

HOME/SCHOOL CONNECTION

Investigation 4: Energy Transfer

Wheelchair ramps provide a long, gradual slope that makes it easier for a person in a wheelchair to get into or out of a building.

Engineers have set recommendations for ramp construction, using the relationship between the height of the entrance and the length of the ramp. For every 1 unit of height, the ramp should be 20 units long. That relationship can be described as a ratio. The ratio is 1:20.

If the entrance is 1 meter (m) high, the ramp should be 20 m long.

The height is called the **rise**. The length is called the **run**.

Height or
rise is 1 m
(100 cm).



Length or run is 20 m (20,000 cm).

The steepest ramp allowed is one that has a ratio of 1:16.

Determine how long the ramps would need to be for the height of the entrances listed in the table. Calculate the length for both ratios.

Height of entrance to building	Ramp 1:20	Ramp 1:16
50 cm		
80 cm		
120 cm		
150 cm		
200 cm		

1. What if you had to make a ramp with a rise of 80 centimeters (cm), but it could not be longer than 15 m. Which ramp ratio would you use, 1:20 or 1:16?
2. If you had to create a ramp using a 1:20 ratio for an entrance that was 150 cm high, but you only had a space that was 10 meters long, how else could you construct the ramp so it fits in your space?