MEASURING UP!

STRUCTURE

- Activity Overview & Preparation (10-15 MIN)
- Introduction (2 MIN)
- Activity & Discussion (15-30 MIN)
- Closing (5-10 MIN)

OBJECTIVES

At the end of this activity, participants will be able to:

- Recognize opportunities in daily life to explore measurement with their child

TIME

35-60 MINUTES

In this activity, caregivers discuss ways to talk about measurement with their children.

MATERIALS

Printout (or digital copies) of caregiver materials

ACTIVITY 2.4

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MEASURING UP!

GETTING READY

FACILITATOR NOTES

ANSWER GUIDE

For each type of measurement discussed in this activity, the Answer Guide provides an example that you can use to get the conversation going, as needed.

BUILDING CAPACITY

This activity builds on the **Math is More than Number** module, but does not require module completion. (Module 2, Segment 2)

ADAPTATIONS

Use these ideas to modify the activity based on:

- child age,
- time and resources available for implementation
- caregiver needs.

TIPS

Blue text indicates something that facilitators might say (e.g.,"**Today we are going to explore how to talk about measurement with our children**"). Regular text is information for facilitation.

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MEASURING UP!

GETTING READY

ACTIVITY OVERVIEW

In this activity, you will help caregivers identify opportunities in daily life to talk about measurement with their children. Measurement is a math concept that we apply in many different contexts — distance, quantity, volume, progress, growth, time, and temperature are all "things" that we measure. There are many developmentally appropriate ways for a child to learn about measurement during early childhood, and many children enjoy measuring!

KEY TERMS & CONCEPTS

Measurement: assigning a number of units to some property, such as length, area, or weight, of an object

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GETTING READY

PREPARATION

10-15 Minutes

Review the provided Measurement Examples in the Answer Guide.

Review DREME's brief overview of the Measurement math topic. https://familymath.stanford.edu/for-educators/measurement-all-about/

After you become familiar with the activity, review the Adaptations section included at the end of this guide.

Be sure all caregiver seats are arranged in a way that participants can see the screen or wall where you will show the icons for each measurement target. Be ready to project the slide.

Consider using a whiteboard, digital Jamboard, or giant poster paper to write down caregivers' ideas to document their success and share ideas with other caregivers.

INTRODUCTION

2 Minutes

Introduce the activity. For example, you might say: "Today we are going to explore how to talk about measurement with our children. Measurement is a math concept that we apply in many different contexts — distance, quantity, volume, money, progress, growth, time, and temperature are all 'things' that we measure. There are many opportunities in daily life to help your child learn about measuring."

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ACTIVITY

ACTIVITY & DISCUSSION

Part 1: 15-30 Minutes

In this activity, you will draw attention to different forms of measurement and ask caregivers to identify where they might naturally occur in their children's home Environment.

To begin, write the following list on a whiteboard or presentation board that caregivers can view, or you can project the illustrated list that is provided in the Caregiver Materials. Discuss any of the measurement properties that the caregivers might not be familiar with. To do this, you might ask for examples. You might say, "Let's think of some examples. What are some ways [insert measurement topic] occurs in your daily life?" You can keep these examples focused on the caregivers' lives, rather than the children's experiences, because you will move to children's experiences in the next step. To get the conversation going, you can use the measurement topic examples provided in the Caregiver Materials.

- Temperature
- Time
- Quantity
- Distance
- Growth
- Volume

Next, ask the caregivers to break into pairs (or small groups, depending on the total group size); each pair chooses one topic from the list above to think about how they might talk with their child about the topic in the context of everyday activities.

"How can you talk about [insert measurement topic] with your child?"

As caregivers discuss the measurement topics, notice and acknowledge any examples they provide that are from their own experiences - for example, if a caregiver says, "We talk about the weather everyday. My son always asks how hot it is going to be, and we look it up. I tell him the temperature and we talk about if it will be warmer or colder than yesterday."

ACTIVITY

ACTIVITY & DISCUSSION

Part 2: 15-30 Minutes

You can expand this activity by asking caregivers to think of opportunities to talk about measurement with children within a specific age range relevant to the caregiver participants (e.g., 12-18 months, 18 months-2 years, 2-3 years, 3-5 years, 5 years and older, etc.).

You can also ask caregivers to think of ideas for two different age groups and compare and contrast them.

Try to guide the conversation toward developmentally appropriate, fun, and engaging ways measurement can occur.

During the conversation, you can refer to conventional measurements (inches, minutes, centimeters, degrees) or nonconventional measurements (such as how many blocks long, shortest/tallest, or hottest/coldest).

Conventional measurements may be too difficult for some children to talk about independently, but children can benefit from observing their caregivers talking about conventional measurement.

"What new ideas do you now have for words about measurement? Which are most appropriate for use with your child, given their age?"

For example, using terms like conventional measures, degrees, or inches might be too difficult for a child who is 5 years old, but using relative terms, like higher or taller, and shorter or wider, can still teach measurement in a developmentally appropriate way.

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ACTIVITY

CLOSING
(5- 10 Minutes)

Incorporate these key takeaways in how you close the session with caregivers. You can state them as written, or paraphrase based on the caregiver's experiences.

- There are many opportunities in daily life to talk about measurement with Children.
- Caregivers can support math conversations with their children using various ways to measure — both conventional and nonconventional.

To help solidify learning, ask families to share one thing they learned about early math from this activity.

ADAPTATIONS

CHILD'S AGE

Review the measurement topic list and decide whether you want to omit any of the terms depending on the current age group of the caregivers' children. Some measurement terms and topics lend themselves more easily to older children, while others can be used with younger children. For example, talking about volume (Which holds more? How much to fill it up?) may be better suited for children older than 5, while talking about quantity (How many?) may be better suited for younger children. Help caregivers reflect on developmentally appropriate examples across measurement topics.

Highlight for caregivers that providing content just a bit harder than what they think their child can do is ideal, because they can scaffold their children's success. Scaffolding can involve helping children "reach" that content by talking about it, giving them clues, and guiding their understanding.

If caregivers have older children (4 and older) the caregivers might adapt talking about the measurement targets to include more complex questions about things like conventional measurement, problem solving, and measurement questions that require mental rotation.

TIME AND RESOURCES

If you have limited time to share the activity with caregivers, consider selecting just 1-3 measurement targets and focusing on ideas for these targets.

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MEASURING UP!

ADAPTATIONS

CAREGIVER NEEDS

If the caregivers you work with require accommodations to participate, be sure to support their needs by:

- Offering closed captioning or audio supports when available
- Providing all materials in caregivers' native language (with translations when relevant)

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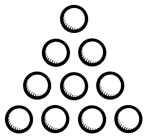
MEASURING UP!

CAREGIVER MATERIALS

Temperature

Time

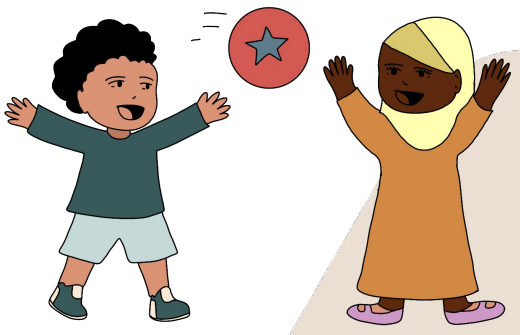


Quantity

Distance

Growth

Volume



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CAREGIVER MATERIALS

MEASUREMENT EXAMPLES

Temperature can be used across age groups to describe hot and cold items, and weather.

Time - Parents can refer to time in minutes, hours or days (e.g., "Five minutes until bedtime!", "The bread bakes for one hour!", "Grandma was here for three days.").

Quantity - Parents can label quantities (e.g., "You have two hands and I have two hands!"), count items, and compare amounts (e.g., "Four is more than two. There are more apples than bananas.")

Distance can be used with 4-year-olds and older to describe how far away or nearby something is; with intermediate age groups to express relative location (e.g., "I need a tool to help me reach it." or "We are almost there!"); or with older children to determine how far a place is (e.g., "How many steps do you think we need to take to get to the bus stop?").

Growth charts can be used for height comparison to contrast the different heights of various children in the home, or with older children to contrast inches or centimeters over time.

Volume can be used with 2-3 year-olds in transferring and pouring liquids — such as at bath time. A parent can help a child use two little cups to fill one big cup.

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ACTIVITIES FOR FAMILY SUPPORT PROFESSIONALS:
EXPLORING EARLY MATHEMATICS

"Everyone Succeeds" was developed for Family Support Professionals to use with the families they serve. All activities are available at no cost, on the Institute of Child Development Math and Numeracy Lab website, for private use with families and caregivers. These materials may not be reproduced or distributed for any for-profit effort without explicit permission from lead developers, Drs. Wackerle-Hollman and Mazzocco.

Module 1: How Attitudes and Dispositions May Affect Early Math

- Activity 1.1 Everyone Succeeds
- Activity 1.2 Flipping the Script
- Activity 1.3 Mathitudes
- Activity 1.4 Learning from Math Mistakes
- Activity 1.5 Comments, Questions, and Conversations (CQC's)
- Activity 1.6 Attitude Adjustments
- Activity 1.7 We Are All Math People

Module 2: Math is Numbers and More: Exploring Early Math Topics

- Activity 2.1 Math Kaleidoscope
- Activity 2.2 Early Math Topics
- Activity 2.3 Picturing Math
- Activity 2.4 Measuring Up!
- Activity 2.5 Toddlers Under Construction

Module 3: Finding Math in Everyday Life

- Activity 3.1 Early Math Success Stories
- Activity 3.2 Math Snacks
- Activity 3.3 Becoming a Math Detective
- Activity 3.4 Make a Statement with Math
- Activity 3.5 Everyday Math in Action
- Activity 3.6 Routines Roadmap

These activities were developed by the Math and Numeracy Lab, directed by Michèle Mazzocco, Institute of Child Development (ICD), in collaboration with Alisha Wackerle-Hollman, Director of the IGDIlab, Department of Educational Psychology, both at the University of Minnesota. Contributors include ICD doctoral students Sarah E. Pan and Jasmine R. Ernst. This work was supported by Heising-Simons Foundation DREME Network Awards 2018-0670 and 2020-1777. We thank members of the Math and Numeracy Lab that contributed to this work, family support professionals who provided feedback or welcomed us (and our activities) into their classrooms, and our community partner consultants who provided insight on language selection and delivered illustrations to make this work meaningful to the Latine and Somali communities.

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