

Standard #: SC.4.N.3.1

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Explain that models can be three dimensional, two dimensional, an explanation in your mind, or a computer model.

Subject Area: Science	Grade: 4
Body of Knowledge: Nature of Science	Idea: Level 2: Basic Application of Skills & Concepts
Big Idea: The Role of Theories, Laws, Hypotheses, and Models - The terms that describe examples of scientific knowledge, for example; "theory," "law," "hypothesis," and "model" have very specific meanings and functions within science.	Date Adopted or Revised: 02/08
Content Complexity Rating: Level 2: Basic Application of Skills & Concepts - More Information	Date of Last Rating: 05/08
Status: State Board Approved	

Remarks/Examples

** Florida Standards Connections: [MAFS.K12.MP.2: Reason abstractly and quantitatively](#); and, [MAFS.K12.MP.4: Model with mathematics](#).

Related Courses

Course Number	Course Title
5020050:	Science - Grade 4 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
7720050:	Access Science Grade 4 (Specifically in versions: 2014 - 2015, 2015 - 2018, 2018 and beyond (current))

Related Access Points

Independent

Access Points Number	Access Points Title
SC.4.N.3.In.1:	Identify different types of models, such as a replica, a picture, or an animation.

Supported

Access Points Number	Access Points Title
SC.4.N.3.Su.1:	Recognize different types of models, such as a replica or a picture.

Participatory

Access Points Number	Access Points Title
SC.4.N.3.Pa.1:	Match a model that is a replica to a real object.

Related Resources

Lesson Plan

Name	Description
A View of Home from the Front Door and from Space:	The world is full of objects large and small, near and far. Models are built as powerful tools to help study large things such as buildings, towns, countries, and even the Earth and the Moon. With models, things beyond our physical reach can be easily explored. To begin to distinguish "home" from "home planet," students can build a model of their home and neighborhood as it appears from the front door of the house, from a tall building, from an airplane, and from outer space.
Cemented Together:	In this activity the students will create their own sedimentary rock using glue and various pieces of sediments found throughout the school yard. The students will create a model of a sedimentary rock and describe how they would identify a sedimentary rock in the real world.
Explore a Rock Foundation: The Hunt for an Asteroid!:	Students are asked to help their client select the "best" asteroid to explore given several different factors. Students collaborate in small groups to develop a procedure to rate the asteroids. They are then asked to write a letter back to the client, defending and explaining the procedure they developed. This MEA has been written based on NASA's current mission to explore an asteroid to prepare for the mission to Mars.
Honey Bee Human--an	This Engineering Design Challenge is intended to help students apply the concepts of pollination from SC.4.L.16.1 as they design an apparatus that will pollinate a field. It is not intended as an initial introduction to this benchmark.

Engineering Design Challenge:	In this Engineering Design Challenge, students will make a 2-dimensional model (a graphic illustration) rather than build a prototype.
Introducing Models to Elementary School Students:	Students learn what a model is by comparing a model of the tongue to their own tongue.
Introduction To The Nature Journal:	In the lessons here, students exercise the observation skills that are essential to writing, visual art, and science. First, they try to use evocative language in describing pictures of birds from the Smithsonian's National Zoo. They go on to record observations and to make hypotheses as they follow the behavior of animals on the National Zoo's live webcams. They can watch the giant pandas, the tigers, the cheetahs, the gorillas, or any of a dozen other species.
Just Right Goldilocks' Café: Temperature:	This is lesson 1 of 3 in the Just Right Goldilocks' Café unit. This lesson focuses on systematic investigation on getting a cup of coffee to be the "just right" temperature. Students will use temperature probes and code using ScratchX during their investigation.
Just Right Goldilocks' Café: Temperature & Turbidity:	This is lesson 3 of 3 in the Goldilocks' Café Just Right unit. This lesson focuses on systematic investigation on getting a cup of coffee to be the "just right" temperature and turbidity level. Students will use both the temperature probe and turbidity sensor and code using ScratchX during their investigation.
Just Right Goldilocks' Café: Turbidity:	This is lesson 2 of 3 in the Just Right Goldilocks' Café unit. This lesson focuses on systematic investigation on getting a cup of coffee to be the "just right" level of turbidity. Students will use turbidity sensors and code using ScratchX during their investigation.
Made To Sail:	Students use simple materials to design and make model sailboats that must stay upright and sail straight in a testing tank.
Modeling Patterns and Cycles in our Lives:	Elementary students use everyday patterns and cycles to learn the cyclical nature of science concepts. This lesson can be used as an Engage activity to spark interest in the seasons or Moon phases.
Predator and Prey:	In this lesson the students will learn about a predator/prey relationship. They will learn about the role that plants and animals play in their ecosystem and what each role is called. The students will also learn about the limiting factors each ecosystem possesses that prevent any species population from becoming too large.
The Playground Project:	Students will enjoy designing their "dream" playground while applying math and science skills in this engineering design challenge lesson. Students will find the area and perimeter of their playground designs. They will also use a budget sheet to make decisions about what to include in their playground, considering the physical properties of the materials they "purchase."

Teaching Idea

Name	Description
Building A Scale Model:	Students create models of objects of their choice, teaching them skills and giving them practice in techniques used by professionals. They use sketches as they build their objects. This activity facilitates a discussion on models and their usefulness.
Lunar Lollipops:	The students work in teams of two to discover the relative positions of the Earth, Sun and Moon that produce the different phases of the Moon.
Sinking Races:	Students will have an opportunity to create models of zooplankton and conduct races to see which one will sink the fastest.

Perspectives Video: Professional/Enthusiast

Name	Description
KROS Pacific Ocean Kayak Journey: Training, Simulation, and Modeling:	Complex problems require complex plans and training. Get in shape to get things done. Related Resources: KROS Pacific Ocean Kayak Journey: GPS Data Set [.XLSX] KROS Pacific Ocean Kayak Journey: Path Visualization for Google Earth [.KML]
Making Models - From the Mind, to Paper, to 3D:	An art studio manager describes how projects are designed and completed using mental, 2D, computer, and 3D models.
Modeling the Everglades with Mathematics:	Dr. Tom Van Lent and Rajendra Paudel describe how hydrologic modeling is used to evaluate environmental conditions in the Everglades.

Unit/Lesson Sequence

Name	Description
Pollution:	In this lesson students will learn about pollution and its effects. They will learn in depth about pesticides and see its harmful effects that they might not have realized at first. The students will simulate a landfill and see what objects will decompose and which objects won't. They will create their own solutions to an oil spill and test to see which solution is the most effective. The students will observe the effects oil has on water birds. Through this they will determine the long term damage done by an oil spill.
Weathering and Erosion:	In this unit, students learn about weathering and erosion (and different types of weathering and erosion) through different models and activities. An engineering design competition asks students to synthesize knowledge about erosion to create an erosion-blocking process/product for the Atlantic Coast.

Student Resources

Name	Description
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[Making Models - From the Mind, to Paper, to 3D:](#)

An art studio manager describes how projects are designed and completed using mental, 2D, computer, and 3D models.

Parent Resources

Name	Description
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[Making Models - From the Mind, to Paper, to 3D:](#)

An art studio manager describes how projects are designed and completed using mental, 2D, computer, and 3D models.