# NCTM National Mathematics Standards
## Grades 9-12
### As Addressed by Challenger's e-Mission: Space Station Alpha

| Instructional programs should enable all students to— | In grades 9–12 all students should— |
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**Numbers and Operations**

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| Understand numbers, ways of representing numbers, relationships among numbers, and number systems | • Develop a deeper understanding of very large and very small numbers and of various representations of them; |
| Compute fluently and make reasonable estimates | • Develop fluency in operations with real numbers, using mental computation or paper-and-pencil calculations for simple cases and technology for more-complicated cases. |
| | • Judge the reasonableness of numerical computations and their results. |

**Algebra**

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| Understand patterns, relations, and functions | • Analyze functions of one variable by investigating rates of change, intercepts, zeros, asymptotes, and local and global behavior; |
| Use mathematical models to represent and understand quantitative relationships | • Draw reasonable conclusions about a situation being modeled. |
| Analyze change in various contexts | • Approximate and interpret rates of change from graphical and numerical data. |

**Measurement**

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| Understand measurable attributes of objects and the units, systems, and processes of measurement | • Make decisions about units and scales that are appropriate for problem situations involving measurement. |

**Problem solving standard**

- 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.

**Communication standard**

- Organize and consolidate their mathematical thinking through communication;
- Communicate their mathematical thinking coherently and clearly to peers, teachers, and others;
- Analyze and evaluate the mathematical thinking and strategies of others;

## Connections standard

- 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.