Academic
Standards

Academic Standards

The Autodesk VEX Robotics Curriculum meets US academic standards for Science, Technology, Engineering, and Math (STEM).

Each unit provides a list of academic standards addressed within each phase of that unit.

Unit 1

The following national academic standards are supported in Unit 1: Introduction to VEX and Robotics.

Phase	Standard
Think	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 3.2: Core Concepts of Technology 3.3: Relationships Among Technologies 4.5: The Effects of Technology on the Environment 4.7: The Influence of Technology on History **Mathematics (NCTM)** *Connections* Recognize and apply mathematics in contexts outside of mathematics.
Create	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.12: Use and Maintain Technological Products and Systems **Mathematics (NCTM)** *Numbers and Operations* Understand numbers, ways of representing numbers, relationships among numbers, and number systems. *Algebra Standard* Understand patterns, relations, and functions. *Geometry Standard* Use visualization, spatial reasoning, and geometric modeling to solve problems. *Measurement Standard* Understand measurable attributes of objects and the units, systems, and processes of measurement.

Phase	Standard
Build	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 3.2: Core Concepts of Technology 3.3: Relationships Among Technologies **Mathematics (NCTM)** *Connections* Recognize and apply mathematics in contexts outside of mathematics.
Amaze	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 3.2: Core Concepts of Technology **Mathematics (NCTM)** *Connections* Recognize and apply mathematics in contexts outside of mathematics.

Unit 2

The following national academic standards are supported in Unit 2: Introduction to Autodesk Inventor.

Phase	Standard
Create	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.12: Use and Maintain Technological Products and Systems **Mathematics (NCTM)** *Numbers and Operations* Understand numbers, ways of representing numbers, relationships among numbers, and number systems. *Algebra Standard* Understand patterns, relations, and functions. *Geometry Standard* Use visualization, spatial reasoning, and geometric modeling to solve problems. *Measurement Standard* Understand measurable attributes of objects and the units, systems, and processes of measurement.

Unit 3

The following national academic standards are supported in Unit 3: Building a Protobot.

Phase	Standard
Think	**Science (NSES)** *Form and Function* *Physical Science:* Motions and Forces PROPERTIES of objects and materials *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 3.2: Core Concepts of Technology 5.8: The Attributes of Design **Mathematics (NCTM)** *Connections* Recognize and apply mathematics in contexts outside of mathematics.
Create	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.12: Use and Maintain Technological Products and Systems **Mathematics (NCTM)** *Numbers and Operations* Understand numbers, ways of representing numbers, relationships among numbers, and number systems. *Algebra Standard* Understand patterns, relations, and functions. *Geometry Standard* Use visualization, spatial reasoning, and geometric modeling to solve problems. *Measurement Standard* Understand measurable attributes of objects and the units, systems, and processes of measurement.

Phase	Standard
Build	**Science (NSES)** *Unifying Concepts and Processes*: Evidences, Models, and Explanation *Form and Function* *Physical Science:* Motions and Forces PROPERTIES of objects and materials *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.12: Use and Maintain Technological Products and Systems **Mathematics (NCTM)** *Communications* Organize and consolidate mathematical thinking through communication. Communicate mathematical thinking coherently and clearly to peers, teachers, and others. *Connections* Recognize and apply mathematics in contexts outside of mathematics.
Amaze	**Science (NSES)** *Unifying Concepts and Processes*: Evidences, Models, and Explanation *Form and Function* *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design **Mathematics (NCTM)** *Communications* Organize and consolidate mathematical thinking through communication. Communicate mathematical thinking coherently and clearly to peers, teachers, and others. *Connections* Recognize and apply mathematics in contexts outside of mathematics.

Unit 4

The following national academic standards are supported in Unit 4: Microcontroller and Transmitter Overview.

Phase	Academic Standard
Think	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science*: Transfer of Energy *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 6.12: Use and Maintain Technological Products and Systems **Mathematics (NCTM)** *Connections* Recognize and apply mathematics in contexts outside of mathematics.
Build	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science*: Transfer of Energy *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 6.12: Use and Maintain Technological Products and Systems **Mathematics (NCTM)** *Connections* Recognize and apply mathematics in contexts outside of mathematics.
Amaze	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science*: Transfer of Energy *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 6.12: Use and Maintain Technological Products and Systems **Mathematics (NCTM)** *Connections* Recognize and apply mathematics in contexts outside of mathematics.

Unit 5

The following national academic standards are supported in Unit 5: Speed, Power, Torque, and DC Motors.

Phase	Academic Standard
Think	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science*: Motion and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.12: Use and Maintain Technological Products and Systems **Mathematics (NCTM)** *Connections* Recognize and apply mathematics in contexts outside of mathematics. *Measurement* Understand measurable attributes of objects and the units, systems, and processes of measurement.
Create	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.12: Use and Maintain Technological Products and Systems **Mathematics (NCTM)** *Numbers and Operations* Understand numbers, ways of representing numbers, relationships among numbers, and number systems. *Algebra Standard* Understand patterns, relations, and functions. *Geometry Standard* Use visualization, spatial reasoning, and geometric modeling to solve problems. *Measurement Standard* Understand measurable attributes of objects and the units, systems, and processes of measurement.

Phase	Academic Standard
Build	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science*: Motion and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.12: Use and Maintain Technological Products and Systems **Mathematics (NCTM)** *Connections* Recognize and apply mathematics in contexts outside of mathematics. *Measurement* Understand measurable attributes of objects and the units, systems, and processes of measurement.
Amaze	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science*: Motion and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design **Mathematics (NCTM)** *Connections* Recognize and apply mathematics in contexts outside of mathematics.

Unit 6

The following national standards are supported in Unit 6: Gears, Chains, and Sprockets.

Phase	Standard
Think	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science*: Motion and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design **Mathematics (NCTM)** *Connections* Recognize and apply mathematics in contexts outside of mathematics. *Algebra* Analyze change in various contexts. *Measurement* Understand measurable attributes of objects and the units, systems, and processes of measurement. *Communication* Communicate mathematical thinking coherently and clearly to peers, teachers, and others.
Create	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.12: Use and Maintain Technological Products and Systems **Mathematics (NCTM)** *Numbers and Operations* Understand numbers, ways of representing numbers, relationships among numbers, and number systems. *Algebra Standard* Understand patterns, relations, and functions. *Geometry Standard* Use visualization, spatial reasoning, and geometric modeling to solve problems. *Measurement Standard* Understand measurable attributes of objects and the units, systems, and processes of measurement.

Phase	Standard
Build	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science*: Motion and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.11: Apply the Design Process **Mathematics (NCTM)** *Connections* Recognize and apply mathematics in contexts outside of mathematics. *Numbers and Operations* Compute fluently and make reasonable estimates. *Algebra* Analyze change in various contexts. *Geometry* 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.

Phase	Standard
Amaze	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science*: Motion and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design **Mathematics (NCTM)** *Connections* Recognize and apply mathematics in contexts outside of mathematics. *Numbers and Operations* Compute fluently and make reasonable estimates. *Algebra* Analyze change in various contexts. *Geometry* 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. *Communication* Communicate mathematical thinking coherently and clearly to peers, teachers, and others.

Unit 7

The following national academic standards are supported in Unit 7: Advanced Gears.

Phase	Academic Standard
Think	**Science (NSES)** *Unifying Concepts and Processes*: Change, Constancy, and Measurement; Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design **Mathematics (NCTM)** *Algebra* Analyze change in various contexts. *Measurement* Understand measurable attributes of objects and the units, systems, and processes of measurement. *Communication* Communicate mathematical thinking coherently and clearly to peers, teachers, and others. *Connections* Recognize and apply mathematics in contexts outside of mathematics.
Create	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.12: Use and Maintain Technological Products and Systems **Mathematics (NCTM)** *Numbers and Operations* Understand numbers, ways of representing numbers, relationships among numbers, and number systems. *Algebra Standard* Understand patterns, relations, and functions. *Geometry Standard* Use visualization, spatial reasoning, and geometric modeling to solve problems. *Measurement Standard* Understand measurable attributes of objects and the units, systems, and processes of measurement.

Phase	Academic Standard
Build	**Science (NSES)** *Unifying Concepts and Processes*: Change, Constancy, and Measurement; Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.11: Apply the Design Process **Mathematics (NCTM)** *Numbers and Operations* Compute fluently and make reasonable estimate. *Algebra* Analyze change in various contexts. *Geometry* 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. *Connections* Recognize and apply mathematics in contexts outside of mathematics.

Phase	Academic Standard
Amaze	**Science (NSES)** *Unifying Concepts and Processes*: Change, Constancy, and Measurement; Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design **Mathematics (NCTM)** *Number and Operations* Compute fluently and make reasonable estimates. *Algebra* Analyze change in various contexts. *Geometry* 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. *Communication* Communicate mathematical thinking coherently and clearly to peers, teachers, and others. *Connections* Recognize and apply mathematics in contexts outside of mathematics.

Unit 8

The following national academic standards are supported in Unit 8: Friction and Traction:

Phase	Standard
Think	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function; Change, Constancy, and Measurement *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design **Mathematics (NCTM)** *Algebra* Analyze change in various contexts. *Measurement* Understand measurable attributes of objects and the units, systems, and processes of measurement. *Problem Solving* Apply and adapt a variety of appropriate strategies to solve problems. *Communication* Communicate mathematical thinking coherently and clearly to peers, teachers, and others. *Connections* Recognize and apply mathematics in contexts outside of mathematics.

Phase	Standard
Create	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.12: Use and Maintain Technological Products and Systems **Mathematics (NCTM)** *Numbers and Operations* Understand numbers, ways of representing numbers, relationships among numbers, and number systems. *Algebra Standard* Understand patterns, relations, and functions. *Geometry Standard* Use visualization, spatial reasoning, and geometric modeling to solve problems. *Measurement Standard* Understand measurable attributes of objects and the units, systems, and processes of measurement.

Phase	Standard
Build	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function; Change, Constancy, and Measurement; Evidence, Models, and Explanation *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.10: Troubleshooting, Research, and Development, Invention and Innovation, and Experimentation in Problem Solving **Mathematics (NCTM)** *Numbers and Operations* *Compute fluently and make reasonable estimates.* *Algebra* Analyze change in various contexts. *Geometry* 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. *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. *Connections* Recognize and apply mathematics in contexts outside of mathematics.

Phase	Standard
Amaze	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function; Change, Constancy, and Measurement; Evidence, Models, and Explanation *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.10: Troubleshooting, Research, and Development, Invention and Innovation, and Experimentation in Problem Solving **Mathematics (NCTM)** *Numbers and Operations* *Compute fluently and make reasonable estimates.* *Algebra* Analyze change in various contexts. *Geometry* 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. *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. *Communication* Communicate mathematical thinking coherently and clearly to peers, teachers, and others. *Connections* Recognize and apply mathematics in contexts outside of mathematics.

Unit 9

The following national academic standards are supported in Unit 9: Drivetrain Design 1.

Phase	Standard
Think	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function; Change, Constancy, and Measurement *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design **Mathematics (NCTM)** *Algebra* Analyze change in various contexts. *Measurement* Understand measurable attributes of objects and the units, systems, and processes of measurement. *Communication* Communicate mathematical thinking coherently and clearly to peers, teachers, and others. *Connections* Recognize and apply mathematics in contexts outside of mathematics.
Create	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.12: Use and Maintain Technological Products and Systems **Mathematics (NCTM)** *Numbers and Operations* Understand numbers, ways of representing numbers, relationships among numbers, and number systems. *Algebra Standard* Understand patterns, relations, and functions. *Geometry Standard* Use visualization, spatial reasoning, and geometric modeling to solve problems. *Measurement Standard* Understand measurable attributes of objects and the units, systems, and processes of measurement.

Phase	Standard
Build	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function; Change, Constancy, and Measurement *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.11: Apply the Design Process **Mathematics (NCTM)** *Algebra* Analyze change in various contexts. *Geometry* Use visualization, spatial reasoning, and geometric modeling to solve problems. *Measurement* Understand measurable attributes of objects and the units, systems, and processes of measurement. *Connections* Recognize and apply mathematics in contexts outside of mathematics.

Phase	Standard
Amaze	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function; Change, Constancy, and Measurement *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.11: Applying the Design Process **Mathematics (NCTM)** *Algebra* Analyze change in various contexts. *Geometry* Use visualization, spatial reasoning, and geometric modeling to solve problems. *Measurement* Understand measurable attributes of objects and the units, systems, and processes of measurement. *Communication* Communicate mathematical thinking coherently and clearly to peers, teachers, and others. *Connections* Recognize and apply mathematics in contexts outside of mathematics.

Unit 10

The following national academic standards are supported in Unit 10: Drivetrain Design 2.

Phase	Standard
Think	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function; Change, Constancy, and Measurement *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design **Mathematics (NCTM)** *Algebra* Analyze change in various contexts. *Measurement* Understand measurable attributes of objects and the units, systems, and processes of measurement. Apply appropriate techniques, tools, and formulas to determine measurements. *Communication* Communicate mathematical thinking coherently and clearly to peers, teachers, and others. *Connections* Recognize and apply mathematics in contexts outside of mathematics.

Phase	Standard
Create	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.12: Use and Maintain Technological Products and Systems **Mathematics (NCTM)** *Numbers and Operations* Understand numbers, ways of representing numbers, relationships among numbers, and number systems. *Algebra Standard* Understand patterns, relations, and functions. *Geometry Standard* Use visualization, spatial reasoning, and geometric modeling to solve problems. *Measurement Standard* Understand measurable attributes of objects and the units, systems, and processes of measurement.

Phase	Standard
Build	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function; Change, Constancy, and Measurement *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.11: Apply the Design Process **Mathematics (NCTM)** *Numbers and Operations* Compute fluently and make reasonable estimates. *Algebra* Analyze change in various contexts. *Geometry* 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. *Connections* Recognize and apply mathematics in contexts outside of mathematics.

Phase	Standard
Amaze	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function; Change, Constancy, and Measurement *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.11: Apply the Design Process **Mathematics (NCTM)** *Numbers and Operations* Compute fluently and make reasonable estimates. *Algebra* Analyze change in various contexts. *Geometry* 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. *Communication* Communicate mathematical thinking coherently and clearly to peers, teachers, and others. *Connections* Recognize and apply mathematics in contexts outside of mathematics.

Unit 11

The following national academic standards are supported in Unit 11: Creating a Tank Tread Drive.

Phase	Standard
Think	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design **Mathematics (NCTM)** *Measurement* Understand measurable attributes of objects and the units, systems, and processes of measurement. *Connections* Recognize and apply mathematics in contexts outside of mathematics.
Create	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.12: Use and Maintain Technological Products and Systems **Mathematics (NCTM)** *Numbers and Operations* Understand numbers, ways of representing numbers, relationships among numbers, and number systems. *Algebra Standard* Understand patterns, relations, and functions. *Geometry Standard* Use visualization, spatial reasoning, and geometric modeling to solve problems. *Measurement Standard* Understand measurable attributes of objects and the units, systems, and processes of measurement.

Phase	Standard
Build	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.11: Apply the Design Process **Mathematics (NCTM)** *Measurement* Understand measurable attributes of objects and the units, systems, and processes of measurement. *Connections* Recognize and apply mathematics in contexts outside of mathematics.
Amaze	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.11: Apply the Design Process **Mathematics (NCTM)** *Algebra* Analyze change in various contexts *Geometry* Use visualization, spatial reasoning, and geometric modeling to solve problems. *Measurement* Understand measurable attributes of objects and the units, systems, and processes of measurement. *Communication* Communicate mathematical thinking coherently and clearly to peers, teachers, and others. *Connections* Recognize and apply mathematics in contexts outside of mathematics.

Unit 12

The following national academic standards are supported in Unit 12: Object Manipulation:

Phase	Standard
Think	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design **Mathematics (NCTM)** *Measurement* Understand measurable attributes of objects and the units, systems, and processes of measurement. *Communication* Communicate mathematical thinking coherently and clearly to peers, teachers, and others. *Connections* Recognize and apply mathematics in contexts outside of mathematics.
Create	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.12: Use and Maintain Technological Products and Systems **Mathematics (NCTM)** *Numbers and Operations* Understand numbers, ways of representing numbers, relationships among numbers, and number systems. *Algebra Standard* Understand patterns, relations, and functions. *Geometry Standard* Use visualization, spatial reasoning, and geometric modeling to solve problems. *Measurement Standard* Understand measurable attributes of objects and the units, systems, and processes of measurement.

Phase	Standard
Build	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.11: Apply the Design Process **Mathematics (NCTM)** *Measurement* Understand measurable attributes of objects and the units, systems, and processes of measurement. *Connections* Recognize and apply mathematics in contexts outside of mathematics.
Amaze	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 6.11: Apply the Design Process **Mathematics (NCTM)** *Measurement* Understand measurable attributes of objects and the units, systems, and processes of measurement. *Communication* Communicate mathematical thinking coherently and clearly to peers, teachers, and others. *Connections* Recognize and apply mathematics in contexts outside of mathematics.

Unit 13

The following national academic standards are supported in Unit 13: Rotating Joints.

Phase	Standard
Think	**Science (NSES)** *Unifying Concepts and Processes*: Change, Constancy, and Measurement; Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design **Mathematics (NCTM)** *Geometry Standard* 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. *Communication* Communicate mathematical thinking coherently and clearly to peers, teachers, and others. *Connections* Recognize and apply mathematics in contexts outside of mathematics.

Phase	Standard
Create	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.12: Use and Maintain Technological Products and Systems **Mathematics (NCTM)** *Numbers and Operations* Understand numbers, ways of representing numbers, relationships among numbers, and number systems. *Algebra Standard* Understand patterns, relations, and functions. *Geometry Standard* Use visualization, spatial reasoning, and geometric modeling to solve problems. *Measurement Standard* Understand measurable attributes of objects and the units, systems, and processes of measurement.
Build	**Science (NSES)** *Unifying Concepts and Processes*: Change, Constancy, and Measurement; Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.11: Apply the Design Process **Mathematics (NCTM)** *Measurement* Understand measurable attributes of objects and the units, systems, and processes of measurement. Apply appropriate techniques, tools, and formulas to determine measurements. *Connections* Recognize and apply mathematics in contexts outside of mathematics.

Phase	Standard
Amaze	**Science (NSES)** *Unifying Concepts and Processes*: Change, Constancy, and Measurement; Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.11: Apply the Design Process **Mathematics (NCTM)** *Communication* Communicate mathematical thinking coherently and clearly to peers, teachers, and others. *Connections* Recognize and apply mathematics in contexts outside of mathematics. *Measurement* Understand measurable attributes of objects and the units, systems, and processes of measurement. Apply appropriate techniques, tools, and formulas to determine measurements.

Unit 14

The following national academic standards are supported in Unit 14: Accumulator Design.

Phase	Standard
Think	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design **Mathematics (NCTM)** *Algebra Standard* Understand patterns, relations, and functions. *Communication* Communicate mathematical thinking coherently and clearly to peers, teachers, and others. *Connections* Recognize and apply mathematics in contexts outside of mathematics.
Create	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.12: Use and Maintain Technological Products and Systems **Mathematics (NCTM)** *Numbers and Operations* Understand numbers, ways of representing numbers, relationships among numbers, and number systems. *Algebra Standard* Understand patterns, relations, and functions. *Geometry Standard* Use visualization, spatial reasoning, and geometric modeling to solve problems. *Measurement Standard* Understand measurable attributes of objects and the units, systems, and processes of measurement.

Phase	Standard
Build	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.11: Apply the Design Process **Mathematics (NCTM)** *Algebra Standard* Understand patterns, relations, and functions. *Geometry Standard* Use visualization, spatial reasoning, and geometric modeling to solve problems. *Numbers and Operations* Compute fluently and make reasonable estimates. *Measurement* Apply appropriate techniques, tools, and formulas to determine measurements. *Connections* Recognize and apply mathematics in contexts outside of mathematics. *Problem Solving* Solve problems that arise in mathematics and in other contexts. Apply and adapt a variety of appropriate strategies to solve problems.

Phase	Standard
Amaze	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.11: Apply the Design Process **Mathematics (NCTM)** *Algebra Standard* Understand patterns, relations, and functions. *Geometry Standard* Use visualization, spatial reasoning, and geometric modeling to solve problems. *Numbers and Operations* Compute fluently and make reasonable estimates. *Communication* Communicate mathematical thinking coherently and clearly to peers, teachers, and others. *Connections* Recognize and apply mathematics in contexts outside of mathematics. *Measurement* Apply appropriate techniques, tools, and formulas to determine measurements. *Problem Solving* Solve problems that arise in mathematics and in other contexts. Apply and adapt a variety of appropriate strategies to solve problems.

Unit 15

The following national academic standards are supported in Unit 15: Linkages.

Phase	Standard
Think	**Science (NSES)** *Unifying Concepts and Processes*: Change, Constancy, and Measurement; Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design **Mathematics (NCTM)** *Algebra Standard* Understand patterns, relations, and functions. *Measurement Standard* Understand measurable attributes of objects and the units, systems, and processes of measurement. *Communication* Communicate mathematical thinking coherently and clearly to peers, teachers, and others. *Connections* Recognize and apply mathematics in contexts outside of mathematics.

Phase	Standard
Create	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.12: Use and Maintain Technological Products and Systems **Mathematics (NCTM)** *Numbers and Operations* Understand numbers, ways of representing numbers, relationships among numbers, and number systems. *Algebra Standard* Understand patterns, relations, and functions. *Geometry Standard* Use visualization, spatial reasoning, and geometric modeling to solve problems. *Measurement Standard* Understand measurable attributes of objects and the units, systems, and processes of measurement.

Phase	Standard
Build	**Science (NSES)** *Unifying Concepts and Processes*: Change, Constancy, and Measurement; Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.11: Apply the Design Process **Mathematics (NCTM)** *Algebra Standard* Understand patterns, relations, and functions. *Geometry Standard* Use visualization, spatial reasoning, and geometric modeling to solve problems. *Numbers and Operations* Compute fluently and make reasonable estimates *Measurement* Understand measurable attributes of objects and the units, systems, and processes of measurement. Apply appropriate techniques, tools, and formulas to determine measurements. *Connections* Recognize and apply mathematics in contexts outside of mathematics. *Problem Solving* Solve problems that arise in mathematics and in other contexts. Apply and adapt a variety of appropriate strategies to solve problems.

Phase	Standard
Amaze	**Science (NSES)** *Unifying Concepts and Processes*: Change, Constancy, and Measurement; Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.11: Apply the Design Process **Mathematics (NCTM)** *Algebra Standard* Understand patterns, relations, and functions. *Geometry Standard* Use visualization, spatial reasoning, and geometric modeling to solve problems. *Numbers and Operations* Compute fluently and make reasonable estimates. *Communication* Communicate mathematical thinking coherently and clearly to peers, teachers, and others. *Connections* Recognize and apply mathematics in contexts outside of mathematics. *Measurement* Understand measurable attributes of objects and the units, systems, and processes of measurement. Apply appropriate techniques, tools, and formulas to determine measurements. *Problem Solving* Solve problems that arise in mathematics and in other contexts. Apply and adapt a variety of appropriate strategies to solve problems.

Unit 16

The following national academic standards are supported in Unit 16: Bumper and Limit Switch:

Phase	Standard
Think	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design **Mathematics (NCTM)** *Algebra Standard* Understand patterns, relations, and functions. *Measurement Standard* Understand measurable attributes of objects and the units, systems, and processes of measurement. *Communication* Communicate mathematical thinking coherently and clearly to peers, teachers, and others. *Connections* Recognize and apply mathematics in contexts outside of mathematics.
Create	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.12: Use and Maintain Technological Products and Systems **Mathematics (NCTM)** *Numbers and Operations* Understand numbers, ways of representing numbers, relationships among numbers, and number systems. *Algebra Standard* Understand patterns, relations, and functions. *Geometry Standard* Use visualization, spatial reasoning, and geometric modeling to solve problems. *Measurement Standard* Understand measurable attributes of objects and the units, systems, and processes of measurement.

Phase	Standard
Build	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.11: Apply the Design Process **Mathematics (NCTM)** *Algebra Standard* Understand patterns, relations, and functions. *Measurement* Understand measurable attributes of objects and the units, systems, and processes of measurement. Apply appropriate techniques, tools, and formulas to determine measurements. *Connections* Recognize and apply mathematics in contexts outside of mathematics. *Problem Solving* Solve problems that arise in mathematics and in other contexts. Apply and adapt a variety of appropriate strategies to solve problems.

Phase	Standard
Amaze	**Science (NSES)** *Unifying Concepts and Processes*: Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design **Mathematics (NCTM)** *Algebra Standard* Understand patterns, relations, and functions. *Communication* Communicate mathematical thinking coherently and clearly to peers, teachers, and others. *Connections* Recognize and apply mathematics in contexts outside of mathematics. *Measurement* Understand measurable attributes of objects and the units, systems, and processes of measurement. Apply appropriate techniques, tools, and formulas to determine measurements. *Problem Solving* Solve problems that arise in mathematics and in other contexts. Apply and adapt a variety of appropriate strategies to solve problems.

Unit 17

The following national academic standards are supported in Unit 17: Systems Integration:

Phase	Standard
Think	**Science (NSES)** *Unifying Concepts and Processes*: Change, Constancy, and Measurement; Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 6.11: Apply the Design Process **Mathematics (NCTM)** *Algebra Standard* Understand patterns, relations, and functions. *Measurement Standard* Understand measurable attributes of objects and the units, systems, and processes of measurement. *Communication* Communicate mathematical thinking coherently and clearly to peers, teachers, and others. *Connections* Recognize and apply mathematics in contexts outside of mathematics.

Phase	Standard
Build	**Science (NSES)** *Unifying Concepts and Processes*: Change, Constancy, and Measurement; Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.11: Apply the Design Process **Mathematics (NCTM)** *Algebra Standard* Understand patterns, relations, and functions. *Geometry Standard* Use visualization, spatial reasoning, and geometric modeling to solve problems. *Number and Operations* Compute fluently and make reasonable estimates. *Measurement* Understand measurable attributes of objects and the units, systems, and processes of measurement. Apply appropriate techniques, tools, and formulas to determine measurements. *Connections* Recognize and apply mathematics in contexts outside of mathematics. *Problem Solving* Solve problems that arise in mathematics and in other contexts. Apply and adapt a variety of appropriate strategies to solve problems.

Phase	Standard
Amaze	**Science (NSES)** *Unifying Concepts and Processes*: Change, Constancy, and Measurement; Form and Function *Physical Science:* Motions and Forces *Science and Technology*: Abilities of Technological Design **Technology (ITEA)** 5.8: The Attributes of Design 5.9: Engineering Design 6.11: Apply the Design Process **Mathematics (NCTM)** *Algebra Standard* Understand patterns, relations, and functions. *Geometry Standard* Use visualization, spatial reasoning, and geometric modeling to solve problems. *Numbers and Operations* Compute fluently and make reasonable estimates. *Communication* Communicate mathematical thinking coherently and clearly to peers, teachers, and others. *Connections* Recognize and apply mathematics in contexts outside of mathematics. *Measurement* Understand measurable attributes of objects and the units, systems, and processes of measurement. Apply appropriate techniques, tools, and formulas to determine measurements. *Problem Solving* Solve problems that arise in mathematics and in other contexts. Apply and adapt a variety of appropriate strategies to solve problems.