JUNIOR SOLAR SPRINT | JSS and STEM Standards

Twenty-six states and their broad-based teams developed the Next Generation Science Standards (NGSS). Junior Solar Sprint is a great tool to integrate into existing curricula to enhance lessons with motivating, hands-on activities.

JSS supports the following STEM standards:

SCIENCE CONTENT STANDARDS

Science as Inquiry

Students should develop the following:

- Abilities necessary to do scientific inquiry
- Understandings about scientific inquiry

Physical Science

Students should develop an understanding of the following:

- Properties and changes of properties in matter
- Motions and forces
- Transfer of energy

Science and Technology

Students should develop the following:

- Abilities of technological design
- Understandings about science and technology

(Excerpted from: National Science Education Standards, 1995 by the National Academy of Sciences).

TECHNOLOGY CONTENT STANDARDS

Standard	Objective
Standard 1	Students will develop an understanding of the characteristics and scope of technology.
Standard 2	Students will develop an understanding of the core concepts of technology.
Standard 3	Students will develop an understanding of the relationships among technologies and the connections between technologies and other fields of study.
Standard 5	Students will develop an understanding of the effects of technology on the environment.
Standard 8	Students will develop an understanding of the attributes of design.
Standard 9	Students will develop an understanding of engineering design.
Standard 10	Students will develop an understanding of the role of troubleshooting, research and development, invention and innovation, and experimentation in problem solving.

Standard 11	Students will develop the abilities to apply the design process.
Standard 12	Students will develop the abilities to use and maintain technological products and systems.
Standard 13	Students will develop the abilities to assess the impact of products and systems.
Standard 16	Students will develop an understanding of and be able to select and use energy and power technologies.

[Excerpted from: Standards for Technological Literacy: Content for the Study of Technology (ITEEA (formerly ITEA), 2000/2002/2007)]

ENGINEERING CONTENT STANDARDS

All Americans will:

- Apply a structured approach to solving problems including: defining a problem, brainstorming, researching and generating ideas, identifying criteria and constraints, exploring possibilities, making a model or prototype, evaluating the design using specifications, and communicating results.
- Ask questions and make observations to help figure out how things work.
- Learn that all products and systems are subject to failure and that many products and systems can be fixed.
- Troubleshoot as a way of finding out why something does not work so that it can be fixed.
- Analyze and break down complex systems into their component parts and explain the relationship and interdependency of the part and the system.

(Excerpted from: The Corporate Member Council – K–12 STEM Guidelines for All Americans)

MATHEMATICS CONTENT STANDARDS

Numbers and Operations

- Understand numbers, ways of representing numbers, relationships among numbers and number systems
- Understand meanings of operations and how they relate to one another• Compute fluently and make reasonable estimates

Geometry

- Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships
- Specify locations and describe spatial relationships using coordinate geometry and other representational systems
- Apply transformations and use symmetry to analyze mathematical situations
- Use visualization, spatial reasoning and geometric modeling to solve problems

Measurement

- Understand measurable attributes of objects and the units, systems and processes of measurement
- Apply appropriate techniques, tools and formulas to determine measurements

ARMY EDUCATIONAL OUTREACH PROGRAM

JR. SOLAR SPRINT

MATHEMATICS CONTENT STANDARDS (cont'd)

Data Analysis and Probability

- Formulate questions that can be addressed with data and collect, organize and display relevant data to answer them

- Select and use appropriate statistical methods to analyze data
- Develop and evaluate inferences and predictions that are based on data
- Understand and apply basic concepts of probability

Problem Solving

- Build new mathematical knowledge through problem solving
- Solve problems that arise in mathematics and in other contexts
- Apply and adapt a variety of appropriate strategies to solve problems
- Monitor and reflect on the process of mathematical problem solving

Reasoning and Proof

- Recognize reasoning and proof as fundamental aspects of mathematics
- Make and investigate mathematical conjectures
- Develop and evaluate mathematical arguments and proofs
- Select and use various types of reasoning and methods of proof connections
- Recognize and use connections among mathematical ideas
- Understand how mathematical ideas interconnect and build on one another to produce a coherent whole
- Recognize and apply mathematics in contexts outside of mathematics

[Excerpted from Principles and Standards for School Mathematics, © 2000 by the National Council of Teachers of Mathematics (NCTM)].