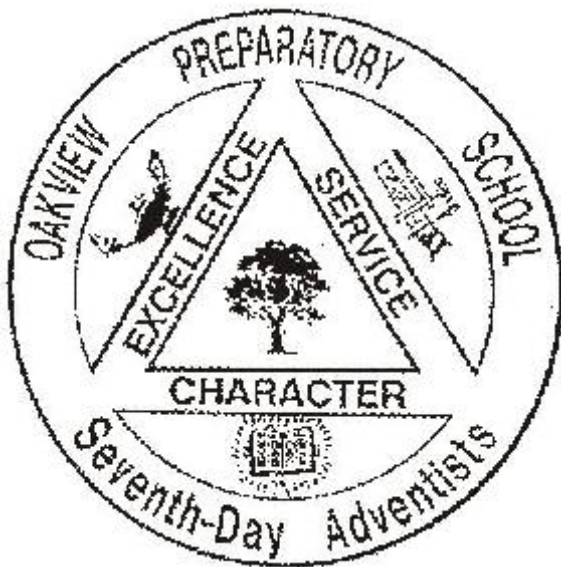


**Oakview Preparatory School of Seventh-day Adventists**



GRADE

**7**

**Pre-March Mathematics Units**  
2005-2006

Instructor  
Mr. Elvis Agard

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# Assessment Rubric

<b>4 = Exceeds the standards</b> (Advanced)	<b>3 = Meets the standards</b> (Proficient)	<b>2 = Approaching the standards</b> (Developing)	<b>1 = Below the standards</b> (Latent)
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	- = <b>Novice</b>	√ = <b>Apprentice</b>	+ = <b>Practitioner</b>	⊕ = <b>Expert</b>
<b>Knowledge</b>	Student is unable to attain and communicate the necessary information or shows little initiative to try.	Student shows willingness to learn the information, but is unable to meet the minimum requirement of 70% on assignments. Inconsistently meets the standards.	Student scores a minimum of 70% on tests, presentations, worksheets and projects, or a rating of proficient on a scoring guide. Consistently meets the standards.	Student demonstrates in-depth knowledge and consistently scores above 90% on assignments, or a rating of advanced on a scoring guide. Consistently exceeds the standards.
<b>Skills</b>	Student fails to attain or demonstrate the required skills to a minimum level and shows minimum initiative to learn.	Student partially demonstrates the required skill or unable to master the skill on a consistent basis.	Student can demonstrate the required skill a minimum of three times or on a consistent basis, or a rating of proficient on a scoring guide.	Student demonstrates the required skill at an exceptional level in a self-directed manner, or a rating of advanced on a scoring guide. Consistently exceeds the standards.

## The Five Process Strands (how all mathematical content is taught)

### **Problem Solving Strand (PS)** *Students will:*

- build new mathematical knowledge through problem solving;
- solve problems that arise in mathematics and in other contexts;
- apply and adapt a variety of appropriate strategies to solve problems;
- monitor and reflect on the process of mathematical problem solving.

### **Reasoning and Proof Strand (RP)** *Students will:*

- recognize reasoning and proof as fundamental aspects of mathematics;
- make and investigate mathematical conjectures;
- develop and evaluate mathematical arguments and proofs;
- select and use various types of reasoning and methods of proof.

### **Communication Strand (CM)** *Students will:*

- organize and consolidate their mathematical thinking through communication;
- communicate their mathematical thinking coherently and clearly to peers, teachers, and others;
- analyze and evaluate the mathematical thinking and strategies of others;
- use the language of mathematics to express mathematical ideas precisely.

### **Connections Strand (CN)** *Students will:*

- recognize and use connections among mathematical ideas;
- understand how mathematical ideas interconnect and build on one another to produce a coherent whole;
- recognize and apply mathematics in contexts outside of mathematics.

### **Representation Strand (R)** *Students will:*

- create and use representations to organize, record, and communicate mathematical ideas;
- select, apply, and translate among mathematical representations to solve problems;
- use representations to model and interpret physical, social, and mathematical phenomena.

# Unit 1

NB: Mandatory <b>portfolio</b> items are in <b>bold</b> . Strands addressed are shaded grey.	Standards by CONTENT STRANDS											Standards by PROCESS STRANDS				
	7N1	7N2	7N3	7N5	7N6	7N7	7N8	7N9	7N12	7N13	7N17	PS	RP	CM	CN	R
11.2 Approximating Square Roots																
6.1 Comparing And Ordering Integers																
6.6 Rational Numbers																
2.5 Scientific Notation																
4.2 Greatest Common Factor																
4.4 Least Common Multiple																
6.2 Adding Integers																
6.3 Subtracting Integers																
6.4 Multiplying Integers																
6.5 Dividing Integers																
<b>Performance Assessment Project</b>																
<b>Unit Test</b>																
Quiz 1																
Quiz 2																
Quiz 3																

## Expanded Content Strands

- 67.N.1 Distinguish between the various subsets of real numbers (counting/natural numbers, whole numbers, integers, rational numbers, and irrational numbers)
- 7.N.2 Recognize the difference between rational and irrational numbers (e.g., explore different approximations of  $\pi$ )
- 7.N.3 Place rational and irrational numbers (approximations) on a number line and justify the placement of the numbers
- 7.N.5 Write numbers in scientific notation
- 7.N.6 Translate numbers from scientific notation into standard form
- 7.N.7 Compare numbers written in scientific notation
- 7.N.8 Find the common factors and greatest common factor of two or more numbers
- 7.N.9 Determine multiples and least common multiple of two or more numbers
- 7.N.12 Add, subtract, multiply and divide integers
- 7.N.13 Add and subtract two integers (with and without the use of a number line)

## Unit 2

NB: Mandatory <b>portfolio</b> items are in <b>bold</b> . Strands addressed are shaded grey.	Standards by CONTENT STRANDS										Standards by PROCESS STRANDS					
	7N4	7N10	7N11	7N14	7N15	7N16	7N18	7N19				PS	RP	CM	CN	R
1.3 Powers And Exponents																
4.1 Prime Factorization																
1.4 Order Of Operations																
6.2 Adding Integers																
PG 255 Negative and Zero exponents																
11.1 Square Roots																
11.2 Approximating Square Roots																
<b>Performance Assessment Project</b>																
<b>Unit Test</b>																
Quiz 1																
Quiz 2																
Quiz 3																
<b>Expanded Content Strands</b>																
7.N.4 Develop the laws of exponents for multiplication and division																
7.N.10 Determine the prime factorization of a given number and write in exponential form																
7.N.11 Simplify expressions using order of operations Note: Expressions may include absolute value and/or integral exponents greater than 0.																
7.N.14 Develop a conceptual understanding of negative and zero exponents with a base of ten and relate to fractions and decimals (e.g., $10^{-2} = .01 = 1/100$ )																
7.N.15 Recognize and state the value of the square root of a perfect square (up to 225)																
7.N.16 Determine the square root of non-perfect squares using a calculator																
7.N.18 Identify the two consecutive whole numbers between which the square root of a non-perfect square whole number less than 225 lies (with and without the use of a number line)																
7.N.19 Justify the reasonableness of answers using estimation																

# Unit 3

NB: Mandatory <b>portfolio</b> items are in <b>bold</b> . Strands addressed are shaded <b>grey</b> .	Standards by CONTENT STRANDS										Standards by PROCESS STRANDS					
	7A1	7A5	7A6	7G10								PS	RP	CM	CN	R
7.1 Writing Expressions And Equations	■											■	■	■	■	■
7.6 Solving Inequalities		■		■								■	■	■	■	■
11.7 Area of a Circle			■									■	■	■	■	■
11.4 Area of a Parallelogram			■									■	■	■	■	■
12.3 Surface Area Of Rectangular Prisms			■									■	■	■	■	■
11.5 Area of Triangles and Trapezoids			■									■	■	■	■	■
12.4 Surface Area Of Cylinders			■									■	■	■	■	■
1.6 Perimeter and Area			■									■	■	■	■	■
8.2 Rates			■									■	■	■	■	■
<b>Performance Assessment Project</b>	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
<b>Unit Test</b>	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Quiz 1																
Quiz 2																
Quiz 3																
<b>Expanded Content Strands</b>																
7.A.1 Translate two-step verbal expressions into algebraic expressions																
7.A.5 Solve one-step inequalities (positive coefficients only) (See 7.G.10)																
7.A.6 Evaluate formulas for given input values (surface area, rate, and density problems)																
7.A.10 Write an equation to represent a function from a table of values																

# Unit 4

NB: Mandatory <b>portfolio</b> items are in <b>bold</b> . Strands addressed are shaded grey.	Standards by CONTENT STRANDS										Standards by PROCESS STRANDS					
	7G1	7G2	7G3	7G4	7G7	7M11						PS	RP	CM	CN	R
11.6 Circumference Of A Circle	■											■				
12.5 Volume of Rectangular Prisms		■										■				
12.6 Volume Of Cylinders		■										■				
12.1 Classifying Solids			■									■				
12.4 Surface Area Of Cylinders				■								■				
12.3 Surface Area Of Rectangular Prisms				■								■				
Find missing angles					■							■				
Estimate surface area						■						■				
<b>Performance Assessment Project</b>	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
<b>Unit Test</b>	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Quiz 1																
Quiz 2																
Quiz 3																
<b>Expanded Content Strands</b>																
7.G.1 Calculate the radius or diameter, given the circumference or area of a circle																
7.G.2 Calculate the volume of prisms and cylinders, using a given formula and a calculator																
7.G.3 Identify the two-dimensional shapes that make up the faces and bases of three-dimensional shapes (prisms, cylinders, cones and pyramids)																
7.G.4 Determine the surface area of prisms and cylinders, using a calculator and a variety of methods																
7.G.7 Find a missing angle when given angles of a quadrilateral																
7.M.11 Estimate surface area																

# Unit 5

NB: Mandatory <b>portfolio</b> items are in <b>bold</b> . Strands addressed are shaded grey.	Standards by CONTENT STRANDS										Standards by PROCESS STRANDS					
	7M2	7M3	7M4	7M8	7M9	7M10	7M12	7M13				PS	RP	CM	CN	R
2.7 Converting Metric Units	■											■	■	■	■	■
2.6 Measuring In Metric Units		■			■		■	■				■	■	■	■	■
5.5 Measuring In Customary Units		■					■	■				■	■	■	■	■
2.7 Converting Metric Units			■									■	■	■	■	■
5.6 Converting Customary Units			■									■	■	■	■	■
Pg 490 Constructions				■								■	■	■	■	■
Identify relative error and magnitude						■						■	■	■	■	■
<b>Performance Assessment Project</b>	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
<b>Unit Test</b>	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Quiz 1																
Quiz 2																
Quiz 3																
<b>Expanded Content Strands</b>																
7.M.2 Convert capacities and volumes within a given system																
7.M.3 Identify customary and metric units of mass																
7.M.4 Convert mass within a given system																
7.M.8 Draw central angles in a given circle using a protractor (circle graphs)																
7.M.9 Determine the tool and technique to measure with an appropriate level of precision: mass																
7.M.10 Identify the relationship between relative error and magnitude when dealing with large numbers (e.g., money, population)																
7.M.12 Determine personal references for customary/metric units of mass																
7.M.13 Justify the reasonableness of the mass of an object																

# Unit 6

NB: Mandatory <b>portfolio</b> items are in <b>bold</b> . Strands addressed are shaded grey.	Standards by CONTENT STRANDS							Standards by PROCESS STRANDS							
	7S1	7S2	7S3	7S4	7S5	7S6	7S7				PS	RP	CM	CN	R
Identify and collect data															
9.5 Circle Graphs															
3.1 Mean, Median, And Mode															
3.5 Histograms															
9.5 Circle Graphs															
3.2 Bar Graphs And Line Graphs															
Pictographs															
3.6 Appropriate Data Displays															
Performance Assessment Project															
Unit Test															
Quiz 1															
Quiz 2															
Quiz 3															
<p><b>Expanded Content Strands</b></p> <p>7.S.1 Identify and collect data using a variety of methods</p> <p>7.S.2 Display data in a circle graph</p> <p>7.S.3 Convert raw data into double bar graphs and double line graphs</p> <p>7.S.4 Calculate the range for a given set of data</p> <p>7.S.5 Select the appropriate measure of central tendency</p> <p>7.S.6 Read and interpret data represented graphically (pictograph, bar graph, histogram, line graph, double line/bar graphs, or circle graph)</p> <p>7.S.7 Identify and explain misleading statistics and graphs</p>															

# Unit 7

NB: Mandatory <b>portfolio</b> items are in <b>bold</b> . Strands addressed are shaded grey.	Standards by CONTENT STRANDS										Standards by PROCESS STRANDS					
	7S8	7S9	7S10	7S11	7S12							PS	RP	CM	CN	R
<b>13.1 Introduction To Probability</b>																
Determine validity of sampling																
Predict the Outcome																
Design experiment to test prediction																
Compare actual results with predicted results																
Performance Assessment Project																
Unit Test																
Quiz 1																
Quiz 2																
Quiz 3																
<b>Expanded Content Strands</b> 7.S.8 Interpret data to provide the basis for predictions and to establish experimental probabilities 7.S.9 Determine the validity of sampling methods to predict outcomes 7.S.10 Predict the outcome of experiment 7.S.11 Design and conduct an experiment to test predictions 7.S.12 Compare actual results to predicted results																

## More Internet Resources

- [ENC Focus Magazine](http://www.enc.org/focus) <http://www.enc.org/focus>
- [The NEA Foundation for the Improvement of Education](http://www.nfie.org/news.htm) <http://www.nfie.org/news.htm>
- [Teaching tips.com](http://www.teachingtips.com/articles.html) <http://www.teachingtips.com/articles.html>
- [Math Stamps](http://jeff560.tripod.com/) <http://jeff560.tripod.com/>
- [Journey into Complex Numbers](http://mathforum.org/johnandbetty/frame.htm) <http://mathforum.org/johnandbetty/frame.htm>
- [Space and Shape in Geometry](http://www.learner.org/teacherslab/math/geometry/) <http://www.learner.org/teacherslab/math/geometry/>
- [Brain Bashers](http://www.brainbashers.com/) <http://www.brainbashers.com/>
- [World of Numbers](http://www.worldofnumbers.com/) <http://www.worldofnumbers.com/>
- [mathartfun.com](http://mathartfun.com/shopsite_sc/store/html/index.html) [http://mathartfun.com/shopsite\\_sc/store/html/index.html](http://mathartfun.com/shopsite_sc/store/html/index.html)
- [mathpuzzle.com](http://www.mathpuzzle.com/) <http://www.mathpuzzle.com/>
- [coolmath.com](http://www.coolmath.com/) <http://www.coolmath.com/>
- [Quia Math Games](http://www.quia.com/dir/math/) <http://www.quia.com/dir/math/>
- [Math Mistakes](http://www.mathmistakes.com/) <http://www.mathmistakes.com/>
- [aplusmath.com](http://www.aplusmath.com/) <http://www.aplusmath.com/>
- [Education World](http://www.educationworld.com/) <http://www.educationworld.com/>