

Britestar Grade 9 Scope and Sequence

This document outlines the comprehensive curriculum for Britestar Grade 9 courses, including detailed unit breakdowns, learning objectives, and pacing guides for Algebra 1, English 9, Physical Science, and World Geography

Algebra 1 - Course Summary

This full-year Algebra 1 course builds a strong foundation in algebraic thinking and problem-solving. Semester A focuses on linear expressions, functions, and systems. Semester B introduces polynomials, quadratic and exponential functions, and mixed function types, with an emphasis on modeling and comparative analysis.

Semester A Overview

Students begin by developing their understanding of real numbers, equations, and functions. They build toward interpreting and analyzing linear relationships, systems, and data sets.

Recommended Pacing

- UNIT 1: THE REAL NUMBER SYSTEM (DAYS 1 – 13)
- UNIT 2: LINEAR EQUATIONS (DAYS 14 – 24)
- UNIT 3: FUNCTIONS (DAYS 25 – 37)
- UNIT 4: LINEAR RELATIONSHIPS (DAYS 38 – 49)
- UNIT 5: SPECIAL LINEAR RELATIONSHIPS (DAYS 50 – 63)
- UNIT 6: SYSTEMS OF LINEAR EQUATIONS AND INEQUALITIES (DAYS 64 – 75)
- UNIT 7: DESCRIPTIVE STATISTICS (DAYS 76 – 90)

Algebra 1 - Semester A Units

UNIT 1: THE REAL NUMBER SYSTEM

Introduces students to expressions, equations, and operations with rational and irrational numbers.

- Model and solve problems using expressions
- Solve one- and two-step linear equations in one variable
- Rewrite radical expressions
- Understand operations with rational and irrational numbers
- Apply properties of real numbers
- Build foundational algebraic vocabulary
- Identify key mathematical relationships
- Use radical relationships in context
- Apply strategies for simplifying expressions
- Interpret equations in real-world contexts

UNIT 2: LINEAR EQUATIONS

Covers solving multistep equations and inequalities, including literal equations and formulas.

- Solve multistep linear equations in one variable
- Apply the distributive property and combine like terms
- Solve and rearrange literal equations
- Graph solutions of linear inequalities
- Interpret inequality solutions in context
- Translate word problems into equations
- Identify when solutions are not valid
- Compare linear equations and inequalities
- Apply equations to decision-making scenarios
- Use algebraic tools to check solutions

UNIT 3: FUNCTIONS

Introduces the concept of functions and teaches students to use notation, graphs, and inverse functions.

- Define and identify functions
- Use domain and range in context
- Graph real-world relationships
- Interpret and evaluate function notation
- Identify inverses of functions
- Recognize functions in multiple forms
- Describe relationships between quantities
- Apply function concepts to problem-solving
- Understand input-output patterns
- Model functional relationships from data

UNIT 7: DESCRIPTIVE STATISTICS

Focuses on representing and analyzing data with plots, tables, and statistical measures.

- Create dot plots, box plots, and histograms
- Analyze center, spread, and shape of data
- Construct and interpret two-way frequency tables
- Represent relationships using scatter plots
- Determine correlation and causation
- Compare multiple data sets
- Use statistical reasoning in real-world situations
- Apply mathematical models to data
- Make inferences from graphical representations
- Support conclusions with data

UNIT 4: LINEAR RELATIONSHIPS

Explores how equations and graphs represent linear functions and their transformations.

- Calculate and interpret slope
- Graph linear equations using intercepts
- Write linear functions from tables, graphs, and situations
- Transform linear equations
- Compare multiple linear graphs
- Identify key graph features (slope, y-intercept)
- Interpret changes in slope or intercept
- Apply linear relationships to real-world data
- Convert between different forms of linear equations
- Analyze trends using equations and graphs

UNIT 5: SPECIAL LINEAR RELATIONSHIPS

Extends linear concepts to parallel and perpendicular lines, direct variation, and data modeling.

- Write equations of special lines (parallel, perpendicular, etc.)
- Recognize and apply direct variation
- Construct scatter plots from data
- Draw lines of best fit
- Create and analyze linear models
- Graph linear inequalities in two variables
- Interpret model predictions
- Identify correlation in data sets
- Use graphs to represent real-life relationships
- Apply multiple representations in problem-solving

UNIT 6: SYSTEMS OF LINEAR EQUATIONS AND INEQUALITIES

Introduces solving systems using graphing, substitution, and elimination methods.

- Write and graph systems of equations
- Solve systems by substitution
- Solve systems by elimination
- Analyze solution types (one, none, infinite)
- Solve real-world problems using systems
- Graph and interpret systems of inequalities
- Model constraints using inequalities
- Interpret solution sets graphically
- Apply algebraic reasoning to systems
- Use systems to compare scenarios

Algebra 1 - Semester B Units

Semester B Overview

Semester B dives into polynomial operations, quadratic modeling, exponential change, and systems involving nonlinear functions.

Recommended Pacing

- UNIT 1: POLYNOMIALS (DAYS 1 – 21)
- UNIT 2: QUADRATIC RELATIONSHIPS (DAYS 22 – 38)
- UNIT 3: SOLVING QUADRATIC EQUATIONS (DAYS 39 – 54)
- UNIT 4: EXPONENTIAL RELATIONSHIPS (DAYS 55 – 71)
- UNIT 5: MIXED FUNCTIONS (DAYS 72 – 90)

UNIT 1: POLYNOMIALS

Builds skills in simplifying, adding, subtracting, multiplying, and factoring polynomial expressions.

- Apply laws of exponents to simplify expressions
- Rewrite expressions with rational and radical exponents
- Add and subtract polynomials
- Multiply polynomials
- Factor quadratic expressions
- Recognize structure in expressions
- Analyze polynomial behavior
- Model real-world problems using polynomials
- Identify equivalent polynomial expressions
- Use factoring to solve contextual problems

UNIT 2: QUADRATIC RELATIONSHIPS

Introduces quadratic functions and how to graph, transform, and apply them.

- Explore and graph quadratic relationships
- Identify key attributes of quadratic functions
- Convert between standard, vertex, and factored forms
- Transform quadratic graphs
- Model real-world problems with quadratics
- Write quadratic functions from data
- Use vertex form for graphing
- Interpret quadratic models in context
- Compare different quadratic forms
- Apply quadratic functions to problem-solving

UNIT 5: MIXED FUNCTIONS

Students compare linear, quadratic, and exponential functions using multiple representations.

- Analyze piecewise and absolute value functions
- Solve systems of linear and quadratic equations
- Solve systems of linear and exponential functions
- Represent sequences using functions
- Interpret arithmetic and geometric sequences
- Compare key features across function types
- Graph and analyze multiple function forms
- Translate between tables, graphs, and equations
- Evaluate function performance in real-life examples
- Model real-world problems using mixed functions

UNIT 3: SOLVING QUADRATIC EQUATIONS

Students learn to solve quadratic equations using five different methods.

- Solve by taking square roots
- Solve by factoring
- Complete the square
- Use the quadratic formula
- Interpret the discriminant
- Choose the appropriate method for solving
- Connect solutions to graph features
- Apply all methods in context
- Compare multiple solving techniques
- Solve quadratic models from real-world data

UNIT 4: EXPONENTIAL RELATIONSHIPS

Covers exponential growth and decay, including graphing and modeling.

- Graph exponential functions
- Identify exponential function features
- Transform exponential functions
- Write exponential equations
- Model real-world situations using exponential change
- Distinguish between growth and decay
- Use graphs and tables to compare rates
- Interpret base and initial value in context
- Compare exponential and linear change
- Analyze trends using exponential models

English 9 - Course Summary

English 9 guides students through a wide variety of texts—poetry, fiction, nonfiction, drama, and speeches—while developing writing, grammar, and analytical skills. In Semester A, students explore theme, structure, and perspective across literary and informational texts. In Semester B, they analyze classic literature and rhetoric, research real-world topics, and craft both literary and argumentative pieces.

Semester A Overview

In Semester A, students analyze theme, structure, and perspective through short stories, memoirs, and informational texts. They practice literary analysis, narrative writing, argumentation, and research while strengthening grammar, vocabulary, and communication skills.

Recommended Pacing

- UNIT 1: PAGE TURNERS AND PLOT TWISTS (DAYS 1 – 21)
- UNIT 2: LEAVING A LEGACY (DAYS 22 – 43)
- UNIT 3: LOOKING INWARD (DAYS 44 – 65)
- UNIT 4: A NATURAL BALANCE (DAYS 66 – 90)

English 9 - Semester A Units

UNIT 1: PAGE TURNERS AND PLOT TWISTS

Students explore how authors create suspense and tension in classic and contemporary short stories, analyzing structure, pacing, and authorial choices.

- Analyze how authors use pacing and structure to create suspense
- Identify and interpret themes in classic and modern stories
- Compare stories and their source materials
- Evaluate how cultural experience influences storytelling
- Use textual evidence to support analytical writing
- Develop and revise a literary analysis with peer feedback
- Strengthen writing cohesion using transitions and paragraph structure
- Determine word meaning using reference materials
- Explore nuance in word choice and tone
- Present ideas clearly in discussions and writing

UNIT 2: LEAVING A LEGACY

This unit invites students to examine characters and real-world figures who leave lasting impacts, analyzing arguments and exploring legacy through research and reflection.

- Analyze how poems and nonfiction texts explore legacy
- Examine how structure and repetition affect meaning
- Identify arguments and evaluate supporting evidence
- Compare character interactions and theme development
- Analyze speeches and letters for rhetorical effectiveness
- Conduct independent research on people who make a difference
- Plan and write an argumentative essay with textual support
- Evaluate peer writing and provide constructive feedback
- Practice using parallel structure and rhetorical devices
- Participate in discussions about impact and influence

UNIT 3: LOOKING INWARD

Students turn to memoirs and personal narratives to explore identity, comparing perspectives and developing their own voice through narrative writing.

- Determine central ideas in memoirs and narratives
- Analyze how point of view and detail shape perspective
- Compare accounts of the same subject in different media
- Plan and write a personal narrative using mentor texts
- Incorporate narrative techniques like dialogue and reflection
- Revise drafts for clarity, structure, and expression
- Interpret figurative and connotative language
- Use context clues and dictionaries to determine word meaning
- Discuss how identity is expressed through language and structure
- Reflect on how writing helps explore personal experiences

UNIT 4: A NATURAL BALANCE

Centered on our relationship with the natural world, students examine themes of survival, environmentalism, and responsibility through literary and informational texts.

- Analyze how authors structure ideas in informational texts
- Interpret central ideas and technical vocabulary
- Examine the role of rhetoric in speeches and articles
- Determine theme development in survival narratives
- Write an expository essay on humanity's relationship with nature
- Use text evidence and transitions to support claims
- Edit and revise for grammar, clarity, and cohesion
- Compare tone and point of view across genres
- Discuss how language affects message and persuasion
- Explore how literature shapes environmental thinking

English 9 - Semester B Units

Semester B Overview

In Semester B, students explore literary drama, evaluate rhetoric in historical texts, and conduct independent research. Writing projects include literary analysis, expository writing, and a multimedia research presentation.

Recommended Pacing

- UNIT 1: LOVE AND CONFLICT IN ROMEO AND JULIET (DAYS 1 – 29)
- UNIT 2: MORE THAN JUST FUN AND GAMES (DAYS 30 – 46)
- UNIT 3: HISTORICALLY SPEAKING (DAYS 47 – 66)
- UNIT 4: THE POWER OF YOUTH (DAYS 67 – 90)

UNIT 1: LOVE AND CONFLICT IN ROMEO AND JULIET

Through Shakespeare's *Romeo and Juliet*, students analyze character motivations, dramatic irony, and theme development in one of literature's most iconic tragedies.

- Examine how structure, pacing, and irony build tension in the play
- Analyze character motivation, development, and interactions
- Compare scenes in different mediums and discuss interpretive choices
- Identify central themes and trace their development
- Evaluate language for tone, connotation, and figurative meaning
- Use textual evidence to support literary analysis
- Participate in discussions and performances of dramatic scenes
- Explore the impact of dramatic irony on audience perception
- Write a literary analysis essay connecting theme and characterization
- Compare *Romeo and Juliet* with its mythological source material

UNIT 2: MORE THAN JUST FUN AND GAMES

Students explore how technology impacts human life in fiction and nonfiction texts, building skills in summarizing, researching, and explanatory writing.

- Analyze central ideas and themes in a dystopian short story
- Evaluate author's purpose and use of structure in nonfiction texts
- Compare portrayals of real people across different media
- Conduct independent research on the impact of technology
- Analyze how ideas connect and unfold in complex informational texts
- Use textual and research-based evidence in expository writing
- Present findings in a multimedia format with visual elements
- Develop effective summaries and informative conclusions
- Participate in peer review and feedback exchanges
- Clarify meaning using domain-specific vocabulary and context

UNIT 3: HISTORICALLY SPEAKING

This unit focuses on rhetorical analysis of historically significant speeches and documents to examine how authors use language to persuade and inspire change.

- Analyze rhetorical techniques in foundational U.S. texts and speeches
- Compare how different authors address related themes
- Identify and evaluate claims, reasoning, and rhetorical appeals
- Discuss the power of language in shaping public opinion
- Examine the influence of audience and occasion on rhetoric
- Write a rhetorical analysis of a historical speech
- Prepare and present a short argumentative speech
- Explore how rhetoric advances authors' points of view
- Compare use of rhetoric across time periods and social movements
- Reflect on how powerful communication can influence change

UNIT 4: THE POWER OF YOUTH

In a culminating project, students conduct original research on youth-led change, creating and presenting multimedia research grounded in mentor texts.

- Develop a focused research question related to youth and change
- Gather and evaluate credible sources using MLA citation
- Synthesize multiple sources to support an expository paper
- Write and revise a well-organized research paper
- Create and refine a multimedia presentation of findings
- Analyze mentor texts for structure, clarity, and engagement
- Present findings to an audience and respond to peer feedback
- Use rhetorical techniques in writing and presentation
- Reflect on the writing and revision process
- Publish final work to reach a broader audience

Physical Science - Course Summary

Physical Science introduces key concepts in chemistry and physics through modeling, investigation, and real-world application. Students explore matter, chemical reactions, force and motion, electricity, energy transformations, waves, and communication technology, building scientific understanding across both semesters.

Semester A Overview

Semester A covers matter and its properties, atomic structure, chemical reactions, and Newtonian mechanics. Students build scientific models, conduct investigations, and solve problems involving energy, force, and motion.

Recommended Pacing

- UNIT 1: STRUCTURE AND PROPERTIES OF MATTER (DAYS 1 – 30)
- UNIT 2: CHEMICAL REACTIONS (DAYS 31 – 57)
- UNIT 3: FORCES AND MOTION (DAYS 58 – 88)

Physical Science - Semester A Units

UNIT 1: STRUCTURE AND PROPERTIES OF MATTER

This unit introduces students to the classification and modeling of matter, including atomic structure and changes in states of matter.

- Apply the scientific method to explore physical phenomena
- Classify matter by composition and observable properties
- Model the molecular structure of substances using simple materials
- Describe how thermal energy affects changes in state
- Investigate the behavior of water during heating and cooling
- Explain the Bohr model of the atom
- Trace the historical development of atomic models
- Compare particle motion in solids, liquids, and gases
- Relate energy input to state changes in common substances
- Use visual models to communicate structure and behavior of matter

UNIT 3: FORCES AND MOTION

Students explore the relationship between force and motion, apply Newton's Laws, and solve problems involving work, power, and machines.

- Identify and draw forces acting on real-world objects
- Use words, graphs, and equations to describe motion
- Predict motion based on net force direction and magnitude
- Conduct investigations relating force and acceleration
- Analyze force interactions during object collisions
- Design a car bumper to reduce impact forces
- Model and explain the use of simple machines
- Solve problems involving work, force, and mechanical advantage
- Compare different types of simple machines in daily use
- Create a functional prototype combining multiple simple machines

UNIT 2: CHEMICAL REACTIONS

This unit focuses on identifying chemical reactions, conservation of atoms, and energy changes during reactions, including applications in society.

- Investigate signs of chemical change in everyday substances
- Compare properties of reactants and products to confirm reactions
- Develop models showing conservation of atoms
- Analyze energy absorbed or released during reactions
- Design a device using a chemical reaction to transfer energy
- Test and revise prototypes for thermal control
- Explain how synthetic materials are created and used
- Evaluate societal impacts of chemical inventions
- Use data to support claims about chemical changes
- Write explanations of energy transfer in chemical systems

Physical Science - Semester B Units

Semester B Overview

Semester B covers force fields, electrical circuits, energy transformations, heat transfer, and wave behaviors. Students apply scientific reasoning to explore physical phenomena and understand how physics concepts impact everyday life and technology.

Recommended Pacing

- UNIT 1: FORCE FIELDS (DAYS 1 – 30)
- UNIT 2: ENERGY (DAYS 31 – 67)
- UNIT 3: WAVES (DAYS 68 – 88)

UNIT 1: FORCE FIELDS

This unit covers gravity, electric, and magnetic force fields, with an emphasis on how they influence motion and technology.

- Construct arguments supporting the law of universal gravitation
- Identify factors that affect strength of electric and magnetic forces
- Investigate and find evidence of force fields acting between objects
- Model series and parallel circuits and explain current flow
- Calculate electricity usage and propose ways to conserve energy
- Differentiate between electromagnets, generators, and motors
- Describe Earth's magnetic field and its protective role
- Classify devices based on electromagnetic function
- Apply understanding of electricity to everyday devices
- Create and present a model for conserving home electricity

UNIT 2: ENERGY

This unit explores different forms of energy, their transformation, and how thermal energy flows between objects.

- Create energy flow diagrams for multiple systems
- Identify and describe different forms of energy
- Investigate how position affects gravitational potential energy
- Analyze how speed and mass affect kinetic energy
- Explain the law of conservation of energy in systems
- Plan and conduct experiments on temperature change
- Model how heat flows between objects
- Design and build a thermal insulator or conductor
- Describe energy transfer between kinetic and thermal forms
- Evaluate real-world devices for thermal energy efficiency

UNIT 3: WAVES

This unit focuses on wave properties and how waves interact with matter, with special attention to light and communication technology.

- Identify and classify waves based on their characteristics
- Use mathematics to model wave behavior
- Investigate light absorption, reflection, and transmission
- Describe how waves interact with different materials
- Analyze how light from space provides scientific information
- Model and explain interactions of light and matter
- Compare digital and analog communication signals
- Evaluate advantages of digital over analog technology
- Explore how electromagnetic waves are used in communication
- Write a research-based explanation of wave applications

World Geography - Course Summary

World Geography introduces students to both physical and human geography through the lens of global regions. In Semester A, students explore Earth's climate systems, physical processes, population patterns, and the geography of the Americas. In Semester B, the focus shifts to regional studies of Europe, Asia, Africa, Australia, Oceania, and Antarctica. Throughout the course, students investigate how geography shapes culture, politics, and economics, while developing map skills and spatial reasoning.

Semester A Overview

Semester A introduces core geographic tools and themes, exploring natural processes, human-environment interaction, and the physical and cultural geography of North and South America.

Recommended Pacing

- UNIT 1: EXPLORING GEOGRAPHY (DAYS 1 – 34)
- UNIT 2: PEOPLE AND GEOGRAPHY (DAYS 35 – 58)
- UNIT 3: NORTH AND SOUTH AMERICA (DAYS 59 – 90)

World Geography - Semester A Units

UNIT 1: EXPLORING GEOGRAPHY

This unit introduces the tools, themes, and physical processes of geography that shape the Earth's surface and atmosphere.

- Review the course syllabus and orientation materials
- Identify the five themes and major branches of geography
- Analyze the purpose and components of different types of maps
- Understand latitude, longitude, and spatial organization
- Explain Earth's atmospheric and oceanic systems
- Analyze factors that influence Earth's climate and vegetation
- Compare weather patterns across global regions
- Examine tectonic forces and their impact on landforms
- Describe erosion, deposition, and other surface processes
- Apply spatial and environmental reasoning to interpret landscapes

UNIT 2: PEOPLE AND GEOGRAPHY

This unit explores how population, culture, and economic development are influenced by geography and the use of natural resources.

- Define human geography and identify patterns of population settlement
- Explore how geography influences culture and migration
- Examine the relationship between natural resources and economies
- Identify renewable and nonrenewable resources
- Analyze global patterns of economic development
- Understand the roles of urbanization and industrialization
- Investigate the causes and effects of human-environment interaction
- Evaluate sustainability and environmental challenges
- Study how geography influences political and social systems
- Apply geographic tools to real-world economic and social issues

UNIT 3: NORTH AND SOUTH AMERICA

This unit examines the physical geography, history, culture, and development of North and South America.

- Analyze the landforms, climates, and natural resources of the Americas
- Explore cultural diversity and migration patterns
- Examine economic activities and trade relationships
- Understand indigenous history and colonization
- Compare urbanization and development across regions
- Investigate current environmental and social issues
- Analyze government structures and political geography
- Study how physical geography shapes cultural identity
- Develop arguments using geographic evidence
- Propose solutions to regional geographic challenges

World Geography - Semester B Units

Semester B Overview

Semester B focuses on the physical and human geography of Europe, Asia, Africa, Australia, Oceania, and Antarctica. Students examine how natural resources, cultural traditions, and political boundaries impact development and daily life across global regions.

Recommended Pacing

- UNIT 1: EUROPE AND NORTHERN ASIA (DAYS 1 – 19)
- UNIT 2: CENTRAL, SOUTH, AND SOUTHEAST ASIA (DAYS 20 – 45)
- UNIT 3: THE MIDDLE EAST AND AFRICA (DAYS 46 – 71)
- UNIT 4: THE PACIFIC WORLD AND ANTARCTICA (DAYS 72 – 90)

UNIT 1: EUROPE AND NORTHERN ASIA

This unit focuses on the geographic, cultural, religious, and economic similarities and differences among countries in Europe and Northern Asia.

- Analyze the human and physical geography of the European subcontinent
- Evaluate patterns of migration, trade, and cultural influence in Europe
- Describe political and economic organizations such as the EU
- Examine the impact of natural resources on European development
- Explore cultural traditions and languages across the region
- Analyze historical factors shaping modern borders
- Study physical features like mountain ranges, rivers, and climates
- Compare urbanization and infrastructure between subregions
- Identify contemporary environmental challenges in Europe
- Evaluate regional trends using spatial and historical evidence

UNIT 3: THE MIDDLE EAST AND AFRICA

This unit examines the complex geography, resources, and cultural traditions of the Middle East and Africa, along with regional conflicts and development.

- Analyze physical and human geography of North Africa and the Middle East
- Evaluate access to freshwater and its regional impacts
- Examine the role of oil in shaping global and regional economies
- Study religious and ethnic influences on politics and society
- Compare rural and urban development in Sub-Saharan Africa
- Investigate desertification, agriculture, and food security
- Identify causes and consequences of regional conflicts
- Explore African colonial history and post-independence growth
- Analyze infrastructure and economic growth across regions
- Use maps and data to draw conclusions about regional trends

UNIT 2: CENTRAL, SOUTH, AND SOUTHEAST ASIA

This unit explores the physical and cultural geography of Central, South, and Southeast Asia, with emphasis on environmental challenges and economic development.

- Analyze geography and development patterns in Central Asia
- Study physical features and climates of the Indian subcontinent
- Evaluate monsoons, agriculture, and water access in South Asia
- Examine population growth and urban challenges
- Analyze religious and linguistic diversity in Asia
- Compare economic systems and industrial development
- Evaluate global trade and outsourcing patterns
- Investigate deforestation and environmental management
- Understand cultural heritage and historical sites
- Develop geographic questions and plan investigations

UNIT 4: THE PACIFIC WORLD AND ANTARCTICA

This unit explores the geography, culture, and development of Australia, New Zealand, Oceania, and Antarctica.

- Analyze human and physical geography of Australia and New Zealand
- Study indigenous populations and colonial influences
- Compare economic and environmental policies
- Investigate geographic features and climates of Oceania
- Evaluate the significance of remote island nations
- Understand Antarctic governance and environmental treaties
- Examine the role of tourism and conservation in Antarctica
- Explore unique ecosystems and wildlife preservation
- Assess climate change effects in polar and island regions
- Synthesize regional case studies using geographic evidence