Mathematics, Grade 7

Time on Task: 3.5 hours per week

Course Philosophy

Mathematics demonstrates God's order even in an abstract world, gradually building a base of knowledge and skills beginning with the simplest concepts to the more complex. In mathematics, the student will see the order and truth that God created. Just as the Bible says, "precept upon precept, line upon line…." (Isaiah 23:10) The sequential mastery of mathematical concepts is the primary objective.

Course Description

Within a well-balanced mathematics curriculum, the primary focal points at Grade 7 are using direct proportional relationships in number, geometry, measurement, and probability; applying addition, subtraction, multiplication, and division of decimals, fractions, and integers; and using statistical measures to describe data.

Goals and Objectives
Texas Essential Knowledge and Skills (TEKS)

§111.23. Mathematics, Grade 7.

(a) Introduction.

(1) Within a well-balanced mathematics curriculum, the primary focal points at Grade 7 are using direct proportional relationships in number, geometry, measurement, and probability; applying addition, subtraction, multiplication, and division of decimals, fractions, and integers; and using statistical measures to describe data.

(2) Throughout mathematics in Grades 6-8, students build a foundation of basic understandings in number, operation, and quantitative reasoning; patterns, relationships, and algebraic thinking; geometry and spatial reasoning; measurement; and probability and statistics. Students use concepts, algorithms, and properties of rational numbers to explore mathematical relationships and to describe increasingly complex situations. Students use algebraic thinking to describe how a change in one quantity in a relationship results in a change in the other; and they connect verbal, numeric, graphic, and symbolic representations of relationships. Students use geometric properties and relationships, as well as spatial reasoning, to

Scope and Sequence

- Numeration
  - Digits
  - Reading and writing numbers
  - Ordinal numbers
  - Place value
  - Number line
  - Expanded notation
- Operations
  - Addition
  - Subtraction
  - Multiplication
  - Division
  - Powers
  - Roots
  - Mastering basic facts
  - Order of operations
  - Inverse operations
- Fraction Concepts
  - Fractions and mixed numbers
  - Decimals

Spiritual Goals

God's intended purpose for mathematics:

1. To teach the child that there is logic and order in arithmetic and that there is logic and order in God's plan.
2. To teach that God cares for numbers and has recorded many for our information.
3. To teach that God commanded men to count, measure, and record information.
4. To teach the child that God is concerned that we be accurate and orderly in our use of weights, measure, and numbers.
5. To teach the child not to place too much confidence in the size.
6. To teach the child the concept of measurement to express men's failure and His plans for man.
7. To develop skills in reasoning which reveal truth.

model and analyze situations and solve problems. Students communicate information about geometric figures or situations by quantifying attributes, generalize procedures from measurement experiences, and use the procedures to solve problems. Students use appropriate statistics, representations of data, reasoning, and concepts of probability to draw conclusions, evaluate arguments, and make recommendations.

(3) Problem solving in meaningful contexts, language and communication, connections within and outside mathematics, and formal and informal reasoning underlie all content areas in mathematics. Throughout mathematics in Grades 6-8, students use these processes together with graphing technology and other mathematical tools such as manipulative materials to develop conceptual understanding and solve problems as they do mathematics.

- Percents
- Ratio and Proportions
- Rates

- Estimation
  - Rounding whole numbers
  - Rounding decimals
  - Rounding mixed numbers
  - Estimating sums
  - Estimating differences
  - Estimating products
  - Estimating quotients
  - Estimating roots
  - Using estimation to verify reasonableness of calculations
- Number Theory
  - Fact families
  - Even and odd
  - Factors, multiples, and divisibility
  - Prime and composite numbers
  - Greatest common factor (GCF)
  - Least common multiple (LCM)
  - Divisibility tests
  - Prime factorization
- Number Sets and Number Systems
  - Counting numbers (natural numbers)
  - Whole numbers

8. To understand that God has given man the ability to observe reality.
9. To understand that God has given man the ability to explore and to formulate relationships.
10. To understand that human reasoning is a reflection of the divine.
11. To appreciate the structure, form, and beauty of God's creation.
12. To appreciate the complexity and precision of God's creation
13. To improve the student's reasoning skills to help hi think less like the world and more like God.
14. To cultivate preciseness in Calculations and reasoning powers.
15. To develop an appreciation for correctness of procedure and accuracy in dealing with facts.
16. To make him aware of his own limitations and need to depend upon the Lord for understanding.
17. To develop skills in thrift and good stewardship to prepare him for successful living in the world.

Biblical Integration Truth Statements

1. ***What is prime reality, the really real?***
   God exists and is the ultimate reality. (Psalm 90:2, Revelation 22:13)
   a. God designed, created, and sustains His creation. (Genesis 1:1-31)
   b. God is good, holy, and loving. (Luke 18:19, 1 John 4:16,

	○ Decimal number system ○ Negative numbers ○ Integers ○ Real numbers ○ Irrational numbers ○ Rational numbers ○ Roman numerals **Correlation with TEKS** **Saxon Math 8/7** Saxon/Houghton Mifflin Harcourt Company Student ISBN 1-56577-509-0 Teacher ISBN 1-59141-304-4	1 Peter 1:16, Psalm 145:12) c. God is omniscient – all knowing. (Romans 11:33-36, Psalm 147:5) d. God is sovereign – nothing is beyond His ultimate interest, control, and authority. (Daniel 4:25) e. God is personal and also triune- He is coequally and coeternally God the Father, God the Son, Jesus, and God the Holy Spirit. (Hebrews 1:3) **2.** ***What is the nature of external reality, that is, the world around us?*** a. God is the source of everything and created the universe out of nothing. (Genesis 1:1) b. The universe was created by God to be orderly. (Isaiah 45:18, Psalm 147:4) c. God is constantly involved in the unfolding pattern of the ongoing operation of the universe. (Psalm 24:1-2, Psalm 32:13-15) d. The universe reflects His glory. (Psalm 8:1, Psalm 19:1) **3.** ***What is a human being?*** a. God created humans to know Him intimately and to have a loving relationship with Him. (Psalm 100:3) b. Human beings are created in the image of God with the capacity to choose. (Genesis 1:27, Proverbs 8:10) c. Adam and Eve chose disobedience and brought death
(b) Knowledge and skills. **(7.1) Number, operation, and quantitative reasoning.** The student represents and uses numbers in a variety of equivalent forms. *The student is expected to:* (A) compare and order integers and positive rational numbers; (B) convert between fractions, decimals, whole numbers, and percents mentally, on paper, or with a calculator; and (C) represent squares and square roots using geometric models. **(7.2) Number, operation, and quantitative reasoning.** The student adds, subtracts, multiplies, or divides to solve problems and justify solutions. The student is expected to: (A) represent multiplication and division situations involving fractions and decimals with models, including concrete objects, pictures, words, and numbers; (B) use addition, subtraction, multiplication, and division to solve problems involving fractions and decimals; (C) use models, such as concrete objects, pictorial models, and number lines, to add, subtract, multiply, and divide	Lesson 4 Lessons 43, 48 Lessons 2, 20 Lesson 9 Lessons 11, 35 Lessons 46, 54	

integers and connect the actions to algorithms;		to themselves and sin entered the world. (Romans 5:12)
(D) use division to find unit rates and ratios in proportional relationships such as speed, density, price, recipes, and student-teacher ratio;	Lesson 52	d. All human beings have a choice and all have chosen sin that brings separation from God. (Romans 3:23)
(E) simplify numerical expressions involving order of operations and exponents;	Starting in Lesson 11	e. Sin is rebellion against God's wishes and ways and this destroys our relationship with God. (Romans 8:7-8)
(F) select and use appropriate operations to solve problems and justify the selections; and	Starting in Lesson 11	f. God provides a way back to Himself through the death of His son Jesus (the second person of the Trinity), on the cross. (John 3:16, Romans 6:23)
(G) determine the reasonableness of a solution to a problem.	Lesson 4	g. Human beings must respond to God with repentance of our sins, receiving forgiveness, and accepting Jesus as our Savior. (Romans 10:9-10)
(7.3) Patterns, relationships, and algebraic thinking. The student solves problems involving direct proportional relationships.		**4. *What happens to a person at death?***
The student is expected to:		a. For each person death is either the gate to life with God and His people or the gate to eternal separation from God. (1 Corinthians 50:52)
(A) estimate and find solutions to application problems involving percent; and	Lessons 8, 29	b. After death, your soul will continue to exist in an eternal way and there is a final judgment by God. (Revelation 20:12)
(B) estimate and find solutions to application problems involving proportional relationships such as similarity, scaling, unit costs, and related measurement units.	Lessons 46, 16, 32, 98, 39	c. Everyone chooses to honor and love Him by accepting Jesus as our Lord and Savior or makes a choice to reject Jesus and grasp for self-fulfillment and personal glory. (Romans 6:23)
(7.4) Patterns, relationships, and algebraic thinking. The student represents a relationship in numerical, geometric, verbal, and symbolic form.		d. Those who received Jesus as Savior will spend eternity in
The student is expected to:		
(A) generate formulas involving unit conversions within the same system (customary and metric), perimeter, area, circumference, volume, and scaling;	Lesson 41	
(B) graph data to demonstrate relationships in familiar concepts such as conversions, perimeter, area, circumference, volume, and scaling; and	Lesson 41	
(C) use words and symbols to describe the relationship between the terms in an arithmetic sequence (with a constant rate of change) and their positions in the sequence.	Lessons 74, 77	
(7.5) Patterns, relationships, and algebraic thinking. The student uses equations to solve problems. The student is expected to:		
(A) use concrete and pictorial models to solve equations and use symbols to record the actions; and	Inv 7, Lessons 3, 77, 74	
(B) formulate problem situations when given a simple equation and formulate an equation when given a problem situation.	Inv 7	

(7.6) **Geometry and spatial reasoning.** The student compares and classifies two- and three-dimensional figures using geometric vocabulary and properties. *The student is expected to:* (A) use angle measurements to classify pairs of angles as complementary or supplementary; (B) use properties to classify triangles and quadrilaterals; (C) use properties to classify three-dimensional figures, including pyramids, cones, prisms, and cylinders; and (D) use critical attributes to define similarity. **(7.7)** **Geometry and spatial reasoning.** The student uses coordinate geometry to describe location on a plane. *The student is expected to:* (A) locate and name points on a coordinate plane using ordered pairs of integers; and (B) graph reflections across the horizontal or vertical axis and graph translations on a coordinate plane. **(7.8)** **Geometry and spatial reasoning.** The student uses geometry to model and describe the physical world. *The student is expected to:* (A) sketch three-dimensional figures when given the top, side, and front views; (B) make a net (two-dimensional model) of the surface area of a three-dimensional figure; and (C) use geometric concepts and properties to solve problems in fields such as art and architecture. **(7.9)** **Measurement.** The student solves application problems involving estimation and measurement. *The student is expected to:* (A) estimate measurements and solve application problems involving length (including perimeter and circumference) and area of polygons and other shapes; (B) connect models for volume of prisms (triangular and rectangular) and cylinders to formulas of prisms (triangular and rectangular) and cylinders; and (C) estimate measurements and solve application problems involving volume of prisms (rectangular and triangular) and cylinders.	Lessons 7, 40 Lesson 62, Inv 6 Lesson 67 Lesson 18 Inv 3 Lesson 80 Lessons 70, 67, Add AIMS Lesson 70 Lesson 67 Lessons 7, 67, 113, Inv 11 Lessons 19, 20, 37, Inv 2 Lessons 95, 67 Lesson 67	Heaven with God. (Philippians 4:10-21) e. Those who rejected Jesus as Savior will spend eternity in Hell without God. (Hebrews 10:26-27) **5.** ***Why is it possible to know anything at all?*** a. Human beings can both know the world around them and God Himself because God has built within them the capacity to do so and because He takes an active role in communicating with them. (John 16:13) b. God's own intelligence is the basis of human intelligence. Knowledge is possible because there is something to be known (God and His creation) and someone to know (God and human beings made in His image). (Genesis 1:27) c. God reveals, Himself to us in two basic ways: by general revelation and by special revelation. (Exodus 3:2, Psalm 19:1-4) d. In general revelation, God speaks through the creation of the universe and through His word, the Bible. (2 Samuel 22:31, Psalm 19:1) ➢ The Bible is internally consistent and unified in its principles and claims. ➢ There is tremendous coherence across the many

(7.10) Probability and statistics. The student recognizes that a physical or mathematical model (including geometric) can be used to describe the experimental and theoretical probability of real-life events. *The student is expected to:* (A) construct sample spaces for simple or composite experiments; and (B) find the probability of independent events.	 Lessons 94, 36 Lesson 94, Inv 10	authors and centuries during which the various books were written and in which its stories unfold. ➢ It is relevant to all the cultures of the world e. Special revelation is God revealing Himself through supernatural ways. Jesus Christ is the ultimate special revelation. He showed us what God is like more fully than any other form of revelation can. Because Jesus was also completely human, he spoke more clearly to us than any other form of revelation can. (John 14:7)
(7.11) Probability and statistics. The student understands that the way a set of data is displayed influences its interpretation. *The student is expected to:* (A) select and use an appropriate representation for presenting and displaying relationships among collected data, including line plot, line graph, bar graph, stem and leaf plot, circle graph, and Venn diagrams, and justify the selection; and (B) make inferences and convincing arguments based on an analysis of given or collected data.	 Inv 4 Inv 4	
(7.12) Probability and statistics. The student uses measures of central tendency and variability to describe a set of data. *The student is expected to:* (A) describe a set of data using mean, median, mode, and range; and (B) choose among mean, median, mode, or range to describe a set of data and justify the choice for a particular situation.	 Lesson 28, Inv 4 Inv 4	***6. How do we know what is right and wrong?*** *a.* Ethics or the knowledge of right and wrong is based on the character of God as good (holy and loving). (Psalm 33:4) b. There is an absolute standard by which all moral judgments are measured and God Himself – His character of goodness (holiness and love) – is the standard. (1 Samuel 2:3)
(7.13) Underlying processes and mathematical tools. The student applies Grade 7 mathematics to solve problems connected to everyday experiences, investigations in other disciplines, and activities in and outside of school. *The student is expected to:* (A) identify and apply mathematics to everyday experiences, to activities in and outside of school, with other disciplines, and with other mathematical topics; (B) use a problem-solving model that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness; (C) select or develop an appropriate problem-solving strategy	 Lesson 1 to end of book Lesson 1 to end of book Lesson 1 to end of book	c. As a result of sin, morally, we have become less able to discern good and evil and less able to know God as He truly is. (Proverbs 1:7) d. God has revealed His standard in the various laws and principles expressed in the Bible.

from a variety of different types, including drawing a picture, looking for a pattern, systematic guessing and checking, acting it out, making a table, working a simpler problem, or working backwards to solve a problem; and (D) select tools such as real objects, manipulatives, paper/pencil, and technology or techniques such as mental math, estimation, and number sense to solve problems.	Lesson 1 to end of book	(Psalm 111:10) ➢ He has dictated absolute moral truth to us. ➢ Every truth must conform to Biblical principles. ➢ Every choice must reflect God's moral truth. ➢ We must promote, defend, and teach these truths to others.
(7.14) Underlying processes and mathematical tools. The student communicates about Grade 7 mathematics through informal and mathematical language, representations, and models. *The student is expected to:* (A) communicate mathematical ideas using language, efficient tools, appropriate units, and graphical, numerical, physical, or algebraic mathematical models; and (B) evaluate the effectiveness of different representations to communicate ideas.	Lesson 1 to end of book Lesson 1 to end of book	*7.* ***What is the meaning of human history?*** a. History is a meaningful sequence of events leading to the fulfillment of God's purposes for humanity. (Psalm 22:27-28, Psalm 47:3) b. History is going somewhere, directed toward a known end. (Matthew 25:34) c. History is a form of revelation, not only does God reveal Himself in history, but the very sequence of events is revelation. (Psalm 33:13-14, Psalm 47:9) d. History has meaning because God is behind all events, not only sustaining all things by His powerful word but also in all things working for the good of those who love Him. (Psalm 40:5, Romans 8:28)
(7.15) Underlying processes and mathematical tools. The student uses logical reasoning to make conjectures and verify conclusions. *The student is expected to:* (A) make conjectures from patterns or sets of examples and nonexamples; and (B) validate his/her conclusions using mathematical properties and relationships.	Lesson 36, Inv 10 Lesson 36, Inv 10	***What should our response be to God? What were we made for?*** **We were made to** **Love** – Matthew 22:37, **Worship** – Romans 12:1, **Obey** – 2 John 6, and
	Student Activities Cooperative Learning Graphic Organizers Small Groups Drawing Manipulatives **Teaching Strategies** Direct Instruction Open-ended Questions	

	Discussion Demonstration Brainstorming Problem Solving Read Aloud Facilitating Cooperative Learning **Evaluation Procedures** Observation Class Participation Quizzes/Tests **Other Resources and Bibliography** Overhead Transparency Set 8/7	**Give Glory** – Psalm 96:3.