Larger & smaller

During her adventures, Alice changes size at least five different times, receiving numerous lessons in size, scale, and proportions. This activity encourages children to think about size, measurement, and scale by measuring and comparing the lengths of different parts of their bodies.

Did You Know?

- ♣ If you were twenty times taller than you are now, you could step over a two-story building!
- ♦ The foot (equal to 12 inches) we measure with today was based on the length of King James' actual foot.
- ♠ *Scale* is another word for "measurements and sizes."

What you'll need:

- ♣ Rolls of adding machine tape
- ♦ Markers or pencils
- ♠ Tape measures
- ♥ Chart paper (optional)
- ♣ Paperclips
- ♦ Glue or tape
- ♠ Paper

To Get Ready:

This activity works best in partners, so you might want to divide the class into pairs.

To Start, Ask:

Did you know that the distance from your left fingertip to your right fingertip (when your arms are stretched out) is almost the same as the distance from the top of your head to the ground? If they are the same, then you are a square. If they are different, then you are a rectangle. Do you think you are a rectangle or a square?

Try It!:

- ♣ In partners, take a piece of adding machine tape and stretch it from one of your partner's fingertips to the other and tear the tape off. Hold the end of the tape at the top of the measured student's head. Does the tape reach all the way to the ground or is it too short? If the tape just barley touches the ground, you're a square. If the tape doesn't reach your toes or if the end of it lies on the ground, you're a rectangle. If you're a rectangle, are you a tall rectangle or a short rectangle?
- ♦ Switch partners and try it again.
- ♠ Now, try some other comparisons. Make a fist and have your partner wrap the tape around its center. Tear off the tape and compare its length to the length of your foot. Are they the same or different? Can you find other parts of your body that are also that length?
- ♥ Next, use your adding machine tape to measure the distance between your shoulder and your elbow. How does that distance compare to the length between your elbow and your wrist?
- ♣ Make a graph comparing the number of students in the class who are squares and rectangles. You could also chart girls vs. boys, ages, or any other comparison.

Questions to think about and ask:

- How many of your own fists tall are you? How many of your own feet tall are you?
- Are there more rectangles or squares in your class? Do you think other classrooms would have the same ratio?

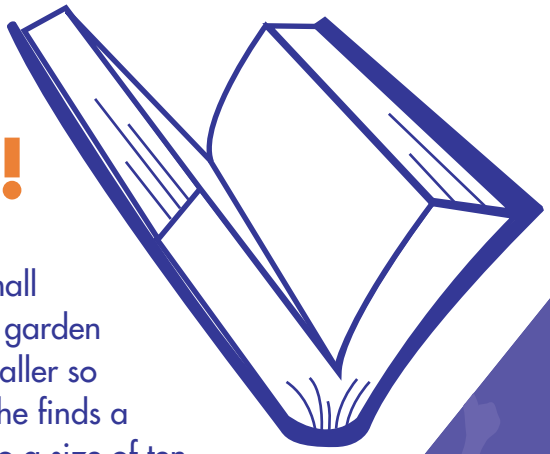
Assess What Happened (Students reflect):

Invite children to write a story about how the world would look different if they were the size of a mouse. Encourage them to answer the question, "If you were to shrink or grow like Alice, would the number of fists tall you are change?"

Connect it to Standards:

"Fundamental abilities and concepts that underlie [the Science as Inquiry] Standard include employ[ing] simple equipment and tools to gather data and extend the senses." (National Research Council Science Education Standards)

Connect it to the Story!



In the Hall of Doors, Alice finds a small door that leads to the most beautiful garden she ever saw. Wishing she were smaller so that she could fit through the door, she finds a special drink that makes her shrink to a size of ten inches tall! When Alice realizes that she left the door's key on the table, she eats a special cake that makes her grow to nine feet tall. Alice never seems to be the right size, are you?

Career Corner:

Archaelogists use the length of bones that they find to figure out the sizes and shapes of pre-historic animals. If you are interested in finding out more about animals from the past and like solving scale puzzles, you might enjoy being an archaelogist.