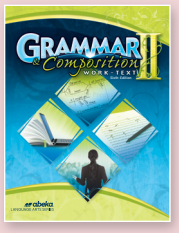
ENGLISH: *Grammar & Composition*



Two vital abilities, the ability to express one's ideas creatively as well as correctly and the ability to comprehend and interpret the written word skillfully, are built upon the elements which are included in English 8. *Grammar and Composition II* builds upon the skills learned in earlier grammar studies providing foundational practice of proper grammar and developing the basic composition skills used in outlining, summarizing, describing, researching, and creative writing. Students will also be introduced to new grammar rules and new writing techniques that will allow them to expand their writing skills.

Added Enrichment

- English DTAs
- Review games
- Grammar Court procedures explained

Evaluation

- Grammar quizzes (22)
- Tests (8), quarter exams (2)
- Semester exam, final exam
- Compositions

Compositions

- Essay (Answer, Persuasive, Narrative)
- Summaries, Type Sketch, Dialogue
- Paragraph, Outline, Captions
- Limerick, Cinquain
- Book reports
- Research paper

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Grammar

- Capitalization:
  - Proper nouns and words formed from proper nouns:
    - Particular persons, places, things:
      - ➤ Political and economic organizations and alliances
    - Words referring to Deity and Holy Scripture
    - Words from proper nouns
    - Common noun or adjective when part of proper name
  - Titles of persons, titles of works
  - First word of every sentence
  - Pronoun *I* and interjection *O*
  - First word of every line of poetry
- Punctuation:
  - End marks:
    - Period for declarative sentences and abbreviations
    - Question mark for interrogative sentences
    - Exclamation point for exclamatory sentences
  - Commas:
    - Before a coordinating conjunction joining two independent clauses
    - To indicate:
      - Omissions or avoid possible misreading
      - Nonessential elements in a sentence:
        - Appositive and appositive phrase
        - ➤ Participial phrase
        - ➤ Adjective and adverb clauses
        - Direct address
        - *Well, yes, no,* or *why*
        - Parenthetical expressions
    - To set off introductory phrases or clauses
    - In dates and addresses
    - After salutations and closings of letters
  - Semicolons:
    - Between independent clauses:
      - If not using coordinating conjunction
      - Joined by:
        - Transitional words
        - Coordinating conjunction if clauses already contain commas
    - ➤ Between items in a series if the items contain commas
  - Colons:
    - Before a list of items
    - ➤ To introduce a formally announced statement or quotation
    - Between:
      - Chapter and verse of Bible reference
      - Hour and minute of time reference
    - After salutation of a business letter
  - Italics:
    - For titles of books, magazines, newspapers, plays, works of art, ships, trains, aircraft, and spacecraft
    - ➤ For words, letters, numbers referred to as such
    - ➤ For foreign words or phrases
  - Hyphens:
    - To divide a word at the end of line
    - In compound numbers
    - In fractions
    - ➤ In prefixes before a proper noun or adjective
    - ➤ In prefixes *all-*, *ex-*, *self-* and suffix *-elect*
    - ➤ In compound adjectives before a noun
  - Quotation Marks:
    - In a direct quotation
    - To enclose:
      - Titles of short poems, songs, chapters, articles, and other parts of books or magazines
      - ➤ A quoted passage of more than one paragraph: at the beginning of each paragraph and at the end of the last paragraph
  - Apostrophes:
    - To form:
      - Possessive case of nouns
      - ➤ Individual possession within a group
      - ➤ Possessive case of compound words and words that show joint possession
      - ➤ Possessive case of indefinite pronouns
    - To show omissions from words
    - With *s* to form plurals of lowercase letters, numbers, signs, and words used as words
  - ➤ Dashes:
    - ➤ After a series of words or phrases giving details about a statement that follows
    - ➤ To indicate an abrupt change or break in a sentence

Grammar & Composition cont. p. 123

ENGLISH: *Grammar & Composition* cont.

Grammar cont.

- To set off parenthetical elements or confidential comments
- Parentheses: to enclose parenthetical elements
- Ellipses: to indicate an omission, unfinished thought, or pause

- The sentence:
  - Recognizing eight parts of speech
  - Definition of sentence
  - Kinds of sentences classified by purpose: declarative, imperative, interrogative, exclamatory
  - Recognizing subjects and verbs: complete subject, simple subject, complete predicate, simple predicate, and verb phrase
  - Overcoming problems locating subjects and verbs:
    - Finding:
      - Subject in an inverted sentence: interrogative sentence, sentence beginning with *there* or *here*
      - Subject of an imperative sentence
      - Verb phrase that is interrupted by other words
  - Diagramming subjects and verbs
  - Recognizing and diagramming compound subjects and verbs
  - Recognizing complements
  - Correcting fragments and run-on sentences
- Parts of speech:
  - Verbs:
    - Recognizing action, linking, and helping verbs:
      - Action: transitive and intransitive verbs
    - Distinguishing verbs from verbals
    - Using:
      - Principal parts of verbs
      - Regular verb endings, irregular verbs
      - Correct principal parts
    - Verb tenses:
      - Conjugation
      - Using progressive and emphatic forms
      - Using consistent verb tense
    - Using active and passive voice
    - Mood: indicative, imperative, subjunctive
    - Avoid incorrect verb forms
    - Use troublesome verbs correctly and avoid verb usage errors
  - Nouns:
    - Recognizing nouns: compound, collective, common, and proper
    - Keeping agreement of subject and verb:
      - Amounts may be singular or plural
      - Words ending in *-ics* as subjects may be singular or plural
    - Recognizing and diagramming nouns as predicate nominatives, direct objects, indirect objects, objects of prepositions, direct address, and appositives
    - Gerunds
    - Gerund phrases
      - Diagramming gerund phrases
    - Infinitives
    - Infinitive phrases
      - Diagramming infinitive phrases
    - Noun clauses
      - Diagramming noun clauses
  - Pronouns:
    - Antecedents
    - Recognizing personal, interrogative, demonstrative, indefinite, compound (intensive and reflexive), relative
    - Keeping agreement of verbs and indefinite pronoun subjects
    - Making pronouns agree with their antecedents in number and in gender
    - Nominative case:
      - For subjects, predicate nominatives, appositives of subjects, and appositives of predicate nominatives
      - For appositives to subjects and appositives to predicate nominatives
    - Objective case:
      - For direct objects, indirect objects, and objects of prepositions and for appositives of direct objects, indirect objects, objects of prepositions
      - For appositives to direct objects, indirect objects, objects of prepositions
    - Possessive case
    - Using correct case for *who, whom, whoever,* and *whomever* and in incomplete clauses beginning with *than* or *as*
    - Avoid pronoun usage problems: double subject, possessive case before a gerund
  - Adjectives:
    - Recognizing and diagramming adjectives:
      - Participles and proper adjectives
      - Infinitives as adjectives
    - Distinguishing adjectives from nouns and pronouns
    - Recognizing and diagramming predicate adjectives:
      - Diagramming compound verbs with one predicate adjective and separate predicate adjectives
    - Using and diagramming:
      - Prepositional and participial phrases as adjectives
      - Infinitive phrases as adjectives
      - Adjective clauses
    - Placing and punctuating adjective modifiers
    - Using adjectives in comparison
    - Avoiding double comparison and double negatives:
      - Supplying necessary words in comparison
      - Differentiating between *this/that* and *these/those*
  - Adverbs:
    - Recognizing and digramming adverbs
    - Infinitives as adverbs
    - Distinguishing adverbs from adjectives
    - Using and diagramming:
      - Prepositional phrases as adverbs
      - Infinitive phrases as adverbs
      - Adverb clauses:
        - Elliptical clauses
    - Correct placement of adverb modifiers
    - Distinguishing dependent clauses
    - Using adverbs in comparison
  - Prepositions:
    - Recognizing prepositions, prepositional phrases, and objects of prepositions
    - Distinguishing between prepositions and adverbs
    - Using prepositions correctly
  - Conjunctions: recognizing coordinating, correlative, and subordinating conjunctions
  - Interjections
  - Diagramming interjections
  - Sentence structure:
    - Defining dependent and independent clauses
    - Recognizing and diagramming simple, compound, complex, and compound-complex sentences

Grammar & Composition cont. p. 124

➤ **RED** *indicates first introduction of content.*

ENGLISH: *Grammar & Composition* *cont.*

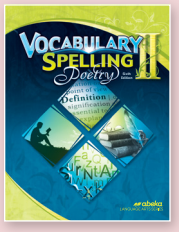
Grammar *cont.*

- Improving writing style
  - Correct a choppy or monotonous style:
    - Begin sentence with an adverb, adverb phrase, adverb clause, or participial phrase
    - ➤ Begin sentence with an adjective, participle, prepositional phrase, or infinitive phrase
    - Exact and vivid words

Composition

- Manuscript form: abbreviations, numbers, titles, hyphenation
- The Writing Process: plan, write, rewrite, edit
- Paragraphs:
  - Topic sentence
  - Summarizing sentence
  - Paragraph development
    - Development by examples, incidents, and reasons
  - Paragraph unity
  - Paragraph coherence: chronological order, order of importance, transitional expressions, space order, pronoun reference, and repetition
- Summaries: short and long works
- Essay answer (expanded)
- Outline
  - Topical and sentence outlines
  - Format of outline
  - Parallelism in an outline
  - Steps to preparing an outline
- Book Reports
  - Preparing
    - Written book reports including introduction, body, conclusion
    - Oral book reports: written preparation and oral presentation
- ➤ Creative dialogue: characters, setting, tone, dialogue, plot
- ➤ Persuasive essay: analyze audience, crafting argument, expanded thesis, providing supports
- Writing descriptions: type sketch, place
  - Steps: point of view, careful selection of details, arrangement of details, use of exact nouns and verbs
- Research paper:
  - Planning the paper: selecting subject, finding sources, writing bibliographies, making a preliminary outline, taking notes, writing notes, avoiding plagiarism
  - Writing the paper: introduction, body
  - Using parenthetical citations
  - Rewriting the paper: check organization, introduction, conclusion, unity, coherence, and citations
  - Editing the paper: check each paragraph, sentence, word; capitalization and punctuation
  - Preparing works cited page
  - Typing the paper
  - Documentation for research paper
- ➤ Writing poetry: limerick, didactic cinquain
  - ➤ Rhyme scheme, rhythm
- ➤ String-a-long Stories
- ➤ Personal narrative essay
- ➤ Writing captions
- The Library: Dewey Decimal System, Library of Congress classification system, using the catalog and reference section.

ENGLISH: *Vocabulary, Spelling, Poetry*



Vocabulary, Spelling, Poetry II emphasizes using an expanded vocabulary and applying spelling rules when analyzing challenging words. The goals of poetry memorization and recitation are an enjoyment and appreciation of poetic beauty and excellence.

Added Enrichment

- Spelling and vocabulary:
  - Spelling and vocabulary lists (28) including review list at end of each quarter:
    - Spelling words (560)
    - Vocabulary words (280)
    - Organized by spelling rules, suffixes, homonyms, compound words, and commonly misspelled words
    - Application exercises (56)
    - Review exercises (29)
  - Each vocabulary word includes:
    - Pronunciation, part of speech
    - Synonyms, antonyms, related forms
    - Definition, sample sentence
  - Pronunciation key
  - Teacher resource: vocabulary mastery sentences
- Poetry teacher resource: introductions for each poem

Evaluation

- Spelling and vocabulary quizzes:
  - Weekly (28)
  - Quarterly review (1 each quarter; each counts as 2 quiz grades)
- Poetry quizzes:
  - Written (7)
  - Oral (2)

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Spelling & Vocabulary Skills Development

- ➤ Master spelling and vocabulary lists including:
  - ➤ Vocabulary words and definitions
  - ➤ Words that follow the spelling rules
  - ➤ Commonly misspelled words
  - ➤ Homonyms
- Use vocabulary words in sentences and in proper context
- Memorize vocabulary definitions
- Be able to identify commonly misspelled words
- Apply spelling and phonics concepts through daily teacher-directed oral practice and independent written practice
- Learn:
  - Synonyms and antonyms of vocabulary words

Vocabulary, Spelling, Poetry cont. p. 125

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ENGLISH: *Vocabulary, Spelling, Poetry* *cont.*

Spelling & Vocabulary Skills Development *cont.*

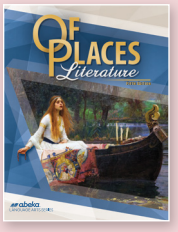
- To distinguish between homophones
- Practical spelling tips and suggestions by studying Keys to Good Spelling
- Spelling rules:
  - Use *i* before *e*, except after *c*, or when sounded like long *a*
  - Double a final consonant before adding a suffix beginning with a vowel
  - Change *y* to *i* when adding suffixes
  - Drop the silent *e* before adding a suffix beginning with a vowel
  - Learn exceptions to the spelling rules
  - Creating a compound word doesn't change the spelling of the two parts
  - Adding a prefix to a word doesn't change the word's spelling

Poetry Skills Development

› Memorize 9 lyrical poems

- Develop appreciation of poetry
- Lay foundation for future literature study
- Perform in front of an audience
- Recite in unison
- Use appropriate expression and volume
- Increase vocabulary
- Demonstrate comprehension of emotion and content
- Develop a mental visualization of the poem
- Discuss meaning and purpose of poems
- Use proper observation of punctuation

ENGLISH: *Literature*



Of Places uses young people's interest in other places to teach Christian character traits such as compassion, courage, and sacrifice. Not only will students gain exposure to people of different ages, nationalities, races, cultures, and economic levels through a variety of literary selections, but they will also learn to enjoy reading wholesome literature. Many of the selections in *Of Places* were written by famous authors and are well-known classics that are an important part of a student's education. *Of Places* features excerpts from classics such as *A Tale of Two Cities, The Jungle Book, Ben Hur, The Hiding Place,* and *The Legend of Sleepy Hollow.*

Literary Value

- 96 authors, including well-known authors such as Emily Dickinson, Mark Twain, Carl Sandburg, Booker T. Washington, and Nathaniel Hawthorne
- Prose selections (55), poems (57), and plays (3)
- Character-building themes such as personal sacrifice, humility, conquering sin, and hard-work ethics
- Literary terms such as the dramatic structure, irony, tone, dialect, metaphor, and assonance and consonance

Added Enrichment

- Footnotes define and explain unfamiliar words
- Comprehension and discussion questions after selections
- Character-building quotations and verses
- Introductory paragraphs for interest and background information
- Author biographies and photos for imporant authors to know
- Suggested compositions (descriptions, summaries, poems, narratives, and imaginative stories)

Evaluation

- Speed and comprehension quizzes (12)
- Homework reading quizzes (17)
- Tests (12), quarter exams (2)
- Semester exam, final exam

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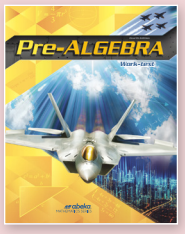
Reading Skills Development

- Develop skills in reading speed and comprehension
- Further develop oral reading skills
- Be able to identify significant quotations and the selections in which they are featured
- Increase vocabulary
- Recognize basic literary devices in the selections

Comprehension, Discussion & Analysis Skills Development

- Develop proper discernment according to the truths of Scripture
- Answer factual, interpretive, and inferential comprehension and discussion questions
- Improve ability to use deductive reasoning, understand cause and effect, and draw conclusions
- Apply literary devices throughout the text
- Build appreciation for good literature and a love of reading

MATHEMATICS: *Pre-Algebra*



Pre-Algebra presents a brief yet complete review of arithmetic with applications to daily life. Once grounded in arithmetic, students can advance to other branches of mathematics. The topics of geometry, algebra, probability, statistics, and radicals are expanded, and trigonometry and systems of equations are introduced. These topics provide the foundation students need to enjoy success in future mathematics courses.

Practice and review problems in each lesson give sufficient opportunity for students to develop and maintain their skills while learning to work quickly and accurately. Word problems and problem-solving strategies throughout the text ensure that students can apply their mathematical skills to everyday situations and encourage students to connect varying types of mathematical knowledge. Level Up sections allow for further expansion of the concepts covered.

Features

- Flexible pacing options in curriculum: Level Up sections (32)
- Review exercises in every section (79)
- Mid-chapter reviews (17)
- Chapter reviews (12)
- Nine-weeks reviews (2)
- Semester review
- Final review

Evaluation

- Quizzes (47)
- Tests (8)
- 9-weeks exam (2)
- Semester exam
- Final exam

➤ **RED** *indicates first introduction of content.*

Numbers

- Arabic system
- Place value
  - Decimal system/powers of ten
  - Whole numbers up to 100 millions place
  - Decimals up to ten thousandths place
- Rounding: whole numbers, decimals, money
- Types of numbers
  - Counting (natural), whole, positive, negative, integer
  - Real
  - Rational/irrational numbers
  - Absolute value
- Comparing numbers
  - ➤ Law of trichotomy
- Number line
- Scientific Notation
  - Standard form
  - ➤ Metric: large, small
- Sequences, numerical
  - Arithmetic, geometric
  - Common difference
  - Common ratio
  - Finding the next term
  - ➤ Increasing difference
  - ➤ Exponential
- Sequences, visual

Factoring

- Rules of divisibility
- Prime Factoring
  - Prime/Composite numbers
  - Prime to each other
  - Fundamental theorem of arithmetic
  - Division by primes/Factor Tree
- Greatest common factor
- Least common multiple
- Exponent/base/power
- Factorial

Arithmetic

- Estimation
- Order of operation
  - Parentheses
  - Brackets, braces, fraction bar
- Addition
  - Addend, sum, annex
  - Whole numbers, fractions, decimals
  - Signed numbers
  - Additive inverse
  - ➤ Scientific notation
- Subtraction
  - Minuend, subtrahend, difference
  - Whole numbers, fractions, decimals
  - Signed numbers
  - ➤ Scientific notation
- Multiplication
  - Factor, partial product, product
  - Whole numbers, fractions, decimals
  - Powers of ten
  - Signed numbers
  - By zero
  - ➤ Scientific notation
- Division
  - Dividend, divisor, quotient, remainder
  - Whole numbers, fractions, decimals
  - Signed numbers
  - Powers of ten
  - ➤ Scientific notation
- Word problems
  - Problem Solving Strategies
- Properties of arithmetic
  - Commutative
  - Associative
  - Distributive
  - Applying properties
  - Estimation

Pre-Algebra cont. p. 127

➤ **RED** *indicates first introduction of content.*

MATHEMATICS: *Pre-Algebra* *cont.*

Fractions
- Numerator, denominator
- Types:
  - Proper, improper, mixed number
  - Complex, reciprocal
- Addition, subtraction, multiplication, division
  - Least common denominator
- Simplifying complex fractions
- Changing a fraction to a decimal
- Word problems
- Ratios
  - Antecedent, consequent
  - Expressing/reading
  - Word problems

Decimals
- Types:
  - Terminating, repeating
  - Rational, irrational
- Changing a decimal to a fraction

Percent, Percentage, Base
- Expressing:
  - Percent as a decimal
  - Decimal as a percent
  - Fraction as a percent
  - Percent as a fraction
  - Fractional percent as a decimal
- Percentage
  - Simple interest
  - Discount and sale price
  - More or less in percent
- Percent
  - Rate of discount
  - Percent of change
- Base

Measures
- Linear
  - U.S. customary: inch, foot, yard, mile
  - Metric: millimeter, centimeter, decimeter, meter, decameter, hectometer, kilometer
- Capacity
  - U.S. customary: fluid ounce, cup, pint, quart, gallon, peck, bushel, teaspoon, tablespoon
  - Metric: milliliter, centiliter, deciliter, liter, decaliter, hectoliter, kiloliter
- Weight
  - U.S. customary: ounce, pound, ton
- Mass:
  - Metric: milligram, centigram, decigram, gram, decagram, hectogram, kilogram
- Historical Measures
  - Linear: cubit, span, palm, finger
  - Capacity: log, hin, bath, homer, measure, cor, ephah, omer
  - Weight: shekel, talent
  - Money: talent (gold), quadran (farthing), shekel (silver), denarius (penny), lepton (mite)
- Converting between U.S. customary measures
  - Single conversion factor
  - Multiple conversion factors
- Converting between metric measures
- Converting between square measures/cubic measures
- Time
  - Second, minute, hour, day, week, month, year, decade, score of years, century, millennium
  - solar year, calendar year, leap year
  - 24-hour time
  - Elapsed time
- Mixed measures
  - Express a mixed measure as a single measure
  - Add, subtract, multiply, divide
- Dimensional analysis
  - Express conversion factor as a ratio
  - Convert between U.S. customary or time measures
- Precision
- Accuracy
- Significant digits

Equations/Inequalities
- Solving, isolating
- Inverse operation
- Solving equations
  - Addition property of equality
  - Multiplication property of equality
  - Both properties
  - Eliminating fractions/decimals
  - Conditional, identity, contradiction
- Word problems
  - Addition property of equality
  - Multiplication property of equality
  - Both properties
  - With multiple unknowns
  - Mixture problems
- Proportions
  - Means, extremes
  - Fundamental property of proportions:
    - Cross multiplication
    - Scale drawings, maps
    - Word problems
- Similarity
  - Similar polygons
  - Word problems
- Pure quadratic equation
- Pure cubic equations
- Pythagorean theorem
  - Hypotenuse, leg
  - Finding hypotenuse, leg
  - Testing triangles
  - Distance on Cartesian plane
  - Word problems
- Inequality graphing
  - $<, >, \leq, \geq, \neq$
  - Open dot, closed dot
  - Solution
  - Compound inequality
- Solving inequalities
  - Addition property of inequality
  - Multiplication property of inequality
  - Both properties
- Compound inequalities
- Inequality word problems

Pre-Algebra cont. p. 128

➤ **RED** *indicates first introduction of content.*

MATHEMATICS: *Pre-Algebra* *cont.*

Geometry

- Plane figure notation
- Plane figures
  - Plane, point, line, line segment, ray, angle
  - Intersecting, parallel, or perpendicular lines
- Polygon, closed figures
  - Side, vertex
  - Triangle, pentagon, hexagon, octagon, heptagon, nonagon, decagon
  - Quadrilateral, rectangle, square, rhombus, trapezoid
  - Regular, equilateral, equiangular
  - Similar polygons
- Congruent polygons
- ➤ SSS, SAS, ASA
- Line symmetry
- ➤ Rotational, symmetry
- ➤ Asymmetrical
- Perimeter: polygon, rectangle, square, any polygon with equal sides, unknown lengths
- Angles: acute, obtuse, right, straight, reflex
- Pairs of angles: vertical, adjacent, complementary, supplementary
- ➤ Transversal
  - ➤ Alternate interior, alternate exterior, corresponding
  - ➤ Parallel lines
- Measuring and drawing angles with a protractor
- ➤ Constructing equal line segments
- Constructing equal angles
- Triangles: acute, obtuse, right, equiangular, equilateral, isosceles, scalene
- Drawing triangles
  - ➤ ASA, SAS
- Triangles formed: 0, 1, 2, or infinitely many
  - Ambiguous case
  - ➤ Constructing triangles
  - ➤ SAS, ASA, SSS
- Circles
  - Center, radius, diameter, arc, semicircle, chord, central angle, subtended, sector
  - Sum of central angles: 360°
- Circumference with radius or diameter
- Area
  - rectangle, square, parallelogram, triangle, circle, trapezoid
  - using a grid and scale
  - Complex figures using addition or subtraction
- ➤ Polyhedra
  - Face, edge, base
  - Prisms, pyramids
  - ➤ Nets
- ➤ Three dimensional curved figures
  - Cylinder, cone, sphere, torus
  - Rectangular prism, cube, triangular prism, square pyramid, cylinder, cone, sphere
- Surface area
  - Rectangular prism, cube, square pyramid, cylinder, sphere
- Lateral surface area
  - Rectangular prism, cube, cylinder
- Volume
  - Rectangular prism, cube, cylinder, cone, pyramids, sphere
- Cross Sections

Graphing on the Cartesian Plane

- Cartesian plane, origin, *x*-axis, y-axis, quadrants, point, ordered pair
- *x*-intercept, *y*-intercept
- Plotting points
- Coordinate geometry, transformations
  - Translation
  - Preimage, image,
  - Rigid transformation
  - Reflection
  - ➤ Rotation: 90°, 180°
  - ➤ Dilation
  - ➤ Reduction, enlargement
  - ➤ Center of Dilation at origin
  - ➤ Superposition
- Slope
  - Rise, run,
  - Positive, negative, zero, undefined
  - Parallel and perpendicular slopes
- Graphing a line
  - Using two points
  - Using a point and a slope
  - Using a table of values
  - Using slope-intercept form
  - ➤ Writing equation from graph
- Linear equations
  - Input, output, independent variable, dependent variable, equation
  - Slope-intercept form
- Direct Variation
  - Constant of variation
  - Proportional/nonproportional
  - Word problems
- ➤ Functions
  - ➤ Relations
  - ➤ Domain, range
  - ➤ Mapping diagram
  - ➤ Vertical line test
  - ➤ Function notation
  - ➤ Evaluation
  - ➤ Linear, nonlinear
  - ➤ Increasing, decreasing
  - ➤ Continuous, discrete
  - ➤ Comparing functions by graphing
- ➤ Parabolas
  - ➤ Nonlinear
  - ➤ Graphing by tables

Probability and Statistics

- Counting
  - Outcome
  - ➤ Sample space
  - Exhaustive list, tree diagram
  - Fundamental theorem of counting
  - ➤ Permutation
- Basic probability
  - Outcome, event,
- Properties of probability
  - Each probability $0 \leq x \leq 1$
  - Sum = 1
  - Complement

Pre-Algebra cont. p. 129

➤ **RED** *indicates first introduction of content.*

MATHEMATICS: *Pre-Algebra* *cont.*

Probability and Statistics *cont.*

- Compound probability
  - Compound events
  - Mutually exclusive
  - Independent
  - Dependent
- Theoretical probability
- Experimental probability
- Relative frequency table
- One way, two way
- Data, statistic, statistics
- Frequency table
- Population, sample, random sample
- Measures of center: Mean, median, mode
  - Range
  - Outliers, sensitive
  - Ranked data
  - Dot plot

Statistical Representation

- Chart title, scale, category label, axis title, major/minor gridlines, legend
- Bar graph, stacked bar graph
  - Interpreting
- Circle graph
  - Interpreting
- Box-and-whisker plot
  - Dispersion, range
  - Five-number summary
  - Finding five-number summary of data
  - Minimum, first quartile, median, third quartile, maximum
  - Interpreting/constructing
  - Comparing two plots
- Stem-and-leaf plot
  - Stem, leaf, class
  - Interpreting/constructing
- Histogram
  - Class, frequency
  - Interpreting/constructing
- Line graph
  - Comparing two lines on the same graph
  - Interpreting
  - Straight, curved, or broken
- ➤ Scatter plots
  - ➤ Association: positive, negative, none
  - ➤ Clustering, outlier
- ➤ Trend line
  - ➤ Finding the equation
  - ➤ Interpolation, extrapolation

Algebra

- Variable, constant
- Notation
  - Raised dot, side-by-side, parentheses
  - Fraction bar
- Factors
  - Numerical coefficient
- Term
  - Constant term
  - Variable term
- Polynomial
  - Monomial, binomial, trinomial
- Evaluation
- Algebraic translation
- Polynomial arithmetic
  - Combining like terms
  - Multiplying/dividing like bases
  - Power rule, quotient rule
  - Negative exponents
  - Raising a power to a power, product to a power, and quotient to a power
  - Multiplying/dividing monomials
  - Multiplying a polynomial by a monomial
  - ➤ Multiplying binomials
  - ➤ FOIL
  - Dividing a polynomial by a monomial
  - Factoring out a monomial
  - ➤ Factoring by grouping

Radicals

- Perfect square, perfect cube
- Radical symbol, index (indices), radicand
- Square root, cube root
- Expressing a radical as a fractional exponent
- Finding rational roots using fractional exponents
- Estimating irrational roots
- ➤ Product rule for radicals
- ➤ Finding irrational roots
- ➤ Like radicals
- ➤ Addition

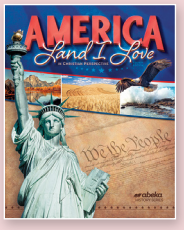
Trigonometry

- ➤ Sine, cosine, tangent
- ➤ Opposite, adjacent
- ➤ Formulas

System of Equations

- ➤ Solving: Graphing, substitution, elimination
- ➤ Solutions: one, infinitely many, none
- ➤ Lines: parallel, intersecting, coinciding
- ➤ System: consistent, inconsistent
- ➤ Equations: dependent, independent
- ➤ Writing repeating decimals as fractions

HISTORY & GEOGRAPHY: *U.S. History*



America: Land I Love presents American history from a conservative, biblical perspective. This textbook uses biographical accounts to illustrate that history traces God's working through people to accomplish His will. As part of this course, students will also study the geography of the Western Hemisphere and the functions of the federal, state, and local governments.

Added Enrichment

- Special feature boxes (61):
  - Give in-depth study of people and events of history that have shaped the U.S.
  - Promote better understanding of U.S. history
  - Help students see lessons to be learned from history and grasp key concepts of U.S. history
- Lists: states and capitals, the U.S. Presidents
- Maps correlating to text (44)

Evaluation

- Review quizzes (30)
- Document memorization quizzes (3)
- U.S. President quizzes (3)
- States and capitals quizzes (5)
- Reading quizzes (20)
- Current event reports (26; each presentation counts as quiz grade)
- Geography projects (18; each counts as quiz grade)
- Tests (8), 9-weeks exam (2)
- Semester exam, final exam
- *Civics Activity Book:*
  - Study of national, state, and local government as information is gathered to complete activities
  - Includes history, geography, and an overview of the Constitution

➤ **RED** *indicates first introduction of content.*

Exploration & Settlement in a New Land

- New world to explore
  - ➤ God's timing in discovery of America
  - Native American heritage
  - Christopher Columbus
  - Defeat of Spanish Armada
  - Spanish and French exploration
    - ➤ Robert Cavalier de La Salle
  - ➤ Spanish and French legacy
- First English colonies
  - English exploration and settlement
  - Jamestown
    - Failure of socialism and benefits of free enterprise
    - House of Burgesses
  - ➤ Scrooby Congregation in Leyden
  - Pilgrims and Plymouth
  - Representative government
    - ➤ General Court
  - Religious freedom
- New colonies
  - Advance of learning: Harvard College, Old Deluder Satan Act
  - Missionary efforts
    - ➤ Algonquian Bible
    - ➤ Mayhews
  - ➤ New England Confederation
  - King Philip's War
- Life in colonial America
  - Land of diversity in immigration, churches, and social classes
  - ➤ Advance of learning: schools, apprentices, and universities
  - Agriculture, landholdings, and slavery in the colonies
  - ➤ Contributions to science
  - ➤ Government in the colonies
- Preparation for independence
  - Great Awakening
    - ➤ Half-way Covenant
    - ➤ Results of Great Awakening
  - French and Indian War
    - ➤ Seven Years' War
  - ➤ Fundamental differences between the colonists and the British
  - British regulations on the colonists
    - ➤ Quartering Act, Declatory Act

Birth of the United States

- Home of the brave
  - Conflict with England
    - ➤ Townshend Acts
    - ➤ Committee of Correspondence
    - ➤ Intolerable Acts
  - First and Second Continental Congress:
    - ➤ Declaration and Resolves
    - ➤ Olive Branch Petition
  - Declaration of Independence
    - ➤ Richard Henry Lee
  - War for Independence
    - ➤ Help from Europe
    - Culper Spy Ring
    - ➤ Nathan Hale, Benedict Arnold, Joseph Brant
    - ➤ Battle of Kings Mountain
  - Treaty of Paris
- Land of the free
  - Articles of Confederation
  - Northwest Ordinance
  - Constitutional Convention
    - ➤ Virginia and New Jersey Plan, Connecticut Compromise
  - Structure and basis of American government:
    - ➤ Balancing of powers
  - Bill of Rights
  - Presidents George Washington and John Adams
    - ➤ Cabinet
    - ➤ Rise of political parties
    - ➤ Jay Treaty and Pickney Treaty
    - ➤ Foreign affairs
    - Federalist Era
  - ➤ Constitution of the United States

U.S. History cont. p. 131

➤ **RED** *indicates first introduction of content.*

HISTORY & GEOGRAPHY: *U.S. History* *cont.*

Building an American Character

- From the Appalachians to the Rockies
  - Daniel Boone
  - Northwest Territory
    - ➤ Treaty of Greenville
  - Louisiana Purchase
    - ➤ Zebulon Pike
  - War of 1812
    - ➤ Impressment and Embargo Act
    - ➤ Battles: Tippecanoe, Lake Erie, Thames River, Horseshoe Bend
    - ➤ Treaty of Ghent
  - Expansion
    - Acquisition of Florida
    - ➤ Missouri Compromise
    - ➤ Monroe Doctrine
- Jacksonian Era
  - President Andrew Jackson
    - ➤ States' rights
    - Trail of Tears, suffrage, and abolition
    - ➤ National Bank
  - ➤ Whig Party
  - ➤ Relations with Britain
- Innovation and inventions
  - Improved transportation and communication
  - Agricultural and industrial advancements
  - Christian influence on industry
  - ➤ Medicine
- Revival, education, and culture
  - Second Great Awakening
    - Circuit riders and camp meetings
    - Charles Finney
    - ➤ Other religious movements
  - Reform
    - Foreign missions movement
    - ➤ Reform movements
  - Education
    - Traditional education
    - American textbooks: *Blue-Backed Speller* and *McGuffey's Readers*
    - ➤ Sequoya
    - ➤ Public education: Horace Mann's normal schools
    - ➤ Higher education: University of North Carolina, Oberlin College, Wesleyan College
  - Culture
    - Literature, Music, Art
    - ➤ Romantic Era, John James Audubon, Augustus Washington
  - ➤ Life in the 19th Century
- Expansion into the West
  - The Republic of Texas
  - Appeal of Oregon
    - ➤ Jedediah Smith and James Beckworth
    - Marcus Whitman
    - The Oregon Trail
    - ➤ John McLoughlin
  - The Mexican War
    - ➤ Bear Flag Revolt
    - ➤ Treaty of Guadalupe Hidalgo
  - California and the gold rush:
    - Gadsden Purchase

Times of Testing & Triumph

- Civil War and Reconstruction
  - States' rights
  - Slavery:
    - ➤ Dred Scott Case
  - Abraham Lincoln
  - Civil War:
    - ➤ North and South differences
    - ➤ Anaconda Plan
    - ➤ Battles: Shiloh, Antietam, Fredericksburg, Chancellorsville, Chickamauga, Chattanooga
    - ➤ People: Farragut, McClellan, Meade
    - ➤ Cherokee Mounted Rifles
    - ➤ Financing the war
  - ➤ Reconstruction Era
    - ➤ Samuel C. Armstrong
    - Booker T. Washington, Hiram Rhodes Revels
- Age of Industry
  - Bell, Edison, Carver
  - ➤ Latimer, Sholes, Eastman
  - ➤ Wonders of technology: Brooklyn Bridge, Statue of Liberty, skyscrapers
  - ➤ Advances in medicine
  - Entrepreneurs:
    - Carnegie, Rockefeller
    - ➤ Lyman Stewart
- Gilded Age
  - ➤ Immigration
  - Settlement of the Great Plains
    - ➤ Homestead Act, Dawes Act
  - ➤ Business and labor reform
    - ➤ Populist Movement
  - Presidencies of Garfield, Cleveland, Harrison, and McKinley
  - ➤ Evangelism and social reform
  - ➤ Atlanta Compromise
  - ➤ Literature and art of the Gilded Age
- Into the 20th Century
  - Spanish-American War
    - ➤ Venezuelan Boundary Dispute, de Lôme letter
    - ➤ Platt Amendment
  - U.S. territorial acquisitions
  - ➤ Progressive Era
    - ➤ Presidents Roosevelt, Taft, Wilson
  - ➤ Philosophies of the late 19th century

Times of Challenge & Promise

- In war and in peace
  - World War I
    - Selective Service Act
    - ➤ Battles: Cantigny, Marne, Belleau Wood, St. Mihiel, Argonne Forest
    - ➤ People: Pershing, Rickenbacker, York
    - ➤ Fourteen Points
  - Roaring Twenties
    - ➤ Age of the automobile and airplane
    - ➤ Culture
    - ➤ Tulsa Race Massacre
  - Religious and social reform
    - ➤ Billy Sunday and Prohibition
    - Evolution: Scopes trial

U.S. History cont. p. 132

➤ **RED** *indicates first introduction of content.*

HISTORY & GEOGRAPHY: *U.S. History* *cont.*

Times of Challenge & Promise *cont.*

- Presidents Harding and Coolidge
  - ➤ Foreign affairs
- ➤ Rise of big government
  - ➤ Great Depression
    - ➤ President Herbert Hoover
    - ➤ Success of private relief
  - ➤ President Franklin D. Roosevelt
  - ➤ New Deal and rise of socialism in America
- A world at war
  - Steps to World War II
  - World War II in Europe and Asia
    - ➤ Lend-Lease Act
    - ➤ War efforts
    - ➤ Doolittle Raid
    - ➤ Fighting Red Tails
  - Cold War
    - Communism
    - ➤ Taft-Hartley Act
  - Korean War:
    - ➤ Pusan Perimeter
- Postwar America
  - ➤ Progress and prosperity in the 1950s
  - President Dwight D. Eisenhower
    - ➤ McCarthy Era
  - ➤ President John F. Kennedy and the New Frontier
  - Civil rights movement
- A time of testing
  - ➤ Testing traditional values
  - President Lyndon B. Johnson and the Great Society
    - ➤ Civil Rights Act of 1964
  - Vietnam War:
    - ➤ Tet Offensive
  - Presidents Nixon, Ford, and Carter
    - ➤ SALT talks
- Eve of the new millennium
  - President Ronald Reagan
    - Conservative movement of the 1980s
    - ➤ Thomas Sowell
    - ➤ Foreign affairs
    - ➤ Iran-Contra hearings
  - Information Age
  - End of Cold War
  - President George Bush
    - Persian Gulf War
    - ➤ Growing national debt
  - President Bill Clinton
    - ➤ Foreign affairs
    - ➤ Threats to America
- Into the new millennium
  - President George W. Bush
  - 9/11 and the War on Terror
    - ➤ Department of Homeland Security
    - Operation Iraqi Freedom: Saddam Hussein
    - Education, elections, appointments
    - ➤ Secure Fence Act
  - President Barack Obama
    - ➤ Affordable Care Act
    - Space Exploration
    - ➤ Foreign affairs
- Challenges and Opportunities
  - President Donald Trump
    - Supreme Court appointments
    - ➤ American Health Care Act, Tax Cut and Job Act
    - ➤ Foreign affairs
    - Space Force
- The COVID-19 Pandemic
  - ➤ WHO, CDC, FDA
  - ➤ Economic, political, social effects of COVID regulations
- President Joe Biden
  - Breach at the Capitol
  - ➤ American Rescue Plan Act
  - ➤ Foreign affairs

Geography

- Western Hemisphere
- North America
- The 13 Original Colonies
- Canada
- The War for Independence
- United States: physical
- Washington, D.C.
- Eastern United States
- Central United States
- Westward expansion
- Western United States
- Civil War
- Pacific United States
- Mexico
- Central America
- West Indies
- South America
- United States: political

Civics

- A study of national, state, and local government
  - Symbols
  - Flag etiquette
  - Symbolism of the flag-folding ceremony
  - Patriotic documents
  - The Constitution at a glance
  - Location of states
  - Geography
  - History
  - Government
  - County
  - City/Town
  - State Profiles (for use with State Studies)

Prayer Time

- Learn to pray for our nation and for government officials

SCIENCE: *Science: Earth & Space*

Science: Earth and Space lays a foundation for future study of the nonliving world. The text begins "from the ground up," starting with soil science and geology. Students learn how geology and the fossil record support the biblical record of a worldwide Flood—not the hypotheses of evolution.

The exploration of the seas includes studying currents, tides, and ocean floor. An investigation of the atmosphere and processes that cause weather includes overviews of several weather phenomena and of measuring and forecasting the weather.

The solar system, stars, and galaxies are examined as the creation of God; evolutionary hypotheses of solar-system formation are briefly discussed and shown to be scientifically unsound. Students learn about man's study and use of astronomy, including an overview of manned and unmanned spaceflight.

The text concludes with a study of environmental issues, thus teaching students to be good stewards of the natural resources God has provided.

Added Enrichment

- Feature boxes with activities, extra information, hands-on investigations for the classroom and at home
- Short articles highlighting God's design in creation (5)
- Science Investigations (10)
- Challenging homework questions designed to provoke thinking more deeply about concepts taught (50)
- Thought-provoking review exercises (69)
- Highlighted fun facts (167)
- Review activities to prepare for tests (28)

Evaluation

- Reading quizzes (21)
- Review quizzes (39)
- In class STEM project (counts as 4 quiz grades and 1 test grade)
- Tests (8), quarter exams (2)
- Semester exam, final exam

➤ **RED** *indicates first introduction of content.*

Introduction to Science

- Using the scientific method:
  - Three main components; hypotheses, theories, and laws; six steps; types of variables; experimental design
  - ➤ Falsifiability
- ➤ Engineering design process—criteria, constraints, prototype
- Scientific reasoning—deductive and inductive reasoning:
  - ➤ Hypothetical proposition, affirming the antecedent, denying the consequent
  - ➤ Method of difference, repeatability, reproducibility, post hoc fallacy
- Scientific models

Pedology: Soil Science

- Characteristics of soil:
  - Organic and mineral materials, humus
  - Topsoil, subsoil, bedrock
  - ➤ Texture: sand, silt, clay, loam
  - ➤ Colors: Munsell charts
  - ➤ Soil pH: pH scale
- Soil nutrients—nutrients and primary plant food elements:
  - ➤ Fertilizer composition: phosphates, nitrogen, potassium
  - ➤ Nitrogen:
    - ➤ Nitrogen cycle, nitrogen compounds
    - ➤ Nitrogen-fixing bacteria
    - ➤ Nitrifying bacteria, denitrifying bacteria
  - ➤ Phosphorus: cell division, growth, plant maturity
  - ➤ Potassium: general health of plant and disease resistance
- Air and water in the soil:
  - ➤ Ground air: pore spaces
  - Ground water:
    - ➤ Saturated, water table, artesian well
    - Aquifer, capillarity

Geology

- Structure of the earth:
  - Introduction to geology: defined
  - Crust—outer layer:
    - Covered with sediment
    - ➤ Oxygen, silicon, aluminum, iron
  - Mantle—middle layer:
    - ➤ Seismic waves, upper mantle, transition zone, lower mantle
    - Moho
  - Core:
    - Outer and inner core
    - ➤ Core-mantle boundary
  - Movements of crust:
    - Plates, plate tectonics
    - ➤ Lithosphere, asthenosphere
    - ➤ Development of plate tectonics theory
    - ➤ Relationship of plate tectonics to biblical record; catastrophic plate tectonics
    - ➤ Rodinia, Pangea, types of faults and folds
    - ➤ Mountains: volcanic, domed, folded, fault-block
- Earthquakes:
  - Earthquakes and tremors:
    - Tectonic earthquakes, tsunamis, aftershocks
    - Seismology, faulting, elastic rebound theory
    - San Andreas Fault, hypocenter, epicenter
  - Earthquake zones: circum-Pacific belt, Alpide belt
  - ➤ Earthquake waves: P waves, S waves, surface wave, seismograph, seismogram, locating an earthquake's epicenter, earthquake early warning
  - Earthquake strength:
    - ➤ Modified Mercalli Scale
    - Richter magnitude scale
    - ➤ Moment magnitude scale
  - ➤ Studying earthquakes:
    - ➤ Provide information about earth's interior
    - ➤ San Andreas Fault Observatory at Depth
  - Reducing earthquake damage:
    - ➤ Fixed-base, base-isolated, and energy-dissipating systems
- Volcanoes:
  - Magma, magma chamber, cone
  - ➤ Volcanology
  - Types of volcanoes: cinder-cone, shield, composite, active, dormant, extinct
  - Location of volcanoes: Ring of Fire

Science: Earth & Space cont. p. 134

➤ **RED** *indicates first introduction of content.*

SCIENCE: *Science: Earth & Space* *cont.*

Geology *cont.*

- Volcanic eruptions and ejecta:
  - ➤ Types of lava
  - Pyroclasts:
    - Volcanic ash, lapilli, volcanic blocks, volcanic bombs
    - ➤ Difference between volcanic blocks and volcanic bombs, pyroclastic flows
  - Volcanic structures:
    - Calderas
    - ➤ Lava tunnels
    - ➤ Igneous intrusions: dikes, sills, laccoliths, batholiths
- Introduction to minerals:
  - Study of minerals:
    - Mineralogy, crystals
    - ➤ Groups of minerals (halides, sulfides, sulfates, oxides, carbonates, phosphates, silicates); faces
  - Identifying minerals:
    - Surface color, streak color, luster, hardness, Mohs scale
    - Cleavage, acid test
    - ➤ Specific gravity, special properties (fluorescence, phosphoresence)
- Notable minerals:
  - Metals:
    - Ore, useful metals
    - ➤ Metallurgy, Bayer process, Hall-Héroult process
    - Iron, alloy, precious metals
    - ➤ Blast furnace, direct iron reduction
  - Gemstones:
    - Precious stones, diamond pipes, semiprecious stones
    - ➤ Simulant and synthetic gemstones
    - ➤ Methods of synthesizing: flame fusion process, pulled method, hydrothermal synthesis
- Rocks—petrology:
  - Igneous rocks:
    - Intrusive and extrusive rock
    - Coarse-grained, fine-grained
    - ➤ Porphyritic (mixed-textured), amorphous, porous
  - Sedimentary rocks:
    - ➤ Concretions, stratum, law of superposition
    - Mechanical sediments:
      - Conglomerate rock
      - ➤ Clastic sedimentary rock
    - Chemical sediments:
      - ➤ Precipitate, evaporites, salt domes
    - Organic sediments:
      - Fossil fuel, types of coal, bitumen, surface mining
      - Underground mining:
        - ➤ Longwall, continuous, and retreat mining
  - Metamorphic rocks:
    - Metamorphism:
      - ➤ Contact and regional metamorphism
    - Foliated and nonfoliated rocks
    - ➤ Characteristics of metamorphic rocks
- Weathering:
  - Physical weathering:
    - ➤ Ice wedging, exfoliation
  - Chemical weathering:
    - ➤ Causes, rate
- Erosion:
  - Erosion by rain:
    - ➤ Runoff, sheet erosion
    - Gullying
  - Erosion by rivers:
    - ➤ Headwaters, load, drainage system, drainage basin, drainage divide
    - ➤ Tributary, floodplain, levees, meanders, oxbow lake, alluvial fan
  - Erosion by groundwater:
    - Caverns, stalactite, stalagmite, column, sinkhole
    - ➤ Dripstone, karst regions
  - Erosion by the sea:
    - Beaches, sea caves
    - ➤ Bars, barrier islands, promontories, sea cliff, sea arches, sea stack
  - Erosion by glaciers:
    - ➤ Continental glaciers, ice caps, valley glaciers, crevasses
    - ➤ Cirque, arête, horn, fjord, striae, till, moraine, drumlins
    - ➤ Outwash, kettles, Ice Age
  - ➤ Erosion by wind:
    - ➤ Eolian processes, deflation, sand and dust storms, sand dunes
    - ➤ Crescentic, parabolic, and transverse dunes
    - ➤ Abrasion
  - ➤ Erosion by gravity:
    - ➤ Mass wasting, soil creep, mudflows
    - ➤ Avalanche, landslides, rockfall
  - Preventing erosion:
    - Terracing
    - ➤ Strip-cropping, breakwaters

Interpreting the Fossil Record

- Conflicting views of the beginning:
  - Special creation, evolution:
    - ➤ Big bang, theistic evolution
  - ➤ Limitations of geology: principle of uniformity
  - ➤ Geology and the Genesis Flood
  - Uniformitarianism: Charles Lyell, problems with, Charles Darwin
  - ➤ Catastrophism: Georges Cuvier
- Paleontology:
  - Fossil formation
  - ➤ Geologic column:
    - ➤ Eons, eras, periods, epochs, index fossils
    - ➤ Imaginary arrangement, circular reasoning, anomalies
  - ➤ Radiometric dating: carbon-14 dating
  - ➤ Biblical explanation of the fossil record
- ➤ Evidence of a flood:
  - ➤ Quick deposition: massive "graveyards," polystrate fossils, unconformity
  - ➤ Living fossils: coelacanth, stasis
- Evidence against evolution:
  - ➤ "Missing links":
    - ➤ *Seymouria, Archaeopteryx, Tiktaalik*
  - ➤ Cambrian explosion
  - ➤ Impossibility of intermediates
  - Natural selection and intermediates
  - Punctuated equilibrium
- Evolution of man—a mistaken belief:
  - ➤ Man vs. ape: body structure, upright posture, cranial capacity
  - Questionable intermediates:
    - *Ramapithecus,* Neanderthal man
    - ➤ Australopithecines, Lucy, *Homo habilis,* Skull 1470
    - ➤ *Homo erectus,* Java man, Peking man, Cro-Magnon man
  - True origin of man: created in God's image

Science: Earth & Space cont. p. 135

➤ **RED** *indicates first introduction of content.*

SCIENCE: *Science: Earth & Space* *cont.*

The Seas

- Water of the seas—oceanography:
  - Characteristics of seawater:
    - Composition, salinity
    - ➤ Color, temperature, density, hydrostatic pressure
    - ➤ Ocean Resources
  - ➤ Ice of the seas: sea ice, icebergs, ice shelf
- Movement of the seas:
  - Ocean currents:
    - ➤ Surface currents, gyre
    - Gulf Stream, Peru Current
    - ➤ Subsurface currents: density current, turbidity current
    - ➤ Upwelling, countercurrent
  - Waves and related phenomena:
    - Crest, trough
    - ➤ Period, whitecaps, ocean swells, breaker, surf
    - ➤ Undertow, longshore current, rip current
    - ➤ Tsunami formation, propagation, and warning systems
  - Tides:
    - High, low, spring, neap tides
    - ➤ Diurnal, semidiurnal, mixed semidiurnal
- Geography of the seas:
  - Continental margin:
    - Continental shelf, continental slope
    - ➤ Shelf break, continental rise, submarine canyons
- Deep ocean floor:
  - Seamount, atoll, lagoon, mid-ocean ridge
  - ➤ Abyssal plain, Mid-Atlantic Ridge, hadal zone
- Study of the seas:
  - Introduction to oceanography:
    - Matthew Maury
    - ➤ H.M.S. *Challenger*
  - Vessels of the oceanographer:
    - Submersibles
    - ➤ Research vessel, bathyscaphe
    - ➤ Deep Submergence Vehicles, remotely operated vehicle
    - Manned undersea laboratories
  - Equipment of the oceanographer:
    - ➤ Oceanographic buoys, drift bottles, profiling floats
    - ➤ Niskin bottles, rosette, gravity corer, piston corer
    - Sonar, scuba

The Atmosphere

- Introducing the atmosphere:
  - Atmospheric composition:
    - ➤ Homosphere, heterosphere
    - Composition of air, water vapor, ozone
  - Layers by temperature:
    - Troposphere:
      - ➤ Temperature gradient, tropopause
    - Stratosphere, ozone layer:
      - ➤ Types of ultraviolet radiation
    - Mesosphere, thermosphere, exosphere:
      - ➤ Mesopause, thermopause
  - Ionosphere:
    - ➤ Cosmic rays, plasma
  - Magnetosphere:
    - Poles, magnetic field, auroras
    - ➤ Van Allen radiation belts
  - Atmospheric pressure: weight of air
- Heat and the atmosphere:
  - Balanced system:
    - ➤ Radiation, albedo
    - Insolation:
      - ➤ Factors affecting insolation
      - ➤ Perihelion, aphelion, energy budget
    - Greenhouse effect:
      - ➤ Greenhouse gases
  - Heat distribution in the atmosphere:
    - ➤ Conduction, convection, convection currents
    - Updrafts, downdrafts
    - ➤ Adiabatic heating and cooling
- Patterns of circulation:
  - Circulating currents:
    - Low pressure, high pressure, global winds
    - ➤ Convection cell, Hadley cell
  - Coriolis effect:
    - ➤ Inertia, cyclone, anticyclone
  - Earth's wind zones:
    - ➤ Intertropical Convergence Zone (ITCZ or doldrums), horse latitudes
    - Trade winds, polar easterlies, prevailing westerlies
    - ➤ Jet streams, Rossby waves
  - Local winds:
    - ➤ Monsoon effect
    - ➤ Sea, lake, land, and forest breezes
    - ➤ Anabatic, katabatic, fall winds
    - ➤ Foehns, Santa Ana winds

Weather

- Understanding weather—climate, meteorology:
  - Factors causing weather: heat energy, uneven heat distribution, water vapor
  - Atmospheric water vapor:
    - Melting, freezing, precipitation, condensation
    - Saturated, relative humidity
    - Dew and frost points:
      - Dew, frozen dew, frost
      - ➤ Condensation nuclei, frost point, deposition, supercooled, freezing nuclei
- Clouds and fog:
  - Naming clouds:
    - Based on:
      - Shape
      - ➤ Height
    - Cumulus, stratus, cirrus, and variations of these three
    - ➤ Lenticular, contrails
  - Fog:
    - Radiation and steam fog
    - ➤ Mist; advection, upslope, and freezing fog
    - ➤ Smog, photochemical smog
  - Precipitation—hydrologic cycle
  - Liquid precipitation:
    - Rain, raindrops, snowflakes, drizzle, freezing rain
    - ➤ Bergeron-Findeisen process, collision-coalescence process
  - Solid precipitation:
    - Sleet, snow, dendrite, hail
    - ➤ Flurries, snow squall, blizzard, whiteout, glaze, rime
  - ➤ Drought: conditions for; agricultural, hydrological, and socioeconomic droughts

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➤ **RED** *indicates first introduction of content.*

SCIENCE: *Science: Earth & Space* *cont.*

Weather *cont.*

- Air masses:
  - Types of:
    - Maritime tropical, continental tropical
    - Maritime polar, continental polar, Arctic
    - ➤ Air-mass weather
  - Fronts and weather:
    - Warm and cold fronts
    - ➤ Stationary and occluded fronts
    - ➤ Frontal cyclones
- Thunderstorms, lightning, and tornadoes:
  - Thunderstorms:
    - ➤ Stable and unstable air, stages of development
    - ➤ Downbursts, cells, supercell
    - Squall line
  - Lightning:
    - Formation, stepped leader, thunder
    - ➤ Return stroke, dart leader
    - Types:
      - ➤ Negative and positive cloud-to-ground, hot lightning, ground-to-cloud, ball lightning
  - Tornadoes:
    - Formation, dangers
    - ➤ Mesocyclone, condensation funnel, occurrence
    - ➤ Enhanced Fujita scale, waterspout, dust devil
- Hurricanes:
  - ➤ Life of a hurricane: tropical cyclone, tropical disturbance
  - ➤ Cyclone categories:
    - ➤ Tropical depression, tropical storm
    - ➤ Saffir-Simpson Hurricane Wind Scale
  - ➤ Hurricane structure: eye, eye wall
  - Hurricane dangers:
    - Wind, inland flooding
    - ➤ Storm surge
- Measuring and forecasting weather:
  - Measuring basics:
    - Thermometer:
      - ➤ Maximum-minimum, bimetallic strip, and electrical thermometers; thermograph
    - Barometer:
      - Bar
      - ➤ Aneroid barometer, millibars
    - Hygrometer:
      - Psychrometer
      - ➤ Wet-bulb depression, hair hygrometer
    - Weather vane
    - ➤ Anemometer
    - ➤ Rain gauge, Stevenson Screen
  - Modern measurements:
    - ➤ Automated instruments, automatic weather stations
    - ➤ Transmissometer, visibility
    - Weather balloons:
      - ➤ Radiosonde
    - ➤ Sounding rocket, ceilometers
    - Radar, weather satellite
  - ➤ Summarizing weather conditions: surface weather charts, station model, isobars, isotherms
  - Predicting weather conditions: weather forecasts, supercomputers
  - Do-it-yourself forecasting: predictable patterns, analyzing clouds

Astronomy

- Solar System:
  - Structure of the solar system:
    - Orbit
    - ➤ Geocentric, Aristotle
    - Ptolemy
    - Copernicus, Galileo, Kepler
    - ➤ Heliocentric
  - Planetary motions:
    - Elliptical paths, Kepler's three laws of planetary motion
    - Astronomical units
  - Gravity and the solar system:
    - Sir Isaac Newton, law of universal gravitation
  - ➤ Origin of the solar system: Creation vs. nebular hypothesis
  - Interplanetary space: vacuum
  - Planets:
    - Mercury: speediest planet
    - Venus:
      - Earth's twin, morning and evening star
      - ➤ Retrograde
    - Earth:
      - Life-sustaining planet
      - Moon, satellite, lunar month, maria
      - ➤ Terrae, rays
      - Phases of the moon, solar eclipse, lunar eclipse
    - Mars: red planet, Phobos, Deimos, Tharsis Bulge, Olympus Mons
    - Jupiter:
      - Largest planet, Great Red Spot, Galilean satellites
    - Saturn:
      - Second-largest, "shepherd moons," Titan, Iapetus, Mimas, Phoebe
      - ➤ Enceladus
    - Uranus:
      - Retrograde rotation
      - ➤ Titania, Oberon, Miranda, Cordelia, Ophelia
    - Neptune: discovered mathematically before seen
    - ➤ Planets vs. dwarf planets: Pluto and moons, Eris
    - Asteroids: asteroid belt, Ceres, Trojan asteroids, near-earth asteroids
    - Comets:
      - ➤ Edmond Halley
      - Halley's comet, nucleus, coma, tail
      - ➤ Short-period comet, long-period comet
      - Kuiper belt
    - Meteoroids: meteor, meteor shower, meteorites
- Constellations:
  - ➤ Celestial sphere:
    - ➤ Horizon, distance between objects, celestial poles
    - ➤ Celestial equator, circumpolar
    - Polaris, zodiac
  - ➤ Modern definition of *constellation*, asterisms
  - Seasonal constellations:
    - ➤ Spring constellations
    - ➤ Summer constellations: Lyra, Vega, Summer Triangle
    - ➤ Autumn and winter constellations
    - Great Square
  - Southern constellations: Centaurus and Crux

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SCIENCE: *Science: Earth & Space* *cont.*

Astronomy *cont.*

- Sun, stars, and galaxies:
  - Sun:
    - Core, photosphere, granule, sunspots
    - ➤ Supergranules
    - Chromosphere, spicules, solar flares, solar prominence
    - ➤ Transition region
    - Corona, solar wind
  - Stellar measurements:
    - Light-year
    - ➤ Parallax, stellar parallax, parsec
  - Star magnitude: apparent magnitude, absolute magnitude
  - Star categories:
    - Temperature and color, temperature and magnitude
    - ➤ Hertzsprung-Russell diagram
    - Giants, supergiants, main sequence, white dwarfs
    - ➤ Red dwarfs
  - Stars in groups:
    - Binary star, optical double
    - ➤ Open clusters, globular clusters
  - Stellar explosions:
    - Nova, supernova, pulsar
    - ➤ Neutron star
  - Galaxies:
    - Milky Way, clusters, Local Group, Andromeda galaxy
    - Superclusters
    - Spiral, barred, elliptical, and irregular galaxies
    - ➤ Lenticular galaxies
  - ➤ Quasars
  - Nebulae

Man & the Universe

- Instruments of astronomy:
  - Visible light astronomy:
    - Telescope, refracting telescope, objective
    - Eyepiece, reflecting telescope
    - ➤ Resolution
  - Spectroscopy:
    - Visible spectrum, spectroscope, spectrogram
      - ➤ Redshift, blueshift
  - Radio wave astronomy:
    - Radio telescopes
    - ➤ Interferometry
- Astronomy and time:
  - ➤ Meridian and transits: zenith, nadir, meridian, transit
  - Day and night:
    - ➤ Sidereal day
    - ➤ Apparent solar day, mean solar day, equation of time
    - Standard solar time, summer time
  - Longer times: lunar month, solar year, week
  - Calendars:
    - Gregorian
    - ➤ Julian, Jewish
  - Ecliptic and climates:
    - ➤ Equinox, precession of the equinoxes, solstice
    - Climate zones
  - Seasons:
    - ➤ Relationship to equinoxes and solstices; lengths
    - Causes
- History of spaceflight:
  - Rockets: solid-fuel rocket, Robert Goddard, liquid-fuel rocket, Wernher von Braun
  - Race to the moon:
    - *Sputnik 1, Explorer 1*
    - Yuri Gagarin, Alan Shepard, John Glenn, Valentina Tereshkova
    - Gemini and Apollo Programs, Saturn V, Neil Armstrong
  - Manned space stations: Salyut program, *Skylab, Mir,* International Space Station
  - Space shuttle
  - Spaceflight today:
    - ➤ Nations in space
    - Private space flights
- Orbits and satellites:
  - Objects in orbit:
    - ➤ Apogee, perigee
    - Geostationary orbit, polar orbit
    - ➤ Sun-synchronous orbits, Hohmann transfer orbit
  - Unmanned satellites:
    - Astronomical, communications, weather, navigational
    - Earth observation, military satellites, GPS
  - Unmanned space probes:
    - ➤ Escape velocity

Environmental Science

- Environment and pollution:
  - Introduction to environmental science:
    - Biotic and abiotic factors, biogeochemical cycles
    - ➤ Preservationists, conservationists
    - Pantheism
  - Pollution basics
  - ➤ Land pollution: landfill, reclaimed, waste-to-energy incinerator, syngas
  - ➤ Air pollution:
    - ➤ Primary and secondary pollutants, formation and dangers of temperature inversion
    - ➤ Clean Air Acts
  - ➤ Water pollution: point and non-point sources, coliform bacteria
- ➤ Global change:
  - ➤ Acid rain
  - ➤ Ozone depletion:
    - ➤ Rowland-Molina hypothesis, freons, halons
    - ➤ Ozone-depleting substances, Montreal Protocol
    - ➤ Hydrochlorofluorocarbons, chlorofluorocarbons
  - Global warming: anthropogenic global warming, Medieval Climate Optimum, Little Ice Age
- Managing our resources:
  - Biblical commands
  - Examining our resources:
    - ➤ Non-renewable and renewable resources
    - Sustainable development, environmental technology
    - ➤ Water reclamation
    - Recycling programs
- Fossil Fuels
  - Petroleum—fractional distillation
  - ➤ Natural gas
  - ➤ Managing fossil fuels—hydraulic fracturing

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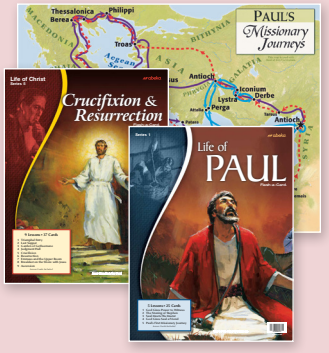
➤ **RED** *indicates first introduction of content.*

SCIENCE: *Science: Earth & Space* *cont.*

Environmental Science *cont.*

- Renewable energy:
  - Biomass energy
    - Biofuels:
      - Ethanol (review)
      - ➤ Wood gas, biogas
      - ➤ Management
      - Solar energy:
        - ➤ Active and passive solar power, photovoltaic cells, concentrating solar power
      - Wind power:
        - ➤ Aerogenerator, wind farm
      - ➤ Hydroelectric power
      - ➤ Nuclear power:
        - ➤ Nuclear chemistry, nuclear fission, nuclear chain reaction
        - ➤ Nuclear reactor, breeder reactor

BIBLE: *Book of Acts* (one semester)



Bible 8 consists of two parts: *Book of Acts* and *Joshua and Judges.*

This first-semester course is designed to give students a basic overview of the life of Peter and Paul, the beginning of the church, and the spread of the gospel to the Gentiles and eventually to the world through Paul's missionary travels.

Through the *Book of Acts,* students may see the power of God at work in His willing servants. His servant Paul is a real person—a person with feelings just like anyone else. Yet Paul's reactions to the trials of life and his indomitable faith in the power of Christ separated him from the nominal Christian life. His life serves as an example for all believers to follow.

Evaluation

- Verses:
  - Verse quizzes (14)
  - 9-weeks verses exam (1)
  - Final verses exam (1)
- Content:
  - 9-weeks content exam (1)
  - Final content exam (1)

Lessons *129 Abeka Flash-a-Cards*

- John the Baptist/Peter (19 lessons)
- Crucifixion and Resurrection (16)
- Life of Paul Series 1 (14)
- Life of Paul Series 2 (21)

Music *44 songs*

- Hymns of the faith, choruses, holiday songs

Memory Work

- Passages (14 containing 48 verses)

Prayer Time

- Learn to pray for each other, our nation, those in authority over us

BIBLE: *Joshua & Judges* (one semester)

The second-semester course, *Joshua and Judges,* focuses on the nation of Israel after their triumphant exodus from Egypt. The exciting, dramatic account of the conquering of the Promised Land will remind the student of the power of God and the provision for His people. This course begins with the anointing of Joshua and ends with the rule of Israel's judges.

Evaluation

- Verses:
  - Verse quizzes (14)
  - 9-weeks verses exam (1)
  - Final verses exam (1)
- Content:
  - 9-weeks content exam (1)
  - Final content exam (1)

Lessons *154 Abeka Flash-a-Cards*

- Joshua (16 lessons)
- Judges (19)
- Ruth (5)
- Life of Samuel (9)
- Esther (8)
- Ezra and Nehemiah (15)

Music *40 songs*

- Hymns of the faith, holiday, choruses

Memory Work

- Passages (14 containing 44 total verses)

Sword Drill *85 verses*

- Old and New Testament

Prayer Time

- Learn to pray for each other, our nation, those in authority over us