<b>Problem-Solving Skills</b>				
<ul style="list-style-type: none"> <li>Uses appropriate strategies to solve problems successfully and explain the solutions</li> </ul>	uses few effective strategies; does not solve problems	uses some appropriate strategies, with partial success, to solve problems; may have difficulty explaining the solutions	uses appropriate strategies to successfully solve most problems and explain solutions	uses effective and often innovative strategies to successfully solve problems and explain solutions
<b>Communication</b>				
<ul style="list-style-type: none"> <li>Presents work and explanations clearly, using appropriate mathematical terminology</li> </ul>	does not present work and explanations clearly, uses few appropriate mathematical terms	presents work and explanations with some clarity, using some appropriate mathematical terms	presents work and explanations clearly, using appropriate mathematical terms	presents work and explanations precisely, using a range of appropriate mathematical terms

**Master 3.1**

**Unit Rubric: Operations with Fractions**

	<b>Not Yet Adequate</b>	<b>Adequate</b>	<b>Proficient</b>	<b>Excellent</b>
<b>Conceptual Understanding</b>				
<ul style="list-style-type: none"> <li>Shows understanding of fractions by demonstrating and explaining:               <ul style="list-style-type: none"> <li>the operation needed to solve a problem</li> <li>contexts that require multiplying and dividing fractions</li> <li>estimation of products and quotients</li> <li>multiplying a fraction by a whole and by a fraction</li> <li>dividing a fraction by a whole and by a fraction</li> <li>rules for multiplying and dividing fractions</li> </ul> </li> </ul>	little understanding; may be unable to demonstrate or explain: <ul style="list-style-type: none"> <li>the operation needed</li> <li>contexts that require multiplying and dividing fractions</li> <li>estimation of products and quotients</li> <li>multiplication with fractions</li> <li>division with fractions</li> <li>rules for multiplying and dividing fractions</li> </ul>	some understanding; partially able to demonstrate or explain: <ul style="list-style-type: none"> <li>the operation needed</li> <li>contexts that require multiplying and dividing fractions</li> <li>estimation of products and quotients</li> <li>multiplication with fractions</li> <li>division with fractions</li> <li>rules for multiplying and dividing fractions</li> </ul>	shows understanding; able to demonstrate and explain: <ul style="list-style-type: none"> <li>the operation needed</li> <li>contexts that require multiplying and dividing fractions</li> <li>estimation of products and quotients</li> <li>multiplication with fractions</li> <li>division with fractions</li> <li>rules for multiplying and dividing fractions</li> </ul>	shows depth of understanding; in various contexts, demonstrates and explains: <ul style="list-style-type: none"> <li>the operation needed</li> <li>contexts that require multiplying and dividing fractions</li> <li>estimation of products and quotients</li> <li>multiplication with fractions</li> <li>division with fractions</li> <li>rules for multiplying and dividing fractions</li> </ul>
<b>Procedural Knowledge</b>				
<ul style="list-style-type: none"> <li>Accurately:               <ul style="list-style-type: none"> <li>multiplies a fraction by a whole and by a fraction</li> <li>divides a fraction by a whole and by a fraction</li> <li>multiplies and divides mixed numbers</li> <li>uses correct order of operations</li> </ul> </li> </ul>	limited accuracy; major errors or omissions in: <ul style="list-style-type: none"> <li>multiplying fractions</li> <li>dividing fractions</li> <li>multiplying and dividing mixed numbers</li> <li>using order of operations</li> </ul>	partially accurate; frequent minor errors or omissions in: <ul style="list-style-type: none"> <li>multiplying fractions</li> <li>dividing fractions</li> <li>multiplying and dividing mixed numbers</li> <li>using order of operations</li> </ul>	generally accurate; few errors or omissions in: <ul style="list-style-type: none"> <li>multiplying fractions</li> <li>dividing fractions</li> <li>multiplying and dividing mixed numbers</li> <li>using order of operations</li> </ul>	accurate and precise; no errors or omissions in: <ul style="list-style-type: none"> <li>multiplying fractions</li> <li>dividing fractions</li> <li>multiplying and dividing mixed numbers</li> <li>using order of operations</li> </ul>
<b>Problem-Solving Skills</b>				
<ul style="list-style-type: none"> <li>Solves problems that involve multiplying and dividing fractions</li> </ul>	may be unable to solve problems involving multiplication and division of fractions	partially solves problems involving multiplication and division of fractions	successfully solves problems involving multiplication and division of fractions	consistently successful in solving problems involving multiplication and division of fractions; may be innovative
<b>Communication</b>				
<ul style="list-style-type: none"> <li>Records and explains reasoning and procedures clearly and completely, including appropriate terminology</li> </ul>	does not record and explain reasoning and procedures clearly and completely	records and explains reasoning and procedures with partial clarity; may be incomplete	records and explains reasoning and procedures clearly and completely	records and explains reasoning and procedures with precision and thoroughness

**Master 3.3**

**Performance Assessment Rubric:  
Sierpinski Triangle**

	<b>Not Yet Adequate</b>	<b>Adequate</b>	<b>Proficient</b>	<b>Excellent</b>
<b>Conceptual Understanding</b>				
<ul style="list-style-type: none"> <li>Explanations show understanding of operations required to solve problems involving perimeter and area involving fractions</li> </ul>	shows very limited understanding; explanations are omitted or inappropriate	shows partial understanding; explanations are often incomplete or somewhat confusing	shows understanding; explanations are appropriate	shows thorough understanding; explanations are effective and thorough
<b>Procedural Knowledge</b>				
<ul style="list-style-type: none"> <li>Accurately:               <ul style="list-style-type: none"> <li>constructs diagrams</li> <li>completes tables</li> <li>multiplies fractions to find area</li> <li>multiplies fractions to find perimeter</li> </ul> </li> </ul>	limited accuracy; major errors or omissions in: <ul style="list-style-type: none"> <li>constructing diagrams</li> <li>completing tables</li> <li>multiplying fractions to find area</li> <li>multiplying fractions to find perimeter</li> </ul>	partially accurate; some errors or omissions in: <ul style="list-style-type: none"> <li>constructing diagrams</li> <li>completing tables</li> <li>multiplying fractions to find area</li> <li>multiplying fractions to find perimeter</li> </ul>	generally accurate; few errors or omissions in: <ul style="list-style-type: none"> <li>constructing diagrams</li> <li>completing tables</li> <li>multiplying fractions to find area</li> <li>multiplying fractions to find perimeter</li> </ul>	accurate and precise; very few or no errors in: <ul style="list-style-type: none"> <li>constructing diagrams</li> <li>completing tables</li> <li>multiplying fractions to find area</li> <li>multiplying fractions to find perimeter</li> </ul>
<b>Problem-Solving Skills</b>				
<ul style="list-style-type: none"> <li>Uses appropriate strategies to solve the problems successfully and explain the solutions</li> </ul>	uses few effective strategies; does not solve the problems	uses some appropriate strategies, with partial success; may have difficulty explaining the solutions	uses appropriate strategies to successfully solve most of the problems and explain solutions	uses effective and often innovative strategies to successfully solve the problems and explain solutions
<b>Communication</b>				
<ul style="list-style-type: none"> <li>Presents work and explanations clearly, using appropriate mathematical terminology</li> </ul>	does not present work and explanations clearly, uses few appropriate mathematical terms	presents work and explanations with some clarity, using some appropriate mathematical terms	presents work and explanations clearly, using appropriate mathematical terms	presents work and explanations precisely, using a range of appropriate mathematical terms

**Master 4.1**

**Unit Rubric:  
Measuring Prisms and Cylinders**

	<b>Not Yet Adequate</b>	<b>Adequate</b>	<b>Proficient</b>	<b>Excellent</b>
<b>Conceptual Understanding</b>				
Shows understanding of nets, prisms and cylinders by: – predicting the objects that can be constructed from a given net – explaining relationships between: – area of 2-D shapes and surface area of a 3-D object – area of 2-D shapes and surface area of a 3-D object – area of the base of a right 3-D object and the formula for volume of the object	little understanding; may be unable to demonstrate or explain relationships between: – nets and 3-D objects – area of 2-D shapes and surface area of a 3-D object – area of the base of right 3-D objects and the formula for volume	some understanding; partially able to demonstrate or explain relationships between: – nets and 3-D objects – area of 2-D shapes and surface area of a 3-D object – area of the base of right 3-D objects and the formula for volume	shows understanding; able to demonstrate and explain relationships between: – nets and 3-D objects – area of 2-D shapes and surface area of a 3-D object – area of the base of right 3-D objects and the formula for volume	shows depth of understanding; in various contexts, demonstrates and explains relationships between: – nets and 3-D objects – area of 2-D shapes and surface area of a 3-D object – area of the base of right 3-D objects and the formula for volume
<b>Procedural Knowledge</b>				
Accurately: – draws and constructs nets – determines surface area of a prism – determines surface area of a cylinder – determines volume of right prisms – determines the volume of right cylinders	limited accuracy; often makes major errors/omissions in: – drawing and constructing nets – determining – surface area of a prism – surface area of a cylinder – volume of right prisms – volume of right cylinders	partially accurate; makes frequent minor errors/ omissions in: – drawing and constructing nets – determining – surface area of a prism – surface area of a cylinder – volume of right prisms – volume of right cylinders	generally accurate; makes few errors/ omissions in: – drawing and constructing nets – determining – surface area of a prism – surface area of a cylinder – volume of right prisms – volume of right cylinders	accurate and precise; rarely makes errors/omissions in: – drawing and constructing nets – determining – surface area of a prism – surface area of a cylinder – volume of right prisms – volume of right cylinders
<b>Problem-Solving Skills</b>				
Solves problems that involve surface area and volume of prisms and cylinders	may be unable to solve problems involving surface area and volume of prisms and cylinders	able to partially solve problems involving surface area and volume of prisms and cylinders	successfully solves problems involving surface area and volume of prisms and cylinders	consistently successful in solving problems involving surface area and volume of prisms and cylinders; may be innovative
<b>Communication</b>				
Records and explains reasoning and procedures clearly and completely, including appropriate terminology (e.g., net, surface area)	does not record and explain reasoning and procedures clearly and completely	records and explains reasoning and procedures with partial clarity; may be incomplete	records and explains reasoning and procedures clearly and completely	records and explains reasoning and procedures with precision and thoroughness

**Master 4.3**

**Performance Assessment Rubric:  
Prism Diorama**

	<b>Not Yet Adequate</b>	<b>Adequate</b>	<b>Proficient</b>	<b>Excellent</b>
<b>Conceptual Understanding</b>				
<ul style="list-style-type: none"> <li>Shows understanding by selecting and applying concepts of surface area and volume appropriately</li> </ul>	shows very limited understanding; unable to apply required concepts	shows partial understanding; applies some required concepts	shows understanding; applies required concepts	shows thorough understanding; consistently applies required concepts
<b>Procedural Knowledge</b>				
<ul style="list-style-type: none"> <li>Accurately:               <ul style="list-style-type: none"> <li>creates a plan on grid paper</li> <li>constructs a model of the plan</li> <li>records dimensions of prisms</li> <li>calculates each surface area</li> <li>calculates the volume of water</li> </ul> </li> </ul>	limited accuracy; major errors or omissions in: <ul style="list-style-type: none"> <li>creating a plan</li> <li>constructing a model</li> <li>recording dimensions of prisms</li> <li>calculating each surface area</li> <li>calculating the volume of water</li> </ul>	partially accurate; some errors or omissions in: <ul style="list-style-type: none"> <li>creating a plan</li> <li>constructing a model</li> <li>recording dimensions of prisms</li> <li>calculating each surface area</li> <li>calculating the volume of water</li> </ul>	generally accurate; few errors or omissions in: <ul style="list-style-type: none"> <li>creating a plan</li> <li>constructing a model</li> <li>recording dimensions of prisms</li> <li>calculating each surface area</li> <li>calculating the volume of water</li> </ul>	accurate and precise; very few or no errors in: <ul style="list-style-type: none"> <li>creating a plan</li> <li>constructing a model</li> <li>recording dimensions of prisms</li> <li>calculating each surface area</li> <li>calculating the volume of water</li> </ul>
<b>Problem-Solving Skills</b>				
<ul style="list-style-type: none"> <li>Uses appropriate strategies (e.g., estimating, using nets, applying formulas) to design and complete calculations</li> </ul>	uses few effective strategies; does not complete the task successfully	uses some appropriate strategies; partially successful	uses appropriate strategies; successful	uses effective and often innovative strategies; successful (may add complexity to the problem by incorporating additional features )
<b>Communication</b>				
<ul style="list-style-type: none"> <li>Presents work and explanations clearly, using appropriate mathematical terminology</li> </ul>	does not present work and explanations clearly, uses few appropriate mathematical terms	presents work and explanations with some clarity, using some appropriate mathematical terms	presents work and explanations clearly, using appropriate mathematical terms	presents work and explanations precisely, using a range of appropriate mathematical terms

**Master 5.1**

**Unit Rubric: Percent, Ratio, and Rate**

	<b>Not Yet Adequate</b>	<b>Adequate</b>	<b>Proficient</b>	<b>Excellent</b>
<b>Conceptual Understanding</b>				
<ul style="list-style-type: none"> <li>Shows understanding by describing or explaining:               <ul style="list-style-type: none"> <li>– contexts where percent may be greater than 100%, or between 0% and 1%</li> <li>– real-life examples of ratios and rates</li> <li>– why a rate cannot be represented as a percent</li> <li>– the meaning of <math>\frac{a}{b}</math> in a given context</li> </ul> </li> </ul>	little understanding; may be unable to describe or explain: <ul style="list-style-type: none"> <li>– contexts where percent may be greater than 100%, or between 0% and 1%</li> <li>– real-life examples of ratios and rates</li> <li>– why a rate cannot be represented as a percent</li> <li>– the meaning of <math>\frac{a}{b}</math> in a given context</li> </ul>	some understanding; partially able to describe or explain: <ul style="list-style-type: none"> <li>– contexts where percent may be greater than 100%, or between 0% and 1%</li> <li>– real-life examples of ratios and rates</li> <li>– why a rate cannot be represented as a percent</li> <li>– the meaning of <math>\frac{a}{b}</math> in a given context</li> </ul>	shows understanding; able to describe or explain: <ul style="list-style-type: none"> <li>– contexts where percent may be greater than 100%, or between 0% and 1%</li> <li>– real-life examples of ratios and rates</li> <li>– why a rate cannot be represented as a percent</li> <li>– the meaning of <math>\frac{a}{b}</math> in a given context</li> </ul>	shows depth of understanding; in various contexts; describes or explains: <ul style="list-style-type: none"> <li>– contexts where percent may be greater than 100%, or between 0% and 1%</li> <li>– real-life examples of ratios and rates</li> <li>– why a rate cannot be represented as a percent</li> <li>– the meaning of <math>\frac{a}{b}</math> in a given context</li> </ul>
<b>Procedural Knowledge</b>				
<ul style="list-style-type: none"> <li>Accurately:               <ul style="list-style-type: none"> <li>– represents percent using grid paper, decimals, or fractions</li> <li>– relates percent, decimals, and fractions</li> <li>– calculates percents, combined percents, and percent of a percent</li> <li>– expresses a given two- or three-term ratio</li> <li>– expresses a given rate (words or symbols)</li> </ul> </li> </ul>	limited accuracy; major errors or omissions in: <ul style="list-style-type: none"> <li>– representing percent</li> <li>– relating percents, decimals, and fractions</li> <li>– calculating percents; combined percents; percent of a percent</li> <li>– expressing a given 2- or 3-term ratio</li> <li>– expressing a given rate</li> </ul>	partially accurate; frequent minor errors or omissions in: <ul style="list-style-type: none"> <li>– representing percent</li> <li>– relating percents, decimals, and fractions</li> <li>– calculating percents; combined percents; percent of a percent</li> <li>– expressing a given 2- or 3-term ratio</li> <li>– expressing a given rate</li> </ul>	generally accurate; few errors or omissions in: <ul style="list-style-type: none"> <li>– representing percent</li> <li>– relating percents, decimals, and fractions</li> <li>– calculating percents; combined percents; percent of a percent</li> <li>– expressing a given 2- or 3-term ratio</li> <li>– expressing a given rate</li> </ul>	accurate and precise; no errors or omissions in: <ul style="list-style-type: none"> <li>– representing percent</li> <li>– relating percents, decimals, and fractions</li> <li>– calculating percents; combined percents; percent of a percent</li> <li>– expressing a given 2- or 3-term ratio</li> <li>– expressing a given rate</li> </ul>
<b>Problem-Solving Skills</b>				
<ul style="list-style-type: none"> <li>Solves problems that involve percent, ratio, or rate</li> </ul>	may be unable to solve problems involving percent, ratio, or rate	partially solves problems involving percent, ratio or rate	successfully solves problems involving percent, ratio, or rate	consistently successful in solving problems involving percent, ratio, or rate; innovative
<b>Communication</b>				
<ul style="list-style-type: none"> <li>Records and explains reasoning and procedures clearly and completely, including appropriate terminology</li> </ul>	does not record and explain reasoning and procedures clearly and completely	records and explains reasoning and procedures with partial clarity; may be incomplete	records and explains reasoning and procedures clearly and completely	records and explains reasoning and procedures with precision and thoroughness

**Master 5.3**

**Performance Assessment Rubric:  
What Is the Smartest, Fastest, Oldest?**

	<b>Not Yet Adequate</b>	<b>Adequate</b>	<b>Proficient</b>	<b>Excellent</b>
<b>Conceptual Understanding</b>				
<ul style="list-style-type: none"> <li>Explanations and conclusions for each hypothesis show understanding of ratios and rates</li> </ul>	shows very limited understanding; does not provide appropriate explanations or conclusions	shows partial understanding by providing some appropriate explanations and conclusions; incomplete and/or flawed	shows understanding by providing appropriate and complete explanations and conclusions	shows thorough understanding by providing appropriate, detailed, and often insightful explanations and conclusions
<b>Procedural Knowledge</b>				
<ul style="list-style-type: none"> <li>Accurately calculates and compares ratios and rates, and verifies results</li> </ul>	limited accuracy; major errors or omissions in calculating and comparing ratios and rates	partially accurate; some errors or omissions in calculating and comparing ratios and rates	generally accurate; few errors or omissions in calculating and comparing ratios and rates	accurate and precise; no errors in calculating and comparing ratios and rates
<b>Problem-Solving Skills</b>				
<ul style="list-style-type: none"> <li>Chooses and applies appropriate strategies to solve each part of the problem</li> </ul>	uses few effective strategies; does not complete the task successfully	uses some appropriate strategies; partially successful	uses appropriate strategies; successful	uses effective and often innovative strategies; successful (may add complexity to the problem)
<b>Communication</b>				
<ul style="list-style-type: none"> <li>Presents work and explanations clearly, using appropriate mathematical terminology</li> </ul>	does not present work and explanations clearly, uses few appropriate mathematical terms	presents work and explanations with some clarity, using some appropriate mathematical terms	presents work and explanations clearly, using appropriate mathematical terms	presents work and explanations precisely, using a range of appropriate mathematical terms

**Master 6.1**

**Unit Rubric: Linear Equations and Graphing**

	<b>Not Yet Adequate</b>	<b>Adequate</b>	<b>Proficient</b>	<b>Excellent</b>
<b>Conceptual Understanding</b>				
<ul style="list-style-type: none"> <li>Shows understanding of linear equations and graphing by:               <ul style="list-style-type: none"> <li>describing the relationship between the variables of a given graph</li> <li>modelling a given problem with a linear equation</li> <li>representing the steps used to solve a given linear equation visually and symbolically</li> </ul> </li> </ul>	little understanding; may be unable to represent, demonstrate, or explain: <ul style="list-style-type: none"> <li>the relationship between variables on a graph</li> <li>modelling a problem with a linear equation</li> <li>steps used to solve a linear equation</li> </ul>	some understanding; partially able to represent, demonstrate, or explain: <ul style="list-style-type: none"> <li>the relationship between variables on a graph</li> <li>modelling a problem with a linear equation</li> <li>steps used to solve a linear equation</li> </ul>	shows understanding; able to represent, demonstrate, and explain: <ul style="list-style-type: none"> <li>the relationship between variables on a graph</li> <li>modelling a problem with a linear equation</li> <li>steps used to solve a linear equation</li> </ul>	shows depth of understanding; in various contexts; represents, demonstrates, and explains: <ul style="list-style-type: none"> <li>the relationship between variables on a graph</li> <li>modelling a problem with a linear equation</li> <li>steps used to solve a linear equation</li> </ul>
<b>Procedural Knowledge</b>				
<ul style="list-style-type: none"> <li>Accurately:               <ul style="list-style-type: none"> <li>graphs two-variable linear relations</li> <li>solves linear equations (models, symbols, pictures)</li> <li>verifies solutions</li> </ul> </li> </ul>	limited accuracy; major errors or omissions in: <ul style="list-style-type: none"> <li>graphing linear relations</li> <li>solving linear equations (models, symbols, pictures)</li> <li>verifying solutions</li> </ul>	partially accurate; frequent minor errors or omissions in: <ul style="list-style-type: none"> <li>graphing linear relations</li> <li>solving linear equations (models, symbols, pictures)</li> <li>verifying solutions</li> </ul>	generally accurate; few errors or omissions in: <ul style="list-style-type: none"> <li>graphing linear relations</li> <li>solving linear equations (models, symbols, pictures)</li> <li>verifying solutions</li> </ul>	accurate and precise; no errors or omissions in: <ul style="list-style-type: none"> <li>graphing linear relations</li> <li>solving linear equations (models, symbols, pictures)</li> <li>verifying solutions</li> </ul>
<b>Problem-Solving Skills</b>				
<ul style="list-style-type: none"> <li>Solves problems by using linear equations concretely, pictorially, and symbolically</li> </ul>	does not successfully solve problems using linear equations	solves some problems using linear equations	successfully solves most problems involving linear equations	effectively solves problems in a range of contexts involving linear equations
<b>Communication</b>				
<ul style="list-style-type: none"> <li>Records and explains reasoning and procedures clearly and completely, including appropriate terminology (for example, ordered pair, linear relation)</li> </ul>	does not record and explain reasoning and procedures clearly and completely	records and explains reasoning and procedures with partial clarity; may be incomplete	records and explains reasoning and procedures clearly and completely	records and explains reasoning and procedures with precision and thoroughness

**Master 6.3**

**Performance Assessment Rubric:  
Planning a Ski Trip**

	<b>Not Yet Adequate</b>	<b>Adequate</b>	<b>Proficient</b>	<b>Excellent</b>
<b>Conceptual Understanding</b>				
<ul style="list-style-type: none"> <li>Shows understanding of patterns and relations by:               <ul style="list-style-type: none"> <li>– choosing and applying appropriate procedures</li> <li>– explaining strategies used (Parts 1 and 4)</li> <li>– describing the relationship between variables in a graph (Part 4)</li> </ul> </li> </ul>	shows very limited understanding by: <ul style="list-style-type: none"> <li>– choosing inappropriate procedures</li> <li>– giving inadequate explanations</li> <li>– giving inappropriate description of relationship between variables in a graph</li> </ul>	shows limited understanding by: <ul style="list-style-type: none"> <li>– choosing appropriate procedures for parts of the problem</li> <li>– giving appropriate but incomplete explanations</li> <li>– giving partially appropriate description of relationship between variables in a graph</li> </ul>	shows understanding by: <ul style="list-style-type: none"> <li>– choosing appropriate procedures for most parts of the problem</li> <li>– giving appropriate explanations</li> <li>– giving appropriate description of relationship between variables in a graph</li> </ul>	shows thorough understanding by: <ul style="list-style-type: none"> <li>– choosing the most appropriate procedures for all parts of the problem</li> <li>– giving precise and thorough explanations</li> <li>– giving precise and thorough description of relationship between variables in a graph</li> </ul>
<b>Procedural Knowledge</b>				
<ul style="list-style-type: none"> <li>Accurately:               <ul style="list-style-type: none"> <li>– calculates and compares costs for two bus companies</li> <li>– writes and solves an equation to calculate number who rented skis (verifies solution)</li> <li>– uses a given equation to calculate temperatures</li> <li>– creates a table of values</li> <li>– graphs the relation</li> <li>– describes the relationship</li> </ul> </li> </ul>	limited accuracy; major errors or omissions in: <ul style="list-style-type: none"> <li>– calculating and comparing bus costs</li> <li>– writing and solving an equation; verifying solution</li> <li>– calculating temperatures</li> <li>– creating a table of values</li> <li>– graphing the relation</li> <li>– describing the relationship</li> </ul>	partially accurate; some minor errors or omissions in: <ul style="list-style-type: none"> <li>– calculating and comparing bus costs</li> <li>– writing and solving an equation; verifying solution</li> <li>– calculating temperatures</li> <li>– creating a table of values</li> <li>– graphing the relation</li> <li>– describing the relationship</li> </ul>	generally accurate; few minor errors or omissions in: <ul style="list-style-type: none"> <li>– calculating and comparing bus costs</li> <li>– writing and solving an equation; verifying solution</li> <li>– calculating temperatures</li> <li>– creating a table of values</li> <li>– graphing the relation</li> <li>– describing the relationship</li> </ul>	accurate and precise; no errors in: <ul style="list-style-type: none"> <li>– calculating and comparing bus costs</li> <li>– writing and solving an equation; verifying solution</li> <li>– calculating temperatures</li> <li>– creating a table of values</li> <li>– graphing the relation</li> <li>– describing the relationship</li> </ul>
<b>Problem-Solving Skills</b>				
<ul style="list-style-type: none"> <li>Uses appropriate strategies to solve problems using linear equations concretely, pictorially, and symbolically</li> </ul>	uses few appropriate strategies; does not successfully solve problems using linear equations and graphs	uses some appropriate strategies; solves some problems using linear equations and graphs	uses appropriate strategies; successfully solves most problems involving linear equations and graphs	uses effective and often innovative strategies; solves all problems involving linear equations and graphs
<b>Communication</b>				
<ul style="list-style-type: none"> <li>Presents work and explanations clearly, using appropriate mathematical terminology</li> </ul>	does not present work and explanations clearly, uses few appropriate mathematical terms	presents work and explanations with some clarity, uses some appropriate mathematical terms	presents work and explanations clearly, uses appropriate mathematical terms	presents work and explanations precisely, uses a range of appropriate mathematical terms

**Master 7.1**

**Unit Rubric: Data Analysis and Probability**

	<b>Not Yet Adequate</b>	<b>Adequate</b>	<b>Proficient</b>	<b>Excellent</b>
<b>Conceptual Understanding</b>				
<ul style="list-style-type: none"> <li>• Demonstrates and explains:               <ul style="list-style-type: none"> <li>– strengths and limitations of various types of graphs</li> <li>– choice of graph for a given data set and context/ purpose</li> <li>– how format and formatting choices affect interpretation</li> <li>– conclusions that can (and cannot) be supported by a given data set or graph</li> <li>– a rule for determining the probability of independent events</li> </ul> </li> </ul>	little understanding; may be unable to demonstrate or explain: <ul style="list-style-type: none"> <li>– strengths and limitations of various types of graphs</li> <li>– choice of graph</li> <li>– effect of format and formatting choices</li> <li>– conclusions that can (and cannot) be supported by a given data set or graph</li> <li>– a rule for probability of independent events</li> </ul>	some understanding; partially able to demonstrate or explain: <ul style="list-style-type: none"> <li>– strengths and limitations of various types of graphs</li> <li>– choice of graph</li> <li>– effect of format and formatting choices</li> <li>– conclusions that can (and cannot) be supported by a given data set or graph</li> <li>– a rule for probability of independent events</li> </ul>	shows understanding; able to demonstrate and explain: <ul style="list-style-type: none"> <li>– strengths and limitations of various types of graphs</li> <li>– choice of graph</li> <li>– effect of format and formatting choices</li> <li>– conclusions that can (and cannot) be supported by a given data set or graph</li> <li>– a rule for probability of independent events</li> </ul>	shows depth of understanding; in various contexts, demonstrates and explains: <ul style="list-style-type: none"> <li>– strengths and limitations of various types of graphs</li> <li>– choice of graph</li> <li>– effect of format and formatting choices</li> <li>– conclusions that can (and cannot) be supported by a given data set or graph</li> <li>– a rule for probability of independent events</li> </ul>
<b>Procedural Knowledge</b>				
<ul style="list-style-type: none"> <li>• Accurately:               <ul style="list-style-type: none"> <li>– compares information provided by different graphs for the same data set</li> <li>– identifies misrepresentations and misinterpretations</li> <li>– determines and verifies the probability of two independent events</li> </ul> </li> </ul>	limited accuracy; often makes major errors/ omissions in: <ul style="list-style-type: none"> <li>– comparing information in different graphs</li> <li>– identifying misrepresentations</li> <li>– identifying misinterpretations</li> <li>– determining probability</li> </ul>	partially accurate; makes frequent minor errors/omissions in: <ul style="list-style-type: none"> <li>– comparing information in different graphs</li> <li>– identifying misrepresentations</li> <li>– identifying misinterpretations</li> <li>– determining probability</li> </ul>	generally accurate; makes few errors/ omissions in: <ul style="list-style-type: none"> <li>– comparing information in different graphs</li> <li>– identifying misrepresentations</li> <li>– identifying misinterpretations</li> <li>– determining probability</li> </ul>	accurate and precise; rarely makes errors/ omissions in: <ul style="list-style-type: none"> <li>– comparing information in different graphs</li> <li>– identifying misrepresentations</li> <li>– identifying misinterpretations</li> <li>– determining probability</li> </ul>
<b>Problem-Solving Skills</b>				
<ul style="list-style-type: none"> <li>• Uses appropriate strategies to solve problems involving the probability of independent events</li> </ul>	does not use appropriate strategies to solve probability problems	uses some appropriate strategies with partial success to solve probability problems	uses appropriate strategies to successfully solve probability problems	consistently uses effective, and often innovative, strategies to solve probability problems
<b>Communication</b>				
<ul style="list-style-type: none"> <li>• Records and explains reasoning and procedures clearly and completely, including appropriate terminology (e.g., scale of a graph; outcome)</li> </ul>	does not record and explain reasoning and procedures clearly and completely	records and explains reasoning and procedures with partial clarity; may be incomplete	records and explains reasoning and procedures clearly and completely	records and explains reasoning and procedures with precision and thoroughness

**Master 7.3**

**Performance Assessment Rubric:  
Promoting Your Cereal**

	<b>Not Yet Adequate</b>	<b>Adequate</b>	<b>Proficient</b>	<b>Excellent</b>
<b>Conceptual Understanding</b>				
<ul style="list-style-type: none"> <li>Shows understanding of data presentation by choosing graphs that:               <ul style="list-style-type: none"> <li>– misrepresent a data set</li> <li>– accurately represent a data set</li> </ul> </li> </ul>	Choice of graphs shows very limited understanding of data presentation	Choice of graphs shows partial understanding of data presentation	Choice of graphs shows understanding of data presentation	Choice of graphs shows thorough understanding; may introduce complexity or subtleties (e.g., misrepresentation may be hard to detect)
<b>Procedural Knowledge</b>				
<ul style="list-style-type: none"> <li>Accurately:               <ul style="list-style-type: none"> <li>– constructs chosen graphs</li> <li>– represents and misrepresents data as required</li> <li>– determines the probability of winning the game</li> </ul> </li> </ul>	limited accuracy; major errors or omissions in: <ul style="list-style-type: none"> <li>– constructing chosen graphs</li> <li>– representing and misrepresents data as required</li> <li>– determining probability of winning</li> </ul>	Partially accurate; some errors or omissions in: <ul style="list-style-type: none"> <li>– constructing chosen graphs</li> <li>– representing and misrepresents data as required</li> <li>– determining probability of winning</li> </ul>	generally accurate; few errors or omissions in: <ul style="list-style-type: none"> <li>– constructing chosen graphs</li> <li>– representing and misrepresents data as required</li> <li>– determining probability of winning</li> </ul>	accurate and precise; very few or no errors in: <ul style="list-style-type: none"> <li>– constructing chosen graphs</li> <li>– representing and misrepresents data as required</li> <li>– determining probability of winning</li> </ul>
<b>Problem-Solving Skills</b>				
<ul style="list-style-type: none"> <li>Uses appropriate strategies to construct a game that involves the probability of two independent events</li> </ul>	uses few effective strategies; does not construct the game successfully	uses some appropriate strategies with partial success; game may have some flaws	uses appropriate strategies to successfully construct a game to given specifications	uses effective strategies to successfully constructs a relatively complex or innovative game
<b>Communication</b>				
<ul style="list-style-type: none"> <li>Presents work and explanations clearly, using appropriate mathematical terminology</li> </ul>	does not present work and explanations clearly, uses few appropriate mathematical terms	presents work and explanations with some clarity, using some appropriate mathematical terms	presents work and explanations clearly, using appropriate mathematical terms	presents work and explanations precisely, using a range of appropriate mathematical terms

**Master 8.1**

**Unit Rubric: Geometry**

	<b>Not Yet Adequate</b>	<b>Adequate</b>	<b>Proficient</b>	<b>Excellent</b>
<b>Conceptual Understanding</b>				
<ul style="list-style-type: none"> <li>Shows understanding of geometry by:               <ul style="list-style-type: none"> <li>– comparing different views of a given 3-D object to the object</li> <li>– predicting top, front, and side views that will result from a described rotation</li> <li>– explaining properties of shapes that make tessellations possible</li> <li>– identifying and describing tessellations in the environment</li> </ul> </li> </ul>	little understanding; may be unable to: <ul style="list-style-type: none"> <li>– compare different views of a given object</li> <li>– predict the effect of a described rotation on different views</li> <li>– explain properties that make tessellations possible</li> <li>– identify and describe tessellations in the environment</li> </ul>	some understanding; partially able to: <ul style="list-style-type: none"> <li>– compare different views of a given object</li> <li>– predict the effect of a described rotation on different views</li> <li>– explain properties that make tessellations possible</li> <li>– identify and describe tessellations in the environment</li> </ul>	shows understanding; able to: <ul style="list-style-type: none"> <li>– compare different views of a given object</li> <li>– predict the effect of a described rotation on different views</li> <li>– explain properties that make tessellations possible</li> <li>– identify and describe tessellations in the environment</li> </ul>	shows depth of understanding; in various contexts, able to: <ul style="list-style-type: none"> <li>– compare different views of a given object</li> <li>– predict the effect of a described rotation on different views</li> <li>– explain properties that make tessellations possible</li> <li>– identify and describe tessellations in the environment</li> </ul>
<b>Procedural Knowledge</b>				
<ul style="list-style-type: none"> <li>Accurately draws and labels:               <ul style="list-style-type: none"> <li>– top, front, and side views of 3-D objects on isometric dot paper</li> <li>– top, front, and side views that result from a given rotation</li> </ul> </li> <li>Identifies:               <ul style="list-style-type: none"> <li>– shapes that will tessellate</li> <li>– given transformations or combinations</li> </ul> </li> <li>Creates tessellations</li> </ul>	limited accuracy; major errors or omissions in: <ul style="list-style-type: none"> <li>– drawing different views of 3-D objects</li> <li>– drawing views that result from a rotation</li> <li>– identifying shapes that will tessellate</li> <li>– identifying transformations</li> <li>– creating tessellations</li> </ul>	partially accurate; frequent minor errors or omissions in: <ul style="list-style-type: none"> <li>– drawing different views of 3-D objects</li> <li>– drawing views that result from a rotation</li> <li>– identifying shapes that will tessellate</li> <li>– identifying transformations</li> <li>– creating tessellations</li> </ul>	generally accurate; few errors or omissions in: <ul style="list-style-type: none"> <li>– drawing different views of 3-D objects</li> <li>– drawing views that result from a rotation</li> <li>– identifying shapes that will tessellate</li> <li>– identifying transformations</li> <li>– creating tessellations</li> </ul>	accurate and precise; no errors or omissions in: <ul style="list-style-type: none"> <li>– drawing different views of 3-D objects</li> <li>– drawing views that result from a rotation</li> <li>– identifying shapes that will tessellate</li> <li>– identifying transformations</li> <li>– creating tessellations</li> </ul>
<b>Problem-Solving Skills</b>				
<ul style="list-style-type: none"> <li>Uses appropriate strategies to create tessellating shapes and tessellations</li> </ul>	does not use appropriate strategies to create tessellating shapes and tessellations	uses some appropriate strategies with partial success to create tessellating shapes and tessellations	uses appropriate strategies to successfully create tessellating shapes and tessellations	uses effective strategies to create tessellating shapes and tessellations; often innovative, complex
<b>Communication</b>				
<ul style="list-style-type: none"> <li>Records and explains reasoning and procedures clearly and completely, including appropriate terminology (for example, axis of rotation; tessellate)</li> </ul>	does not record and explain reasoning and procedures clearly and completely	records and explains reasoning and procedures with partial clarity; may be incomplete	records and explains reasoning and procedures clearly and completely	records and explains reasoning and procedures with precision and thoroughness

**Master 8.3**

**Performance Assessment Rubric:  
Creating Tessellating Designs**

	<b>Not Yet Adequate</b>	<b>Adequate</b>	<b>Proficient</b>	<b>Excellent</b>
<b>Conceptual Understanding</b>				
<ul style="list-style-type: none"> <li>Shows understanding by demonstrating and describing how transformations were used to create the tessellation</li> </ul>	description shows very limited understanding of tessellation	description shows partial understanding of tessellation	description shows understanding of tessellation	description shows thorough understanding of tessellation
<b>Procedural Knowledge</b>				
<ul style="list-style-type: none"> <li>Chooses appropriate shapes to tessellate</li> <li>Creates tessellations</li> <li>Identifies transformations and combinations of transformations</li> </ul>	limited accuracy; major errors or omissions in: <ul style="list-style-type: none"> <li>choice of shape</li> <li>creating tessellations</li> <li>identifying transformations</li> </ul>	partially accurate; some minor errors or omissions in: <ul style="list-style-type: none"> <li>choice of shape</li> <li>creating tessellations</li> <li>identifying transformations</li> </ul>	generally accurate; few minor errors or omissions in: <ul style="list-style-type: none"> <li>choice of shape</li> <li>creating tessellations</li> <li>identifying transformations</li> </ul>	accurate and precise; no errors in: <ul style="list-style-type: none"> <li>choice of shape</li> <li>creating tessellations</li> <li>identifying transformations</li> </ul>
<b>Problem-Solving Skills</b>				
<ul style="list-style-type: none"> <li>Uses appropriate strategies to create tessellating shapes and required tessellations</li> </ul>	does not use appropriate strategies to create tessellating shapes and tessellations	uses some appropriate strategies with partial success to create tessellating shapes and tessellations	uses appropriate strategies to successfully create tessellating shapes and tessellations	uses effective strategies to create tessellating shapes and tessellations; designs are innovative; relatively complex
<b>Communication</b>				
<ul style="list-style-type: none"> <li>Presents work and explanations clearly, using appropriate mathematical terminology (for example, translation, reflection, rotation, conservation)</li> </ul>	does not present work and explanations clearly; uses few appropriate mathematical terms	presents work and explanations with some clarity, using some appropriate mathematical terms	presents work and explanations clearly, using appropriate mathematical terms	presents work and explanations precisely, using a range of appropriate mathematical terms