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A Guide for Parents and Families About What Your TWELFTH GRADER Should Be Learning In School This Year

SC EDUCATION OVERSIGHT COMMITTEE

This guide shares important information about the South Carolina Academic Standards. These standards outline state requirements for your child's learning program and what students across the state should be able to do in certain subjects.

A good educational system provides many tools that help children learn. Academic standards are useful for making sure:

- teachers know what is to be taught;
- children know what is to be learned; and
- parents and the public can determine how well the concepts are being learned.

The following pages provide information about the South Carolina Academic Standards for mathematics, English language arts, science and social studies for Twelfth Grade. The information can help you become familiar with what your child is learning at school and may include activities to reinforce and support your child's learning, selected book titles for additional reading, and Web site addresses for extended learning. Because sites change, please preview before students begin work. This version does not include every standard taught in Twelfth Grade. The complete South Carolina Academic Standards for each subject area can be found at www.ed.sc.gov.

Sample and release assessment questions for the High School Assessment Program (HSAP) and End-of-Course Tests can be found at www.eoc.sc.gov/informationforeducators/TestItems.htm.

South Carolina Academic Standards

Here are seven key reasons parents should be in the know about the academic standards:

1. Standards set clear, high expectations for student achievement. Standards tell what students need to do in order to progress through school on grade level.
2. Standards guide efforts to measure student achievement. Results of tests (PASS) on grade-level academic standards and end-of-course examinations show if students have learned and teachers have taught for mastery.
3. Standards promote educational equity for all. Instruction in every school in the state will be based on the same academic standards.
4. Standards help parents determine if children in South Carolina are taught the same subject content as children across the nation. South Carolina Academic Standards have been compared with and matched to national standards as well as standards of other states to make sure that they are challenging.
5. Standards inform parents about the academic expectations for their child. Standards give parents more specific information for helping their child at home. Parents no longer have to guess the type of help their child needs to do better in school.
6. Standards enable parents to participate more actively in parent/teacher conferences. Knowledge of the academic standards helps parents understand more about what their child is learning and what they can do at each grade level. Parents are able to have conversations with teachers about student progress in specific areas and understand more completely the progress of their child.
7. Standards help parents see how the current grade level expectations are related to successive years' expectations. Parents are able to see how their child's knowledge is growing from one year to the next.

WEB RESOURCES

South Carolina Department of Education (SCDE):
www.ed.sc.gov

South Carolina Education Oversight Committee (EOC):
www.eoc.sc.gov

South Carolina Education Television (SCETV):
www.knowitall.org

Sample and Release HSAP and End-of-Course Test Items:
www.eoc.sc.gov/informationforeducators/TestItems.htm

ENGLISH LANGUAGE ARTS

English 4

Students should be able to:

Reading

- Make inferences and draw conclusions by comparing and contrasting information from one or more texts
- Evaluate the impact of point of view and figurative language (including extended metaphor, oxymoron, and paradox) on the meaning of a text
- Understand the relationship among character, plot, and theme in texts
- Analyze the effects of imagery, flashback, foreshadowing, symbolism, irony, and allusion on the tone and meaning of a text
- Create responses to reading through writing, drawing, acting, speaking, and media productions
- Read independently for various reasons
- Evaluate the thesis within and across nonfiction texts
- Analyze ways authors show bias
- Evaluate the impact of text structures and graphic features (for example, charts and graphs) in nonfiction texts
- Identify a variety of propaganda techniques used in nonfiction texts
- Use context clues to determine the meaning of unfamiliar words and technical terms
- Use a knowledge of Greek or Latin word parts to understand the meanings of words
- Understand how British history and culture have influenced the development of the English language

Writing

- Use planning strategies to organize writing (for example, creating lists, discussing ideas, or using graphic organizers, models, or outlines)
- Use a variety of sentence types
- Create multi-paragraph writing that has an introduction and conclusion, a clear main idea, and support for ideas such as definitions and descriptions
- Use correct grammar, punctuation, and spelling in writing
- Use editing strategies to improve writing
- Use revision strategies to improve the organization, development, and voice in written pieces
- Create career-oriented and technical writing (for example memos, business letters, resumes, technical reports, and information analyses)
- Write essays, memoirs, or poems that tell a story and use descriptive language to enhance voice and tone
- Create descriptions for use in other modes of written works such as narrative, expositor, or persuasive pieces
- Create persuasive pieces, industry (including, editorials, essays, speeches, or reports that address a specific audience and use logical arguments supported by facts or expert opinions)

Research

- Use direct quotations, paraphrases, or summaries to incorporate information from other sources into writing or speaking
- Use a standard method to document sources and properly credit the work of others
- Create written assignments and oral presentations that are designed for a specific audience and purpose
- Use a variety of print or electronic sources and supporting graphics in presentations
- Design and present inquiry projects

Activities

- Read the same book your child is reading and discuss the book with your child
- Take your child to a movie or play written by a British writer and discuss the playwright's portrayal of character, plot, and theme
- Have your child compare and contrast British and American poetry and plays
- Have your child compare and contrast movies and plays to books read focusing on British literature
- Provide opportunities for your child to prepare and deliver a brief oral presentation
- Determine the audience for a written or oral presentation and generate ideas to appeal to that particular audience
- Review political campaign materials with your child and evaluate them for propaganda techniques
- Ask your child to make inferences or draw conclusions about British literature

Books

- Austin, Jane. *Emma*
- DuMaurier, Daphne. *Rebecca*
- Golding, William. *Lord of the Flies*
- Shelley, Mary Wollstonecraft. *Frankenstein*

Web Sites

- Romantic Circles – http://www.rc.umd.edu
- United States Department of Education – http://www2.ed.gov/parents
- Anthology of British Literature – http://www.luminarium.org
- Online Dictionary – http://www.onelook.com

MATHEMATICS

The mathematics standards for grades nine through twelve contained in the South Carolina Mathematics Academic Standards 2007 provide the essential content students are expected to learn during their entire high school mathematics career. Academic standards are specified for five high school core areas: elementary algebra, intermediate algebra, geometry, precalculus and data analysis and probability. Content topics contained in precalculus, and data analysis and probability are given below. Students in **12th grade** are generally enrolled in **Mathematics for the Technologies 4, Precalculus,** or **Probability and Statistics.** Since mathematics is taught in specific mathematics courses rather than as an integrated system in most high schools, standards for courses are incorporated into course outlines in the document Outlines of High School Mathematics Courses found on the State Department of Education web site http://www.ed.sc.gov/. Other courses may be available as well for students in schools on a semester block schedule.

Precalculus

The academic standards for the precalculus core area establish the process skills and core content for Precalculus.

The content of the precalculus standards includes:

- Characteristics and behaviors of functions
- Operations on functions
- Behaviors of polynomial functions and rational functions
- Behaviors of exponential and logarithmic functions
- Behaviors of trigonometric functions
- Behaviors of conic sections

Students are expected to use technology, including graphing calculators, computers, and data gathering equipment throughout the course. Graphing calculators should be an integral part of all instruction.

Probability and Statistics

The academic standards for the data analysis and probability core area establish the process skills and core content for Probability and Statistics and Mathematics for the Technologies 4.

The content of the data analysis and probability standards includes:

- Design of a statistical study
- Collection, organization, display, and interpretation of data
- Basic statistical methods of analyzing data
- Basic concepts of probability

Students learn the fundamental principles of probability and statistics and apply these principles to data analysis through projects, investigations and case studies. Students are expected to use technology, including graphing calculators, computers, and data gathering equipment throughout the course. Graphing calculators should be an integral part of all instruction.

Sample Assessment Questions

Sample questions for Mathematics for the Technologies 4, Pre-calculus, and Probability and Statistics are not available at this time.

Activities:

Have your child:

- Critique data collection methods. Find examples of data collection methods used in studies. Explain how the methods could control or lead to bias.
- Use an exponential equation to solve the following problem. Felipe deposits $2,000 into a retirement account and leaves it to accumulate for 30 years. Find the accumulated amount if the interest rate is (a) a true annual rate of 7.5 percent, (b) 7.5 percent compounded quarterly, (c) 7.5 percent compounded monthly, (d) 7.5 percent compounded daily and (e) 7.5 percent compounded continuously.
- Use probability to solve the following problem: If 40 percent of the population has type O blood and two people walk into a blood donor station at the same time, what is the probability that (a) both have type O blood, (b) neither has type O blood and (c) one has type O blood and the other does not?

Books:

- Grinstein, Louise S. and Sally I. Lipsey, editors. *Encyclopedia of Mathematics Education*
- Hershey, Robert L. *All the Math You Need to Get Rich: Thinking with Numbers for Financial Success*
- Hopfensperger, Patrick, Henry Kranendonk and Richard Scheaffer. *Probability Models*
- Nahin, Paul J. *Dueling Idiots and Other Probability Puzzlers*

Web Sites:

- www.illuminations.nctm.org
- http://mathworld.wolfram.com/

SCIENCE

It is recommended that students take **Physics** and/or **Earth Science** in the twelfth grade, however, many high schools in South Carolina also offer a variety of advanced science electives.

Physics

The standards for Physics establish the scientific inquiry skills and core content for all Physics courses in South Carolina schools. In these courses, students acquire a fundamental knowledge of motion, matter, and energy that should not only serve them as the foundation for their study of science in institutions of higher education but should also provide them with the science skills that are necessary in Physics-oriented technical careers.

A total of seven high school core area standards for Physics must be taught: the required standards for Physics are standards 1 through 5; any two of standards 6 through 10 are required in addition. The decision about which two of standards 6 through 10 to address in any particular Physics course should be based on the objectives for that course. Teachers, schools, and districts should therefore use these standards to make decisions concerning the structure and content of all their courses in physics.

The standards addressed in Physics include:

- Demonstrate an understanding of how scientific inquiry and technological design, including mathematical analysis, can be used appropriately to pose questions, seek answers, and develop solutions
- Demonstrate an understanding of the principles of force and motion and relationships between them
- Demonstrate an understanding of the conservation, transfer, and transformation of mechanical energy
- Demonstrate an understanding of the properties of electricity and magnetism and the relationships between them
- Demonstrate an understanding of the properties and behaviors of mechanical and electromagnetic waves
- Demonstrate an understanding of the properties and behaviors of sound
- Demonstrate an understanding of the properties and behaviors of light and optics
- Demonstrate an understanding of nuclear physics and modern physics
- Demonstrate an understanding of the principles of fluid mechanics
- Demonstrate an understanding of the principles of thermodynamics

Earth Science

The standards for earth science establish the scientific inquiry skills and core content for all earth science courses in South Carolina schools. Earth Science courses should provide students with a basic knowledge of the natural world that will serve as the foundation for more advanced secondary and postsecondary courses and will also give them the science skills necessary for Earth Science-oriented technical careers. In order for students to achieve these goals, earth science courses must include inquiry-based instruction, allowing students to engage in problem solving, decision-making, critical thinking, and applied learning. Teachers, schools, and districts should use the academic standards for Earth Science to make decisions concerning the structure and content of all their Earth Science courses and to determine how these courses may go beyond the standards.

The standards addressed in Earth Science include:

- Demonstrate an understanding of how scientific inquiry and technological design, including mathematical analysis, can be used appropriately to pose questions, seek answers, and develop solutions
- Demonstrate an understanding of the structure and properties of the universe
- Demonstrate an understanding of the internal and external dynamics of solid Earth
- Demonstrate an understanding of the dynamics of Earth's atmosphere
- Demonstrate an understanding of Earth's freshwater and ocean systems
- Demonstrate an understanding of the dynamic relationship between Earth's conditions over geologic time and the diversity of its organisms

Web Sites:

- Amusement Park Physics – http://www.learner.org/exhibits/parkphysics/
- Center for Improved Engineering and Science Education http://www.k12science.org/currichome.html
- Frank Potter's Science Gems-more than 14000 science resources sorted by category and grade level – http://www.sciencegems.com
- SC MAPS – http:// www.ces.clemson.edu/scmaps
- The Particle Adventure, The Fundamentals of Matter and Forces – http://www.particleadventure.org/
- The Weather Channel – www.weather.com/
- What Should I Look For in the Science Program in My Child's School: A Guide for Parents – http://www.scimathmn.org

Activities:

Have your child:

- Investigate the SC Junior Academy of Science and participate with your child in workshops and activities
- Visit museums, industrial exhibits, and electrical generating plants and discuss the physics observed in everyday life
- Discuss current science events as they appear in the nightly news and in the newspaper
- Visit with your child a local science fair, the Roper Mountain Science Center in Greenville, and a planetarium
- Build model rockets or electronic devices from kits
- Learn to play musical instruments and discuss the variables that influence the pitch and the volume of the tones produced
- Research energy efficiency when purchasing a car or an appliance
- In the context of an eye exam, research, and discuss how various lenses can correct vision

Books:

- Eisenkraft, Arthur. *Active Physics*
- Macaulay, David. *The Way Things Work: From Levers to Lasers. Cars to Computers; A Visual Guide to the World of Machines*
- Gonick, Larry. *A Cartoon Guide to Physics.* This collection of cartoons touches upon all aspect of general physics including velocity, acceleration, explosions, electricity, and magnetism, circuits and relativity using simple, clear, and sometimes humorous illustrations

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SOCIAL STUDIES

A separate document is available at www.eoc.sc.gov containing Family-Friendly Standards for the required courses of Economics, United States Government, and United States History and the Constitution

SCIENCE
Continued

- Hewitt, Paul. *Touch This!! Conceptual Physics for Everyone.* This book was written for a general audience and assumes no prior knowledge of physics or mathematics. Explanations of nature's rules in common language