

LEARNING ACTIVITY: **FINDING SLOPE**

Grades 6–12



Earth scientists play an important, if largely invisible, role in many aspects of our daily lives, such as building homes or growing food. For example, geoscientists help determine which locations would be best for undertaking these vital activities.

The slope of the soil is an important soil property to consider when building or planting. The slope gradient is the angle of incline or decline, expressed in the percent of rise or fall of the soil surface from horizontal over a distance of 100 feet.

Soil slope affects the flow of water that can erode the soil. It also affects machinery use, building construction, plantings, maintenance, and on-site waste disposal systems using septic tanks (because seepage can occur down-slope of an absorption field).

Various activities are best suited to specific slope classes (see sidebar). For home construction, for instance, a “gently sloping” slope of 2-6% is preferred. If the slope is too flat, water doesn’t drain away from the house. If the slope is too steep, erosion and soil stability can be a problem.

Materials

- Calibrated stake
- String (about 12 inches)
- Washer or nut
- Tack
- Clip board
- Computer with Internet connection
- “Supplemental Worksheet (slope finder)” (www.soils4teachers.org/lessons-and-activities/earth-science-week-materials)

Procedure

1. Discuss: Certified soil scientists usually use a Clinometer or Abney level to determine slope. You can make a slope finder using the “Supplemental Worksheet (slope finder)” to determine the approximate slope of landscapes around you.
2. Find a slope to measure.
3. Mount the slope finder on the back of a board or clip board with the top line parallel with the sighting edge. Drill a hole and tie a string, or use a tack to attach a string from the point marked with a plus sign, and tie a washer about the size of a quarter or a half-inch nut to the other end of the string.
4. Set a calibrated stake at both the top and bottom of the slope to be measured.
5. Sight at a point from the top of one stake to the top of the other stake. Hold the slope finder steady.
6. After sighting, pinch a string against the scale and read the percent slope directly.
7. Discuss: Would this slope be a good one on which to build a house? For what activities do you think this sloped soil would be useful?

SLOPE CLASSES

A	0-2%	Nearly level
B	2-6%	Gently sloping
C	6-12%	Moderately sloping
D	12-18%	Strongly sloping
E	18-25%	Moderately steep
F	25-35%	Steep
G	35-100%	Very steep



Source: Soil Science Society of America. H.M. Galloway, A.L. Zachery, Agronomy Department, Purdue University, Revised by S.S. Fulk-Bringman. Adapted with permission.

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
						1
2 Did You Know? Unnamed Hurricane (Category 5) Batters Florida Keys, 1935	3 Labor Day	4	5	6	7	8
9 Grandparents Day	10 Happy Birthday! Stephen Jay Gould, U.S. Paleontologist and Evolutionary Biologist, Born 1941	11 Patriot Day	12	13 Did You Know? Hurricane Ike (Category 4) Strikes Texas, 2008	14	15 Sept. 15–23, 2012: Geoscience Event: 55th AEG Annual Meeting, Association of Environmental and Engineering Geologists, Salt Lake City, Utah
16 Sept. 16–19, 2012: Geoscience Event: AAPG International Conference and Exhibition, American Association of Petroleum Geologists, Singapore Rosh Hashanah (Sundown) Sept. 16–18, 2012	17 Citizenship Day Constitution Day	18	19	20	21	22 Sept. 22–25, 2012: Geoscience Event: AIPG 49th Annual Meeting, American Institute of Professional Geologists, Rapid City, South Dakota Autumnal Equinox
23 <hr/> 30	24 Did You Know? Hurricane Rita (Category 5) Batters Texas and Louisiana, 2005	25 Yom Kippur (Sundown) Sept. 25-26, 2012	26	27	28	29