



Academic Support: Standard Alignment

Each lesson includes a literacy component, a real-life problem application, a check for understanding, and a summative assessment in the form of a hands-on engineering design activity.

Grade 4 at a Glance

Students understand that energy takes many forms and can move between places, organisms have structures with specific functions, Earth changes over time, and human use of natural resources affects the environment.

Grade 5 at a Glance

Students understand that matter is made of tiny particles, changes during chemical reactions, and is affected by gravity. They explain how plants obtain and cycle matter, how Earth's resources are used, and how the Sun's uneven heating affects weather.

*We customize the experience to fit your schedule, budget, and classroom goals



Tiny Scientists, Big Ideas:

Read about how each lesson connects to big ideas to help you understand its instructional purpose. Read about the hands-on engineering activity. For each activity, the academic standard is listed. Choose an idea for an ASC educator to implement in your classroom.

Grade 4 Activities

Water Works: Students apply their learning by building and test a water wheel or a water filtration system. [SC.4.3.4.a:](#)

Nervous System: Students will build a nervous system model and understand its parts and functions. [C.4.2.1.b / 4-LS1-2](#)

Grade 5 Activities

Reaction Time: Students will produce several chemical reactions that demonstrate the conservation of matter and how new substances are created. [5-PS1-4](#)

Spin, Orbit & Explore!: Students will create a moving model of Earth, the Moon, and the Sun to show the Earth's rotation and revolution, including the Earth's relationship to the Moon and the Sun. [SC.4.3.1](#)

TECHNOLOGY



Academic Support: Standard Alignment

Our coding and robotics lessons are designed to challenge older students with increasingly complex concepts and projects. Lessons are structured to allow students to demonstrate mastery at their own pace and level. Students apply coding, computational thinking, and problem-solving skills through hands-on creativity, collaboration, and independent learning.

Grade 4 At a Glance

Students will apply their problem-solving skills and computational thinking by building interactive projects using block-based programming and logic control flow while testing different algorithms.

Grade 5 At a Glance

Students will advance from basic execution to system optimization. Students deepen their computational thinking by using multiple variables, and complex conditional logic. They shift from simple block-coding projects to building dynamic applications.

*We customize the experience to fit your schedule, budget, and classroom goals



Tiny Coders, Big Ideas:

Explore our robotics and coding challenges, designed to provide age-appropriate, hands-on learning experiences. The final activity in each lesson connects directly to the Big Ideas and has a clear instructional purpose. Choose one challenge or idea for an ASC educator to develop and implement in your classroom.

Grade 4 Activities

Gyro Navigation: Students will write a computer program that uses gyroscopes to navigate through a robotics course. [CS.4.2.1](#)

Lift and Grab: Students will build a sequential grabbing mechanism that allows a robotic attachment to lift and grab using only one motor. [CS.4.2.1](#)

Grade 5 Activities

Color Sorting: Students will write a computer program that uses reflected values from a color sensor to follow lines on a robotics course. [CS.5.1.2](#)

Missing Block Problem: Students will create an algorithm using state-based decision-making. The algorithm should be able to detect missing blocks in the pickup zones and identify the color of any present blocks, then sort them into their correct drop-off zones. [CS.5.3.1](#)

ENGINEERING



Academic Support: Standard Alignment

Each lesson includes a literacy component, a check for understanding, and a summative assessment in the form of a hands-on engineering design challenge.

Grade 4 At a Glance

Students design, test, and refine a device that converts energy from one form to another. Students investigate solutions to extreme weather, such as developing designs and engineering strategies to reduce the impact of natural hazards on humans.

Grade 5 At a Glance

Students understand that matter cycles through air, soil, plants, animals, and microbes as these organisms live and die. They learn that the Earth's major systems interact in multiple ways to affect Earth's surface materials and processes.

*We customize the experience to fit your schedule, budget, and classroom goals



Tiny Engineers, Big Ideas:

Explore below how each lesson connects to big ideas to help you understand its instructional purpose. Read about the hands on coding and robotics challenge. The academic standard is listed below. Choose an idea for an ASC educator to build out in your classroom.

Grade 4 Activities

Race for Energy!: Students will design, build, and test a battery-operated car and use the resulting speed and distance data to examine the laws of energy. [SC.4.1.4.a](#)

Build for the Storm: Students will design, build, and test a weather-proof structure, depending on the type of natural disaster. [SC.4.3.5 / 4-ESS3-2](#)

Grade 5 Activities

Compost Champions: Students will design and build a composting structure that demonstrates the producer-consumer-decomposer cycle. [SC.5.2.2.a / 5-LS2-1](#)

Sphere to Sphere: Students will design and build a 3-D model of Earth, highlighting the ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact. [SC.5.3.3.a](#)



Academic Support: Standard Alignment

Each lesson integrates math literacy, opportunities to check for understanding, and a summative assessment that allows students to apply their learning in hands-on problem-solving activities.

Grade 4 At a Glance

Students will enhance and broaden their math vocabulary by describing, comparing, and identifying the components and characteristics of their designs and constructions.

Grade 5 At a Glance

Students will enhance their math vocabulary by describing the data they collected during their challenge. This will involve using both direct measurements of lengths and indirect measurements through the use of various objects.

*We customize the experience to fit your schedule, budget, and classroom goals



Tiny Mathematicians, Big Ideas:

For 4th and 5th grade students, lessons emphasize mathematical reasoning, computation, problem-solving, and real-world application through increasingly complex tasks that encourage students to explain their thinking, make connections, and demonstrate mastery.

Grade 4 Activities

Wonder Wheel: Students will design and build an amusement park using the six simple machines.

CCSS 4.MD.A.3

Blast Off: Students will design, build, and test rockets. Using the collected distance, height, and time data, students can create tables and graphs to identify any patterns. **4.MD.B.4**

Grade 5 Activities

Rover Engineers: Students will design and build a Martian Land Rover to explore Mars' terrain using coordinate plane graph points. **5.G.A.2**

Build, Float & Deliver: Students will design and build a ship and its containers for traveling across the oceans to deliver goods to other countries. **5.MD.C.5**