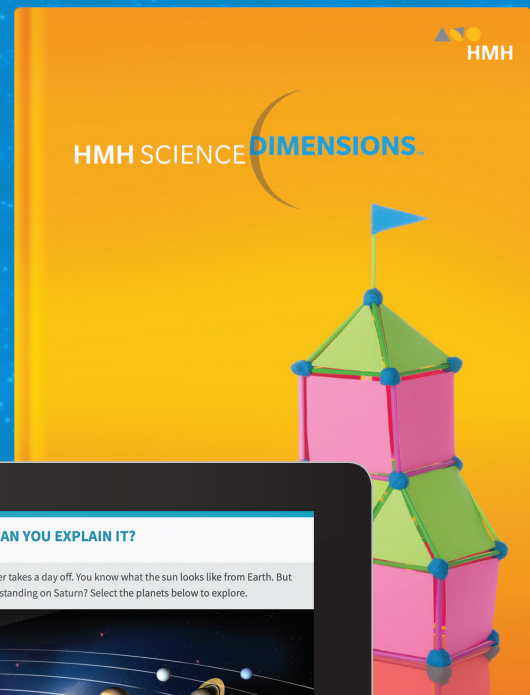


# HMH SCIENCE **DIMENSIONS**<sup>TM</sup>

ENGINEERED for the **NEXT** GENERATION

## Scope and Sequence

GRADES K-5



**Map your journey  
through K-5 science with  
this groundbreaking  
spiraled curriculum.**

A guide to units, lessons, hands-on activities, and correlated standards





# Kindergarten

## ENGINEERING & DESIGN

### Unit 1: Engineering and Technology

K-2-ETS1-1, K-2-ETS1-2, K-2-ETS1-3

#### Lesson 1: Engineer It • What Does an Engineer Do?

Hands-On Activity: Engineer It • Problem and Solution

#### Lesson 2: Engineer It • How Can We Use a Design Process?

Hands-On Activity: Engineer It • A Design Process

## PHYSICAL SCIENCE

### Unit 2: Forces and Motion

K-PS2-1, K-PS2-2

#### Lesson 1: Engineer It • What Is Motion?

Hands-On Activity: Engineer It • Make a Ramp

#### Lesson 2: Engineer It • How Can We Change the Way Things Move?

Hands-On Activity: Engineer It • Pushing Marbles

## LIFE SCIENCE

### Unit 3: Plants and Animals

K-LS1-1, K-ESS2-2, K-ESS3-1

#### Lesson 1: What Do Plants Need?

Hands-On Activity: Plant Needs

#### Lesson 2: What Do Animals Need?

Hands-On Activity: Pill Bug Home

#### Lesson 3: Where Do Plants and Animals Live?

Hands-On Activity: Where Plants Live

#### Lesson 4: How Do Plants and Animals Change Their Environment?

Hands-On Activity: Engineer It • Plan a Park

## EARTH & SPACE SCIENCES

### Unit 4: Sun Warms Earth

K-PS3-1, K-PS3-2

#### Lesson 1: How Does the Sun Warm Earth?

Hands-On Activity: The Sun's Heat

#### Lesson 2: Engineer It • How Can I Protect Myself from the Sun?

Hands-On Activity: Engineer It • Design Shade

## Unit 5: Weather

K-ESS2-1, K-ESS3-2

### Lesson 1: How Can We Observe Weather Patterns?

Hands-On Activity: Observing Patterns in Weather

### Lesson 2: How Can We Measure Weather?

Hands-On Activity: Measuring Weather with Tools

### Lesson 3: Engineer It • What Are Kinds of Severe Weather?

Hands-On Activity: Engineer It • Model Thunder

### Lesson 4: Engineer It • How Can Forecasts Help Us?

Hands-On Activity: Engineer It • Design a Severe Weather Safety Kit

## Unit 6: Earth's Resources

K-ESS3-1, K-ESS3-3

### Lesson 1: What Are Natural Resources?

Hands-On Activity: Clay Bricks

### Lesson 2: Engineer It • How Can We Save Natural Resources?

Hands-On Activity: Engineer It • Design a Solution



# Grade 1

## ENGINEERING & DESIGN

### Unit 1: Engineering and Technology

K-2-ETS1-1, K-2-ETS1-2, K-2-ETS1-3

#### Lesson 1: Engineer It • How Do Engineers Use Technology?

Hands-On Activity: Engineer It • Solve the Headphones Problem

#### Lesson 2: Engineer It • How Can We Solve a Problem?

Hands-On Activity: Engineer It • Protect the Legs!

## PHYSICAL SCIENCE

### Unit 2: Sound

1-PS4-1, 1-PS4-4

#### Lesson 1: What Is Sound?

Hands-On Activity: Make Something Move with Sound

#### Lesson 2: Engineer It • How Can We Communicate with Sound?

Hands-On Activity: Engineer It • Communicate Over Distance

### Unit 3: Light

1-PS4-2, 1-PS4-3, 1-PS4-4

#### Lesson 1: How Does Light Help Us See?

Hands-On Activity: Make Observations in Different Light

#### Lesson 2: How Do Materials Block Light?

Hands-On Activity: Test How Light Passes Through Materials

#### Lesson 3: How Does Light Travel?

Hands-On Activity: Test What Happens to Light

## LIFE SCIENCE

### Unit 4: Plant and Animal Structures

1-LS1-1

#### Lesson 1: Engineer It • What Parts Help Plants Live?

Hands-On Activity: Engineer It • Use Ideas from Plants to Design a Solution

#### Lesson 2: Engineer It • What Body Parts Help Animals Stay Safe?

Hands-On Activity: Engineer It • Design a Shoe

#### Lesson 3: Engineer It • What Body Parts Help Animals Meet Their Needs?

Hands-On Activity: Engineer It • Use Ideas from Animals

#### Lesson 4: How Do Plants and Animals Respond to Their Environment?

Hands-On Activity: Change How a Plant Grows

### Unit 5: Living Things and Their Young

1-LS1-2, 1-LS3-1

#### Lesson 1: How Do Plants Look Like Their Parents?

Hands-On Activity: Grow Carrot Tops

#### Lesson 2: How Do Animals Look Like Their Parents?

Hands-On Activity: Observe Brine Shrimp

#### Lesson 3: How Do Animals Take Care of Their Young?

Hands-On Activity: Compare How Animals Learn from Their Parents

## EARTH & SPACE SCIENCES

### Unit 6: Objects and Patterns in the Sky

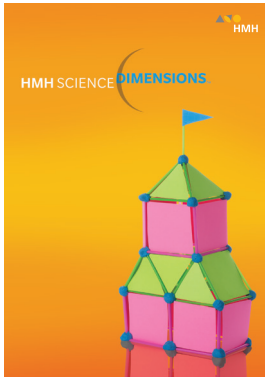
1-ESS1-1, 1-ESS1-2

#### Lesson 1: How Do Objects in the Sky Seem to Change?

Hands-On Activity:  
Observe the Pattern of the Sun

#### Lesson 2: What Are Patterns of Daylight?

Hands-On Activity: Observe Patterns of Sunset



# Grade 2

## ENGINEERING & DESIGN

### Unit 1: Engineering Design Process

K-2-ETS1-1, K-2-ETS1-2, K-2-ETS1-3

#### Lesson 1: Engineer It • What Is a Design Process?

Hands-On Activity: Engineer It • Build a Better Lunchbox

#### Lesson 2: Engineer It • How Can We Compare Design Solutions?

Hands-On Activity: Engineer It • Compare Strengths and Weaknesses of Design Solutions

## PHYSICAL SCIENCE

### Unit 2: Matter

2-PS1-1, 2-PS1-2, 2-PS1-3, 2-PS1-4

#### Lesson 1: Engineer It • What Are Properties of Matter?

Hands-On Activity: Engineer It • Explore Properties of Matter

#### Lesson 2: How Do Heating and Cooling Change Matter?

Hands-On Activity: Explore Cooling

#### Lesson 3: How Does Matter Change?

Hands-On Activity: Explore Changes to Matter

#### Lesson 4: How Are Objects Put Together?

Hands-On Activity: Build Objects from Smaller Pieces

## LIFE SCIENCE

### Unit 3: Environments for Living Things

2-LS2-1, 2-LS2-2, 2-LS4-1

#### Lesson 1: What Do Plants Need?

Hands-On Activity: Explore Plant Needs

#### Lesson 2: Engineer It • How Do Plants Depend on Animals?

Hands-On Activity: Engineer It • Plan and Build a Model Tool

#### Lesson 3: What Plants and Animals Live in Water Habitats?

Hands-On Activity: Make a Model Habitat

#### Lesson 4: What Plants and Animals Live in Land Habitats?

Hands-On Activity: Make a Habitat Exhibit

## EARTH & SPACE SCIENCES

### Unit 4: Earth's Surface

2-ESS2-2, 2-ESS2-3

#### Lesson 1: Where Is Water Found on Earth?

Hands-On Activity: Locate Bodies of Water

#### Lesson 2: Engineer It • How Can We Map Land and Water?

Hands-On Activity: Engineer It • Make a Map

### Unit 5: Changes to Earth's Surface

2-ESS1-1, 2-ESS2-1

#### Lesson 1: What Changes on Earth Happen Slowly?

Hands-On Activity: Model Erosion

#### Lesson 2: What Changes on Earth Happen Quickly?

Hands-On Activity: Model Quick Changes on Earth

#### Lesson 3: Engineer It • How Can We Prevent Wind and Water from Changing Land?

Hands-On Activity: Engineer It • Prevent Water from Changing Land



# Grade 3

## ENGINEERING & TECHNOLOGY

### Unit 1: Engineering Design Process

3-5-ETS1-1, 3-5-ETS1-2, 3-5-ETS1-3

#### Lesson 1: Engineer It - How Do We Define a Problem?

Hands-On Activity: What's in the Way?

#### Lesson 2: Engineer It - How Can We Design a Solution?

Hands-On Activity: Modeling Irrigation

#### Lesson 3: Engineer It - How Do We Test and Improve a Solution?

Hands-On Activity: Looking It Over

## PHYSICAL SCIENCE

### Unit 2: Forces

3-PS2-3, 3-PS2-4

#### Lesson 1: What Are Forces?

Hands-On Activity: Demonstrating How Forces Affect Motion

#### Lesson 2: What Are Some Types of Forces?

Hands-On Activity: Exploring Forces

#### Lesson 3: Engineer It • What Forces Act from a Distance?

Hands-On Activity: Build an Electromagnet

### Unit 3: Motion

3-PS2-1, 3-PS2-2

#### Lesson 1: What Is Motion?

Hands-On Activity: Slow Walk, Fast Walk

#### Lesson 2: What Are Some Patterns in Motion?

Hands-On Activity: Tick Tock

## LIFE SCIENCE

### Unit 4: Life Cycles and Inherited Traits

3-LS1-1, 3-LS3-1

#### Lesson 1: What Are Some Plant Life Cycles?

Hands-On Activity: How Do Plants Grow

#### Lesson 2: What Are Some Animal Life Cycles?

Hands-On Activity: Observing Mealworm Metamorphosis

#### Lesson 3: What Are Inherited Plant and Animal Traits?

Hands-On Activity: Monster Traits

## Unit 5: Organisms and Their Environments

3-LS2-1, 3-LS3-2 3-LS4-2, 3-LS4-3, 3-LS4-4

### Lesson 1: How Does the Environment Affect Traits?

Hands-On Activity: How Much Water Do Plants Need?

### Lesson 2: What Are Adaptations?

Hands-On Activity: Just Pecking?

### Lesson 3: How Can Organisms Succeed in Their Environments?

Hands-On Activity: Battle of the Beans!

### Lesson 4: Engineer It • What Happens When Environments Change?

Hands-On Activity: How Can It Cross the Road?

## EARTH & SPACE SCIENCE

### Unit 6: Fossils

3-LS4-1

#### Lesson 1: What Is a Fossil?

Hands-On Activity: Walk This Way

#### Lesson 2: What Do Fossils Tell Us About the Past?

Hands-On Activity: What Can You Learn from Studying a Fossil?

## Unit 7: Weather and Patterns

3-ESS2-1, 3-ESS2-2, 3-ESS3-1

### Lesson 1: How Is Weather Measured?

Hands-On Activity: Analyzing Weather

### Lesson 2: How Can We Predict Weather?

Hands-On Activity: Weather Here and There

### Lesson 3: Engineer It • What Are Some Severe Weather Impacts?

Hands-On Activity: Smashing Floods

### Lesson 4: What Are Some Types of Climates?

Hands-On Activity: Looking for a New Home





# Grade 4

## ENGINEERING & TECHNOLOGY

### Unit 1: Engineering and Technology

3-5-ETS1-1, 3-5-ETS1-2, 3-5-ETS1-3

#### Lesson 1: Engineer It - How Do Engineers Define Problems?

Hands-On Activity: Menu Planning

#### Lesson 2: Engineer It - How Do Engineers Design Solutions?

Hands-On Activity: Design It!

#### Lesson 3: Engineer It - How Do Engineers Test and Improve Prototypes?

Hands-On Activity: Testing, Testing!

## PHYSICAL SCIENCE

### Unit 2: Energy

4-PS3-1, 4-PS3-2, 4-PS3-3, 4-PS4-4

#### Lesson 1: What Is Energy?

Hands-On Activity: Light the Bulb

#### Lesson 2: Engineer It - How Is Energy Transferred?

Hands-On Activity: Design and Test a Solar Cooker

#### Lesson 3: How Do Collisions Show Energy?

Hands-On Activity: Test It! Stored Energy in a Rubberband

### Unit 3: Waves and Information Transfer

4-PS4-1, 4-PS4-2, 4-PS4-3

#### Lesson 1: What Are Waves?

Hands-On Activity: Let's Make Waves

#### Lesson 2: How Does Light Reflect?

Hands-On Activity: Disappearing Coins

Hands-On Activity: Reflecting on Angles

#### Lesson 3: How Is Information Transferred from Place to Place?

Hands-On Activity: Pixels to Pictures

## LIFE SCIENCE

### Unit 4: Plant Structure and Function

PE 4-LS1-1

#### Lesson 1: What Are Some Plant Parts and How Do They Function?

Hands-On Activity: Hold the Soil

#### Lesson 2: Engineer It - How Do Plants Grow and Reproduce?

Hands-On Activity: Flying High

### Unit 5: Animal Structure and Function

PE 4-LS1-1

#### Lesson 1: Engineer It - What Are Some External Structures of Animals?

Hands-On Activity: Staying Warm

#### Lesson 2: What Are Some Internal Structures of Animals?

Hands-On Activity: Pump It Up!

#### Lesson 3: How Do Senses Work?

Hands-On Activity: Touch Test

## EARTH & SPACE SCIENCE

### Unit 6: Changes to Earth's Surface

4-ESS2-1, 4-ESS2-2

#### Lesson 1: How Does Water Shape Earth's Surface?

Hands-On Activity: Rate the Change

#### Lesson 2: What Other Factors Shape Earth's Surface?

Hands-On Activity: Finding Change

#### Lesson 3: Engineer It – How Can Maps Help Us to Learn About Earth's Surface?

Hands-On Activity: Park Designer

#### Lesson 4: What Patterns Do Maps Show Us?

Hands-On Activity: Tracking Quakes

### Unit 7: Rocks and Fossils

4-ESS1-1

#### Lesson 1: How Do Rock Layers Change?

Hands-On Activity: Modeling How Rocks Can Form

#### Lesson 2: What Do Fossils Tell Us About Ancient Environments?

Hands-On Activity: Old and New

#### Lesson 3: What Are Some Patterns Fossils Show Us?

Hands-On Activity: Layer By Layer

### Unit 8: Natural Resources and Hazards

4-ESS3-1, 4-ESS3-2

#### Lesson 1: What Non-Renewable Resources Are Used for Energy?

Hands-On Activity: Catch That Dirt

#### Lesson 2: Engineer It - What Renewable Resources Are Used for Energy?

Hands-On Activity: Running on Sunshine

#### Lesson 3: Engineer It – How Can People Reduce the Impact of Land-Based Hazards?

Hands-On Activity: Reduce the Risk

#### Lesson 4: Engineer It - How Can People Reduce the Impact of Water-Based Hazards?

Hands-On Activity: Is It Safe?



# Grade 5

## ENGINEERING & TECHNOLOGY

### Unit 1: Engineering and Technology

3-5-ETS1-1, 3-5-ETS1-2, 3-5-ETS1-3

#### Lesson 1: Engineer It - How Are Science and Math Used in Engineering?

Hands-On Activity: Testing Straw Beams

#### Lesson 2: What Is the Design Process?

Hands-On Activity: Testing With a Scale Model

#### Lesson 3: How Does Technology Affect Society?

Hands-On Activity: Car Competition

## PHYSICAL SCIENCE

### Unit 2: Matter

5-PS1-1, 5-PS1-2, 5-PS1-3, 5-PS1-4

#### Lesson 1: What Is Matter?

Hands-On Activity: How Big Is It?

#### Lesson 2: What Are Properties of Matter?

Hands-On Activity: What Affects the Rate of Dissolving?

#### Lesson 3: How Does Matter Change?

Hands-On Activity: Which Will React?

## LIFE SCIENCE

### Unit 3: Energy and Matter in Organisms

5-LS1-1, 5-PS3-1

#### Lesson 1: How Does Energy Get Transformed by Plants?

Hands-On Activity: Lights Out!

#### Lesson 2: How Do Organisms Use Matter and Energy?

Hands-On Activity: What Was for Dinner?

#### Lesson 3: How Do Organisms Interact?

Hands-On Activity: What's Out There?

### Unit 4: Energy and Matter in Ecosystems

PE 5-LS2-1

#### Lesson 1: How Do Energy and Matter Move Through Ecosystems?

Hands-On Activity: Modeling Matter Moving within an Ecosystem

#### Lesson 2: How Do Organisms Change Their Ecosystems?

Hands-On Activity: Invasion!

## EARTH & SPACE SCIENCE

### Unit 5: Systems in Space

5-PS2-1, 5-ESS1-2, 5-ESS1-1

#### Lesson 1: How Does Gravity Affect Matter on Earth?

Hands-On Activity: A Trip Around the World

#### Lesson 2: What Daily Patterns Can Be Observed?

Hands-On Activity: How Does Your Shadow Grow?

#### Lesson 3: What Patterns Can Be Observed In a Year?

Hands-On Activity: Sunrise, Sunset

#### Lesson 4: What Is the Sun?

Hands-On Activity: Find the Light

### Unit 6: Earth's Systems

5-ESS2-1, 5-ESS2-2

#### Lesson 1: What Are Earth's Major Systems?

Hands-On Activity: Modeling Earth's Layers

#### Lesson 2: How Do Earth's Systems Interact?

Hands-On Activity: What Happens During the Water Cycle?

#### Lesson 3: Engineer It - What Is the Role of the Oceans in Earth's Systems?

Hands-On Activity: How Do Oceans Shape Shorelines?

### Unit 7: Earth and Human Activities

5-ESS3-1

#### Lesson 1: How Does Resource Use Affect Earth?

Hands-On Activity: A Solution for All This Pollution!

#### Lesson 2: Engineer It - How Can People Protect the Environment?

Hands-On Activity: Pocket Park

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