



# EXPLORING SCIENCE PRACTICES

## Measure Up!

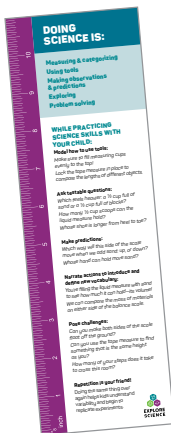
Try this with your toddler or preschooler!



Work with your child to investigate the tools and materials in the sandbox.  
**Ask early learners:** *Do any of these tools remind you of something you've seen before? How can you use them?*



Encourage your child to measure by counting out loud with them.  
**Ask early learners:** *How many handfuls of sand can you fit in the measuring cup? How many blocks fit along the length of your shoe?*



Continue to explore measurement with your early learner using the prompts on the take-home bookmark!

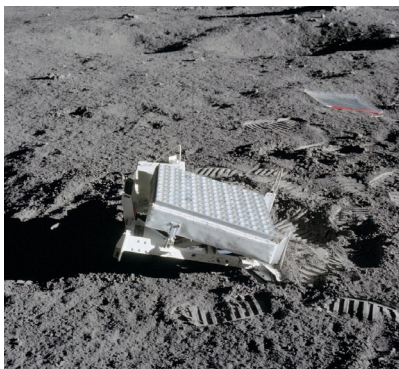
## *Measuring, using tools, and counting are important science process skills.*

**Very young children can use measuring tools to investigate foundational scientific concepts like distance, mass, and volume.** Providing early learners with opportunities and vocabulary to explore their world contributes to the development of lifelong science literacy and critical-thinking skills. Young children can experiment with rulers, tape measures, balance scales, and other tools to make observations and comparisons about amounts. Is the object or material in question big or small? Is it light or heavy? About how many or how much of something is there? Early learners can also use nonstandard units, like blocks, shoe lengths, or their own jumps. Encourage your child to measure a room with the length of their body! How many times do they fit across lying head to toe? How many thumbs tall is their teddy bear?



**Make measurement a part of everyday play and routines.**

Keep encouraging your child to practice early measuring skills by counting out loud together throughout the day. Take note of the number of leaves on a plant, or the number of stairs as you both walk up them. As your child becomes more advanced, try encouraging them to keep track of something over time, like recording how many days it takes a bean to sprout or how many days between rainstorms. Using numbers to represent observations builds a child's understanding of data, integrates math with science, and provides a quantitative basis for making comparisons. These are early iterations of the same skills that professional researchers use in their investigations of the physical world.



**Retroreflector arrays placed on the Moon by astronauts on Apollo missions 11, 14, and 15 reflect light back toward Earth.**

**Scientists develop and use measuring tools to gather information about the physical world, including faraway objects in space.** NASA's ongoing Lunar Laser Ranging experiment uses creative technologies to find the distance between the Earth and the Moon. Observatories on Earth send laser beams toward the Moon and record the amount of time it takes for the signals to bounce back after hitting a special reflector. Because scientists know how fast the laser light travels, they can use this data to calculate the distance between our planet and the Moon.