

Goal: Keep track of how much paper the group uses in a week

Grades: K–6+

Minimum number of participants: 1

Suggested grouping: any

Time: 10 minutes or less (each day for a week)

Math: measuring height; analyzing data

Materials:

scrap paper to be recycled
chart paper and marker
ruler or yardstick

Prerequisites: none

Books about things that pile up:

Stacks of Trouble. Brenner, Martha. (Kane, 2000).

The Story of Paper. Compstine, Ying Chang. (Holiday House, 2003).

Talk About...

Before beginning

Find a place to pile up scrap paper for a week.

1 Predict

We're going to stack up our scrap paper to see how much we use. How high do you think the pile will be at the end of the week?

Talk About...

Record predictions.

2 Each day for a week, everyone adds to the pile

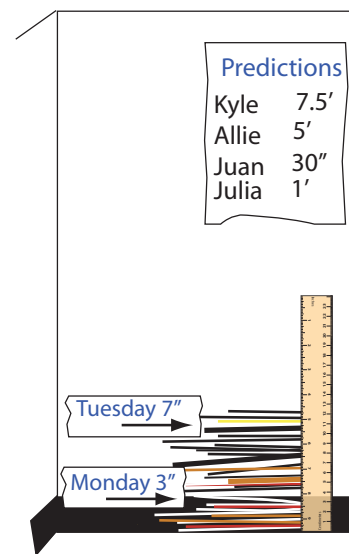
Measure and record the height together each day.

3 How high?

Compare predictions with results.

If we keep collecting paper, how much would we have in a month?

Would the pile reach the ceiling?



Variations

Stacking boxes (easier). Children collect a recyclable material, such as cracker boxes or paper towel rolls. They predict how much they'll have in a month: If we lay the boxes end to end, will they span the room? Will they stretch down the hallway? At the end of the month, they test their predictions.

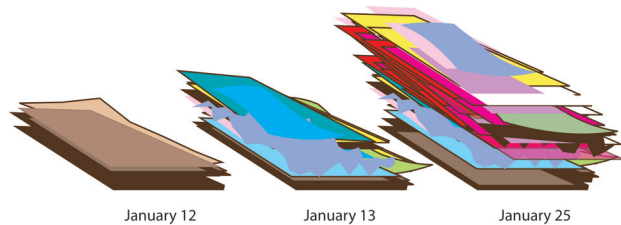
Rain gauge (harder). Children make a rain gauge by marking quarter inches on the outside of a clear plastic container. They set the gauges outside and predict how much rain will fall in a week. Then, they try it to find out.



Rate of change

Rate is measured in many ways. For cars, it's typically in miles per hour. For runners on a treadmill, it's feet per minute, and for piles of paper in this activity, it's inches per day. Rate can be constant, for instance, when a car is traveling at a steady 50 miles per hour or when a pile increases by 5 inches each day. Rates can also vary. The paper pile may grow several inches on the day of a drawing project. It may not change at all on the day of a field trip.

If children measure the paper pile daily, they learn to judge whether it is growing at a fast, slow, or steady rate of change.



Predicting growth

Children, animals, and plants all grow. Those who care for them keep track of their growth to determine if they are healthy.

Health care workers use growth charts to determine if children are growing properly. These charts show typical growth patterns. When children come to a health clinic, a nurse weighs and measures them. The nurse then compares these measurements to growth charts, in order to determine a child is developing at a normal rate.

Gardeners and farmers make plans based on what they notice about plant growth. The tomatoes are growing quickly, so we need to stake them. At this rate, the peaches will ripen in a few days, so we'll need to hire extra workers to pick them.