

Objectives Alignment to 5th Grade Benchmarks and Standards

While attending STARBASE FLORIDA-Jacksonville students will be exposed to a variety of hands-on experiences requiring students to apply their knowledge of science, math, and computer science standards to meet the STARBASE objectives. In addition, emphasis is placed on the Florida K-12 Mathematical Thinking and Reasoning Standards as well as exposure to informational text.

SCIENCE	
STARBASE Science Objectives	Benchmarks and Standards
1. SCIENCE:	5 th Grade Science, Math, and Computer Science and all
A. Science Fundamentals	
1. The learner will conclude there are more than 100	SC.5.P.8.4 Explore the scientific theory of atoms (also
known elements that combine in a multitude of ways to	called atomic theory) by recognizing that all matter is
produce compounds, which account for all living and non-	composed of parts that are too small to be seen without
living substances, and that atoms combine to form	magnification. Not assessed.
molecules and molecules formed from different atoms	
combine to form compounds.	
2. The learner will understand that all energy can be	SC.5.P.10.1 Investigate and describe some basic forms of
classified as potential energy (such as chemical,	energy, including light, heat, sound, electrical, chemical,
mechanical, nuclear, and gravitational energy) or kinetic	and mechanical. SC.5.P.10.2 Investigate and explain that
energy (such as radiant, thermal, motion, sound, and	energy has the ability to cause motion or create change.
electrical energy) and that energy transfers in many ways,	SC.5.P.10.3 Investigate and explain that an electrically
such as heat, light, electricity, mechanical motion, sound,	charged object can attract an uncharged object and can
and the nature of a chemical.	either attract or repel another charged object without
	any contact between the objects. Sc.5.P.10.4 Investigate
	into host light and sound energy as well as the energy
	of motion SC E P 11 1 Investigate and illustrate the fact
	that the flow of electricity requires a closed circuit (a
	complete loop) SC 5 P 11 2 Identify and classify materials
	that conduct electricity and materials that do not
3. The learner will conclude a change in the state of	SC.5.P.8.1 Compare and contrast the basic properties of
matter of a substance is the result of a change in kinetic	solids, liquids, and gases, such as mass, volume, color.
energy.	texture, and temperature. SC.5.P.8.2 Investigate and
	identify materials that will dissolve in water and those
	that will not and identify the conditions that will speed up
	or slow down the dissolving process.
4. The learner will differentiate between a physical	SC.5.P.9.1 Investigate and describe that many physical
change in which matter changes state or form and a	and chemical changes are affected by temperature.
chemical change in which one or more new substances	
are formed.	
B. Characteristic Properties	
1. The learner will identify a fluid as a liquid or gas and	SC.5.P.8.1 Compare and contrast the basic properties of
will understand that any material that flows is a fluid,	solids, liquids, and gases, such as mass, volume, color,
which has no fixed shape, and changes its shape	texture, and temperature.
continuously when acted on by an external stress.	

2. The learner will recognize a substance has characteristics properties, such as density, viscosity, boiling point, surface tension, compressibility, and solubility, all of which are independent of the amount of the sample.	SC.5.P.8.1 Compare and contrast the basic properties of solids, liquids, and gases, such as mass, volume, color, texture, and temperature.
C. Motion & Force	
1. The learner will demonstrate that an object in motion will stay in motion or an object at rest will stay at rest unless acted upon by an outside force. (Newton's First Law)	 SC.5.P.13.1 Identify familiar forces that cause objects to move, such as pushes or pulls, including gravity acting on falling objects. SC.5.P.13.2 Investigate and describe that the greater the force applied to it, the greater the change in motion of a given object. SC.5.P.13.3 Investigate and describe that the more mass an object has, the less effect a given force will have on the object's motion. SC.5.P.13.4 Investigate and explain that when a force is applied to an object but it does not move, it is because another opposing force is being applied by something in the environment so that the forces are balanced.
Force 2. The learner will determine that acceleration is produced when a force acts on a mass. The greater the mass, the greater the amount of force necessary to accelerate the mass. (Newton's Second Law)	 SC.5.P.13.1 Identify familiar forces that cause objects to move, such as pushes or pulls, including gravity acting on falling objects. SC.5.P.13.2 Investigate and describe that the greater the force applied to it, the greater the change in motion of a given object. SC.5.P.13.3 Investigate and describe that the more mass an object has, the less effect a given force will have on the object's motion. SC.5.P.13.4 Investigate and explain that when a force is applied to an object but it does not move, it is because another opposing force is being applied by something in the environment so that the forces are balanced.
3. The learner will conclude every action is followed by a reaction equal in magnitude and opposite in direction. (Newton's Third Law)	 SC.5.P.13.1 Identify familiar forces that cause objects to move, such as pushes or pulls, including gravity acting on falling objects. SC.5.P.13.2 Investigate and describe that the greater the force applied to it, the greater the change in motion of a given object. SC.5.P.13.3 Investigate and describe that the more mass an object has, the less effect a given force will have on the object's motion. SC.5.P.13.4 Investigate and explain that when a force is applied to an object but it does not move, it is because another opposing force is being applied by something in the environment so that the forces are balanced.
U. Science Explorations	
1. The learner will utilize scientific principles to examine the world around us while investigating the relationship of science to society, technology, mathematics, and other disciplines.	SC.5.N.1.1 Define a problem, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types such as: systematic observations; experiments requiring the identification of variables, collecting and organizing data; interpreting data in charts, tables, and graphics; analyze information; make predictions; and defend conclusions. SC.5.N.1.2 Explain the difference between an experiment and other types of scientific investigation. SC.5.N.1.5 Recognize and explain that authentic scientific investigation frequently does not parallel the steps of "the scientific method."

2. TECHNOLOGY:	
A. Tools of Technology	
1. The learner will investigate technological innovations.	 SC.35.CS-CC.1.3 Identify ways that technology can foster teamwork, and collaboration can support problem solving and innovation. SC.35.CS-CS.1.2 Describe how models and simulations can be used to solve real-world issues in science and engineering. SC.35.CS-CS.2.2 Describe how computational thinking can be used to solve real life issues in science and engineering. SC.35.CS-CS.2.4 Solve real-world problems in science and engineering using computational thinking skills. SC.35.CS-CP.1.3 Identify, research, and collect a data set on a topic, issue, problem, or question using age-appropriate technologies.
2. The learner will employ technologies to solve a simulated or real-world problem.	 SC.35.CS-CC.1.3 Identify ways that technology can foster teamwork, and collaboration can support problem solving and innovation. SC.35.CS-CS.1.2 Describe how models and simulations can be used to solve real-world issues in science and engineering. SC.35.CS-CS.2.2 Describe how computational thinking can be used to solve real life issues in science and engineering. SC.35.CS-CS.2.4 Solve real-world problems in science and engineering using computational thinking skills. SC.35.CS-CP.1.3 Identify, research, and collect a data set on a topic, issue, problem, or question using age-appropriate technologies.
3. ENGINEERING:	
1. The learner will recognize the engineering design process is a method of problem solving used to create a system, a product, or a process that meets an identified need.	SC.5.N.1.5 Recognize and explain that authentic scientific investigation frequently does not parallel the steps of "the scientific method." SC.5.N.2.1 Recognize and explain that science is grounded in empirical observations that are testable; explanation must always be linked with evidence. SC.5.N.2.2 Recognize and explain that when scientific investigations are carried out, the evidence produced by those investigations should be replicable by others.
2. The learner will apply the steps of the Engineering Design Process to solve a simulated or real-world problem.	SC.5.N.1.5 Recognize and explain that authentic scientific investigation frequently does not parallel the steps of "the scientific method." SC.5.N.2.1 Recognize and explain that science is grounded in empirical observations that are testable; explanation must always be linked with evidence. SC.5.N.2.2 Recognize and explain that when scientific investigations are carried out, the evidence produced by those investigations should be replicable by others.
B. 3-D Computer-Aided Design (CAD)	
1. The learner will construct a 3-D scale model based on geometric relationships using engineering design software and computer technology as required by OASD/RA.	SC.5.N.1.2 Explain the difference between an experiment and other types of scientific investigation. MA.5.GR.1.1 Classify triangles or quadrilaterals into different categories based on shared defining attributes. Explain why a triangle or quadrilateral would or would not belong to a category. MA.5.GR.1.2 Identify and classify three-

	dimensional figures into categories based on their
	defining attributes. Figures are limited to right pyramids.
	right prisms, right circular cylinders, right circular cones
	and spheres MA 5 GR 2 1 Find the perimeter and area of
	a rectangle with fractional or decimal side lengths using
	visual models and formulas MA 5 GR / 1 Identify the
	origin and avec in the coordinate system. Plot and label
	origin and axes in the coordinate system. Plot and laber
	plane SC 25 CS CS 1 2 Describe how models and
	plane SC.35.CS-CS.1.2 Describe now models and
	simulations can be used to solve real-world issues in
	science and engineering.
2. The learner will use engineering design software to	SC.5.N.1.2 Explain the difference between an experiment
demonstrate basic CAD operation and skills in the areas	and other types of scientific investigation. MA.5.GR.1.1
of: • Sketching (2-D geometry creation and modification)	Classify triangles or quadrilaterals into different
Geometric and dimensional constraints (applying	categories based on shared defining attributes. Explain
appropriate constraints) • Modeling (3-D modeling skills	why a triangle or quadrilateral would or would not belong
and modifications) • Assemblies (understanding and	to a category. MA.5.GR.1.2 Identify and classify three-
creating simple assemblies).	dimensional figures into categories based on their
	defining attributes. Figures are limited to right pyramids,
	right prisms, right circular cylinders, right circular cones
	and spheres. MA.5.GR.2.1 Find the perimeter and area of
	a rectangle with fractional or decimal side lengths using
	visual models and formulas. MA.5.GR.4.1 Identify the
	origin and axes in the coordinate system. Plot and label
	ordered pairs in the first quadrant of the coordinate
	plane. SC.35.CS-CS.1.2 Describe how models and
	simulations can be used to solve real-world issues in
	science and engineering.
3 The learner will relate geometric relationships and	MA 5 GB 1 1 Classify triangles or quadrilaterals into
mathematical applications to parameters of CAD	different categories based on shared defining attributes
	Explain why a triangle or quadrilateral would or would
	pot belong to a category MA 5 GP 1.2 Identify and
	classify three dimensional figures into categories based
	on their defining attributes. Figures are limited to right
	on their defining attributes. Figures are infined to fight
	pyramids, right prisms, right circular cylinders, right
	circular cones and spheres. MA.5.GR.2.1 Find the
	perimeter and area of a rectangle with fractional or
	decimal side lengths using visual models and formulas.
	MA.5.GR.4.1 Identify the origin and axes in the
	coordinate system. Plot and label ordered pairs in the
	first quadrant of the coordinate plane SC.35.CS-CS.1.2
	Describe how models and simulations can be used to
	solve real-world issues in science and engineering.
4. MATHEMATICS OPERATIONS & APPLICATIONS:	
A. Number Relationships Objectives	
1. The learner will solve problems using ratios expressed	MA.5.NSO.1.2 Read and write multi-digit numbers with
as a fraction, a decimal, or a percent.	decimals to the thousandths using standard form, word
	form and expanded form. MA.5.FR.1.1 Given a
	mathematical or real-world problem, represent the
	division of two whole numbers as a fraction. MA.5.AR.2.1
	Translate written real-world and mathematical
	descriptions into numerical expressions and numerical
	expressions into written mathematical descriptions.

B. Measurement 3. The learner will apply appropriate	
standard units and tools to measure mass.	
 The learner will apply appropriate standard units and tools to measure length. 	SC.5.P.8.1 Compare and contrast the basic properties of solids, liquids, and gases, such as mass, volume, color, texture, and temperature.
 The learner will apply appropriate standard units and tools to measure liquid volume. 	SC.5.P.8.1 Compare and contrast the basic properties of solids, liquids, and gases, such as mass, volume, color, texture, and temperature.
 The learner will apply appropriate standard units and tools to measure mass. 	SC.5.P.8.1 Compare and contrast the basic properties of solids, liquids, and gases, such as mass, volume, color, texture, and temperature.
C. Geometry Objectives	
1. The learner will recognize geometric properties and relationships and apply them to specific problems using a coordinate plane, angle, area, surface area, or volume.	MA.5.GR.1.1 Classify triangles or quadrilaterals into different categories based on shared defining attributes. Explain why a triangle or quadrilateral would or would not belong to a category. MA.5.GR.1.2 Identify and classify three-dimensional figures into categories based on their defining attributes. Figures are limited to right pyramids, right prisms, right circular cylinders, right circular cones and spheres. MA.5.GR.2.1 Find the perimeter and area of a rectangle with fractional or decimal side lengths using visual models and formulas. MA.5.GR.4.1 Identify the origin and axes in the coordinate system. Plot and label ordered pairs in the first quadrant of the coordinate plane.
D. Data Analysis	
1. The learner will collect data using observations and experiments.	SC.5.N.1.1 Define a problem, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types such as: systematic observations; experiments requiring the identification of variables, collecting and organizing data; interpreting data in charts, tables, and graphics; analyze information; make predictions; and defend conclusions. MA.5.DP.1.1 Collect and represent numerical data, including fractional and decimal values, using tables, line graphs or line plots.
2. The learner will represent data using tables and graphs.	MA.5.DP.1.1 Collect and represent numerical data, including fractional and decimal values, using tables, line graphs or line plots.
3. The learner will collect and analyze data to identify solutions and/or make informed decisions.	MA.5.DP.1.2 Interpret numerical data, with whole- number values, represented with tables or line plots by determining the mean, mode, median or range.