

Blocks Measure Up



Acknowledgements

Principal Investigator

Judy A. Brown, Ed.D.
Senior Vice President, Education
Phillip and Patricia Frost Museum of Science

Project Director

Cheryl Lani Juárez

Project Coordinator

Krista Kaiser

Development Team

Judy Brown, CherylN Caldwell, Raquel Diaz, Fran Gordon,
Cheryl Lani Juárez, Krista Kaiser, Isabel Leeder, Ted Myers, Romina
Pastorelli

Miami-Dade County Community Action and Human Services Head Start/Early Head Start

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Early Childhood Hands-On Science (ECHOS) is supported by the Institute of Education Sciences, U.S. Department of Education, through Grant R305A100275 to the Phillip and Patricia Frost Museum of Science. The opinions expressed herein are those of the authors and do not necessarily represent the position of the U.S. Department of Education.

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Overview

Overall Goal: Children use blocks as an alternative measurement tool to compare the length and height of objects.

Lesson	Objectives	Vocabulary	Key Concepts	Tools
#1: Blocks in a Row	Children will use 1" blocks to develop a conceptual understanding of comparison words: same, longer and shorter.	equal length long/longer measure row same shorter	<ul style="list-style-type: none">• An object's length can be measured.• When rows of blocks are the same length, they are equal in length.• When a row has more blocks than another, it is longer.• When a row has fewer blocks than another, it is shorter.	1" blocks
#2: Block by Block	Children will use 1" blocks to measure the length of objects.	inch/es	<ul style="list-style-type: none">• 1" blocks can be used to measure the length of objects.	1" blocks
#3: How Tall Am I?	Children will compare and contrast their height to others.	height tall/taller	<ul style="list-style-type: none">• A person's height can be measured.	1" blocks
#4: Speedway	Children will conduct an investigation to explore how changing a variable may affect the distance a car toy travels down a ramp.	far/farther high/higher investigation ramp	<ul style="list-style-type: none">• The height of a ramp affects how far a toy car travels.	ramps

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Science Process Skills

Science Process Skills	Lesson #1	Lesson #2	Lesson #3	Lesson #4
Observing				
Identifies object properties	●	●	●	●
Uses senses to observe concrete, familiar objects	●	●	●	●
Differentiates between models and the real thing				
Uses measurement tools to record observations		●	●	●
Uses tools to observe objects or events	●	●	●	●
Describing				
Describes key attributes of objects			●	●
Creates drawings or models depicting objects				
Describes changes in objects	●			●
Discusses changes in variables that affect an investigation				●
Categorizing				
Notices similarities and differences	●		●	●
Sorts objects into groups using one attribute at a time	●		●	
Establishes own sorting criteria				
Sorts objects using multiple attributes				
Provides reasoning for grouping objects				
Predicting				
Verbalizes thinking		●	●	●
Recognizes and extends patterns	●			●
Makes simple predictions				●
Makes predictions based on observations				●
Uses estimation to make quantitative predictions				●
Experimenting				
Investigates models of objects/phenomena			●	●
Manipulates materials	●	●	●	●
Identifies factors that might affect the outcome of an experiment				●
Participates in collecting data		●	●	●
Interprets data using symbols or graphs		●	●	●
Performs trial-and-error investigations				●
Drawing Conclusions				
Makes verbal interpretations of observations	●	●	●	●
Finds patterns from data collected				●
Connects findings from an investigation				●

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Lessons at a Glance

Blocks in a Row is an introduction to comparison words such as same, longer and shorter. In this lesson, the teacher introduces 1" blocks as a non-standard unit of measurement. Children use blocks to measure the length of truck beds. Which is longer? Which is shorter?

In **Block by Block**, children enjoy the story *What's Down the Block?*, in which a boy and his father measure things they find around their neighborhood. Children use 1" blocks to measure the length of books found in their classroom.

Children are growing every day and are interested in affirming their own growth. In **How Tall Am I?**, the teacher compares her own height to that of a doll. She then uses a length of butcher paper on the wall to record the doll's height, her own height, and the height of each child. Children compare and contrast their height to the doll's height and the teacher's height. Who is taller? Who is shorter? Are any children the same height?

In **Speedway**, children use blocks to build ramps of different heights to investigate whether the height of a ramp affects the length a car travels. The children predict the outcome, make observations and draw conclusions about the relationship between ramp height and distance traveled.



Key Concepts

Blocks are familiar and engaging toys that can help children develop measurement skills. One-inch unit blocks can serve as an alternative measuring tool to help children prepare to use standard units of measurement later on. **Blocks Measure Up** introduces mathematics and physical science concepts using one-inch blocks to measure the length of familiar objects and the height of a ramp to be used in a physical science investigation.

- Children are naturally curious about their physical surroundings. This awareness is evident in their speech. Children are using comparing words such as bigger, smaller, longer, shorter. For example, one child may comment to another, “Hey, your cookie is bigger than mine!” A child who is comparing is measuring.
- Length and height can be measured by using standard or nonstandard units of measurement. Some standard tools of measurement include rulers, measuring tape and height charts. Nonstandard units of measurement include blocks, paper clips, string and other items of uniform size.
- Measurements can be made using objects of uniform size and shape repeatedly. In the first three lessons, blocks are used to measure length and height. Blocks are laid horizontally to measure length and stacked vertically to measure height.
- Scientific investigations require the use of math skills. Counting, comparing, ordering, patterning, estimating, predicting, and measuring are commonly used while conducting science experiments. Some refer to math as the language of science.
- Although young children might not be able to explain the complex concepts involved in the motion of objects, they have intuitive notions about the relationship between height and speed, and can develop a deeper understanding through experimentation.
- A basic principle of scientific investigations is to change only one part, or variable, of an experiment at a time, while keeping all other aspects the same.

Lesson Guide

TEACHER TALK

Teacher talk is indicated by **bold letters that appear in large print**. When you first start teaching ECHOS, you may need to rely heavily on this text to ensure that you are presenting the science concepts accurately. As you become familiar with the text, use it as a guide or refer to it only as needed. You should always read the entire script prior to delivering the lesson.

TEXT IN ALL CAPS

Text IN ALL CAPS appears throughout the script to emphasize a step or instructions given to children.

VOCABULARY WORDS

Vocabulary words are introduced during the lesson and reinforced in the Outcomes section.

They appear in *red italic letters* the first time they are introduced.

MATERIALS IN BLUE LETTERS

Materials listed in *blue letters* in the *Material Preparation* page, indicate materials that are non-consumable. Once acquired, these materials do not need to be replaced.

SCIENCE AREA

The last page of each lesson contains suggested materials that could be added to your science area. Before adding any materials for children's independent use, evaluate whether the item is safe to be explored with limited supervision. The science area should be a place that children use freely to explore and conduct their own trial and error experiments, rather than a display area.