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 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.

Junior Solar Sprint

JSS and STEM Standards

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

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).