



## Grade 9

*Royal Oak Schools has a comprehensive curriculum for all ninth graders that includes academics, foreign language, physical education, health, music and art. Our curriculum also includes areas essential to the education of the total child. We pay close attention to the physical learning environment and the learning climate of our classrooms. We recognize the uniqueness of every child and are dedicated to providing the best educational experience possible. This folder describes Royal Oak's Curriculum for ninth grade students in the core academic areas of language arts, social studies, math and science.*

A Parent guide to the Royal Oak

# High School

Ninth grade is a transition year for students. As they enter high school, our nurturing staff helps students adjust to challenging academic expectations, experience extra-curricular activities, and develop awareness of career and educational opportunities.

- Instruction is delivered in a variety of ways to maximize achievement.
- Our curriculum is under continuous review and revision by teachers and administrators from all buildings.
- The progress of all students is assessed in a variety of ways. Counselors meet with Ninth graders to review progress and update long range plans in preparation for scheduling. Report cards are sent home every six weeks. Standardized assessments for ninth graders include the Differential Aptitude Test which assesses the career and academic aptitude of our students. Results are sent to parents and used for educational planning.
- At every level students accomplish important milestones in each curricular area. The curriculum is developmentally appropriate and challenging at each grade.
- This brochure outlines what we expect ninth grade students to be able to demonstrate throughout the year in each of the four core curricular areas.

# language arts

*The K--12 English Language Arts curriculum provides a framework for students to develop reading, writing, listening, speaking, and critical thinking skills*

Ninth grade students will:

- practice the research process , producing a research project.
- create a minimum of three published pieces that address three distinct audiences.
- read and analyze a variety of genre that are thematically linked. They will write an essay that links the theme with personal experience and makes reference to three of the texts.
- compose a letter to the editor of a newspaper which addresses a social issue. Students will follow guidelines for editorial writing.
- write a parody based on literature they have analyzed.
- Include assessments in the 9<sup>th</sup> Grade Language Arts Portfolio.

# social studies

*The Social Studies K-12 Curriculum develops social understanding and civic responsibility by building four capacities in learners: disciplinary knowledge, thinking skills, commitment to democratic values, and citizen participation.*

Ninth grade students will:

## In **CIVIC PERSPECTIVE**

- evaluate the challenges in creating a balance between personal freedoms and maintaining government autonomy.
- consider how issues and events related to the Vietnam era affected various peoples, society, places and cultures.

## In **GEOGRAPHY**

- demonstrate how US presidents have responded in different ways to issues such as communist expansion, atomic bomb development, and division of Germany, Korea, China, Vietnam, the Middle East, Cuba and Aims/space race.
- evaluate foreign power positions in height of national interests and American values.

## In **ECONOMICS**

- evaluate a New Deal government-spending program on the basis of its intended and unintended results.
- analyze the economic factors that characterize the Industrial Revolution (1870-1900).

# math

*The K-12 Mathematics Curriculum provides the framework for students to develop reasoning, communication, and problem-solving skills. The six strands of the math curriculum include: patterns, relationships and functions; geometry and measurement; data analysis and statistics; number sense and numeration; numerical and algebraic operations and analytical thinking; and probability and discrete mathematics.*

Ninth grade Algebra 1 & 2\* accomplishes these strands as described below.

Students will:

## **Patterns, Relationships and Functions**

- draw and interpret graphs, organize data in matrices, draw and interpret scatter plots and analyze trends in data.
- identify relations and functions, understand function notation, identify families of equations and families of graphs.

- find rates of change for linear functions, explore quadratic functions, explore exponential patterns and evaluate exponential functions.

### **Geometry and Measurement**

- analyze graphs, graph lines given the slope and a point, write equations of lines, and explore parallel and perpendicular lines.
- explore quadratic functions and their graphs as well as exponential functions and their graphs.
- solve equations using the Pythagorean Theorem and solve problems using trigonometric ratios.

### **Data Analysis and Statistics**

- find the mean, median and mode; interpret graphs; and organize data in spreadsheets.
- interpret scatter plots, sketch graphs, find trend lines and lines of best fit.
- analyze data using standard deviation.

### **Number Sense and Numeration**

- add, subtract, multiply and divide real numbers.
- compare rational numbers, evaluate expressions and solve addition, subtraction, multiplication and division equations.
- simplify variable expressions, solve equations with rational numbers, find square roots, estimate square roots, use square roots to solve equations, solve radical equations and solve equations with extraneous roots.
- solve equations by factoring and solve rational equations.

### **Numerical and Algebraic Operations and Analytical Thinking**

- evaluate expressions using order of operations, simplify expressions, and organize data in matrices, and input variables and formulas in spreadsheets.
- do modeling by writing equations, using tiles and solving equations.
- solve percent equations, solve proportions, solve equations with variables on both sides and solve equations involving absolute values.
- solve and graph inequalities.
- solve compound inequalities and interpret their solutions.
- solve direct and inverse variation problems.
- solve systems of equations by graphing, substitution and elimination.
- write systems of equations and explore concepts of linear programming. Students will solve quadratic find compound interest and calculate exponential decay all using properties of exponential functions. They will solve problems using the distance and mid-point formulas, simplify radicals, solve radical equations and explore rational functions. Students will also add, subtract, multiply, divide and **factor polynomials**.

### **Probability and Discrete Mathematics**

- find experimental probability, conduct simulations, find theoretical probability, find probability of independent and dependent events, use the multiplication counting principle and find permutations.

\*The Extended Algebra Program will complete this curriculum in the 9<sup>th</sup> and 10<sup>th</sup> grades. equations and analyze solutions using the discriminate. Students will model exponential growth,

# science

*The Science Curriculum provides the framework for students to develop scientific literacy by using, constructing, and reflecting on scientific knowledge, and coming to informed conclusions. Students will learn concepts and theories of the three main science areas: earth, life, and physical.*

Students will:

### **Physical Science**

- describe how element families are similar and different based upon their structural similarities and differences through orally presentations and group discussions.
- explain chemical changes in terms of the breaking of bonds and the rearrangement of atoms to form new substances.
- explain why mass is conserved in physical and chemical changes.
- compare and contrast nuclear fission, nuclear fusion, and natural radioactivity.
- describe energy transformation involved in physical, chemical and nuclear changes, and contrast their relative magnitudes.
- explain changes in matter and energy involving heat transfer, and explore the key concepts of the mechanisms of heat transfer.
- describe the characteristics of sounds as related to the properties of sound waves.

- explain shadows, color, and other light phenomena.
- measure and describe vibrations and waves.
- explain how electrical current is controlled in simple series and parallel circuits.
- describe how electric currents can be produced by interacting wires and magnets, and explain applications of this principle.

### **Earth Science**

- explore features of the earth's surface.
- discover the forces that help to change the earth over time.
- investigate the plate tectonics theory as it relates to movements of our planet's continents.
- relate the above concepts to the formation of the Great Lakes region while making connections to the effects of erosion and glaciation.
- investigate the role of "meteorologists" as they determine local and global weather conditions.
- use tools that are used to collect weather data to gather information and predict daily weather patterns.
- investigate how the earth's weather changes over time.
- explore climatic changes as they relate to glacial activity, ocean currents, and the greenhouse effect.
- discover the interrelationship between human activities and how they affect climatic changes.
- demonstrate where water is found on earth; describe the characteristics of water and how water moves; and analyze the interaction of human activities with the hydrosphere.
- investigate conservation of resources and recycling, effects of technology on the earth's systems and resources, pollution and waste disposal, and maintaining water quality.
- identify how water moves below the surface of the earth and how water migrates below ground to springs, wells, and aquifers.
- appraise the positive and negative aspects of current scientific issues.
- conduct a risk/benefit analysis, keeping in mind that the world is continually affected by change.

### **What Parents Can Do...**

- Talk to your child about school daily.
- Talk to and work with your child's teacher(s).
- Encourage your child to read a variety of material daily.
- Encourage your child to use writing skills in everyday life.
- Make math part of everyday life (e.g., money, time, fractions, and multiples) and discuss applications with your child.
- Acknowledge a good job when you see it with positive comments.
- Check and sign your child's planner daily.
- Look over and discuss your child's work.
- Encourage regular attendance at school.
- Promote community service and involvement in school activities.



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