

Impossible Heights: Calculate and Measure with Your Shadow!

Everywhere you go, your shadow follows, but it can be much more than a companion or a silhouette: on a sunny day, your shadow can be used to discover the heights of structures that tower over you.

Here's an activity that can turn a gorgeous day into a memorable one with this hands-on lesson in mathematics. By using the concept of proportion, your child will learn fundamental math skills and experience how math can be applied in practical ways to the world around her.



What You Need:

- Tape measure
- Notebook
- Calculator
- Pen or pencil

What You Do:

1. Go to a sunny spot outside where you can clearly see your shadow. This is easiest if done earlier or later in the day when the sun is not directly overhead.
2. Using the tape measure, calculate your shadow in inches from the toes to the top of the head. Record this number in a notebook.
3. Using the tape measure again, measure your actual height in inches. Record this number in your notebook.
4. Divide your height by the length of your shadow and write that number down. This is the proportion, and you'll need to use in step 7.
5. Locate an object that is too tall to measure, but not so tall that you can't see its entire shadow. A few good examples of this are a basketball hoop, tree, or flagpole.
6. Measure the object's shadow in inches and record the number in your notebook.
7. Multiply the length of the object's shadow by the proportion from step 4. This will tell you the object's height in inches. Divide by 12 to find the object's height in feet.

Note: This activity should be done within about twenty minutes, so the sun doesn't move significantly in the sky. If you and your child continue the activity, just make sure to measure your child's shadow again and recalculate the proportion.

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