Objective Find the slope of a wheelchair ramp.

Materials tape measure or yard stick, graph paper, pencil

Investigation Getting Going Handicap ramps must be designed so that they are easy to climb for any individual. The Americans with Disabilities Act (ADA) states that “the least possible slope shall be used for any ramp.” ADA also states that the maximum slope of any new ramp is $\frac{1}{12}$. So, for 1 foot of rise, there must be 12 feet of run.

Work with a partner to complete the following.

1. Find a ramp to your school building or another building in the neighborhood. Measure the rise and run of the ramp. What is the slope of the ramp? Does it comply with the ADA? Why or why not?

2. Choose a building in your community that has an entryway with no ramp. Measure the height of the entryway from ground level.

3. Calculate an appropriate slope for the entryway. The slope of the ramp must be less than or equal to $\frac{1}{12}$ to comply with ADA regulations.

4. Draw a diagram of the entryway and an appropriate ramp. You may need to draw aerial and side views.

5. Write a paragraph describing how you chose the slope of the ramp that you designed. Describe an alternate slope that could be used for the entryway.
Teacher’s Notes for Wheelchair Ramps Project
For use after Chapter 8

Project Goals
• Calculate slope.
• Design a ramp given the dimensions of an entryway.

Managing the Project
Classroom Management Assign a task for each student in the group. One student can measure the objects while the other records the results. The students may choose to separate the tasks, where each student chooses several tasks, or work on each task together. Have each student complete a peer evaluation form stating who completed which tasks.

Rubric for Project
The following rubric can be used to assess student work.

4 The student has reasonably accurate measurements for an existing ramp. The student has completed a clear explanation for comparing the ramp to ADA requirements. The student has chosen an appropriate location for a new ramp and has found reasonably accurate measurements. The slope has been correctly calculated. The student has created an accurate, clear, and correct diagram. The student has supplied a clear and coherent explanatory paragraph. The student has completed a peer evaluation.

3 The student has reasonably accurate measurements for an existing ramp. The student has completed a clear explanation for comparing the ramp to ADA requirements. The student has chosen an appropriate location for a new ramp and has found reasonably accurate measurements. A minor error is made in calculating the slope. The student created a clear diagram with 1 or 2 errors. The student has supplied a clear and coherent explanatory paragraph with 1 or 2 errors. The student has completed a peer evaluation.

2 The student has reasonably accurate measurements for an existing ramp with 1 or 2 errors. The student has completed a somewhat clear explanation for comparing the ramp to ADA requirements. The student has chosen an appropriate location for a new ramp and has found reasonably accurate measurements with 1 or 2 errors. The slope is calculated with a few errors. The student created a diagram with many errors. The student has supplied an incomplete or unclear explanatory paragraph. The student has completed a peer evaluation with 1 or 2 omissions.

1 The student’s measurements for an existing ramp have many errors. The student has not completed a clear explanation for comparing the ramp to ADA requirements. The student has chosen an inappropriate location for a new ramp and/or the measurements are inaccurate. The slope is calculated incorrectly. The student created an unclear and incorrect diagram. The student has not supplied an explanatory paragraph, or it is an incomplete or unclear paragraph. The student has completed a peer evaluation with many omissions.