

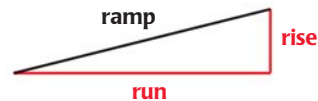
## 4.4 Slopes of Lines TEKS A.6.A

**MATERIALS** • several books • two rulers

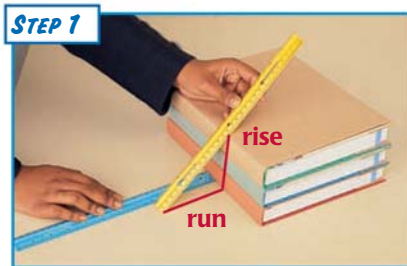
**QUESTION** How can you use algebra to describe the slope of a ramp?

You can use the ratio of the vertical rise to the horizontal run to describe the *slope* of a ramp.

$$\text{slope} = \frac{\text{rise}}{\text{run}}$$



**EXPLORE** Calculate the slopes of ramps



**Make a ramp** Make a stack of three books. Use a ruler as a ramp. Measure the rise and run of the ramp, and record them in a table. Calculate and record the slope of the ramp in your table.



**Change the run** Without changing the rise, make three ramps with different runs by moving the lower end of the ruler. Measure and record the rise and run of each ramp. Calculate and record each slope.



**Change the rise** Without changing the run, make three ramps with different rises by adding or removing books. Measure and record the rise and run of each ramp. Calculate and record each slope.

**DRAW CONCLUSIONS** Use your observations to complete these exercises

**Describe** how the slope of the ramp changes given the following conditions. Give three examples that support your answer.

1. The run of the ramp increases, and the rise stays the same.
2. The rise of the ramp increases, and the run stays the same.

**In Exercises 3–5, describe the relationship between the rise and the run of the ramp.**

3. A ramp with a slope of 1
4. A ramp with a slope greater than 1
5. A ramp with a slope less than 1
6. Ramp A has a rise of 6 feet and a run of 2 feet. Ramp B has a rise of 10 feet and a run of 4 feet. Which ramp is steeper? How do you know?