

Grade

8

# Wheelchair Ramps

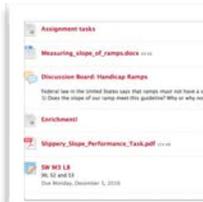
MATH



**Driving Question:** Does the slope of our ramp meet U.S. Federal Guidelines?

## Project Description:

In a hands-on application of the math concept of slope, students used their knowledge of the formula of slope to determine whether or not a ramp in the school met guidelines set out by the United States on the safety of wheelchair ramps. Students learned content from the teacher and then measured the ramp to determine its rise over run in a real world situation. Students then discussed in person and on a virtual discussion board about the ramp in their school and whether or not it meets guidelines and whether or not these guidelines needed to be in place.



**Discussion:**  
Federal law in the United States says that ramps must not have a slope higher than  $1/12$ ".

1. Does the slope of our ramp meet the guidelines? Give mathematical evidence.
2. Why do you think the US goes for this guideline for handicapped ramps?

Put your answers into the discussion.



## Student Products

- ▶ Learn about the skills and concepts of slope
- ▶ Measure ramp in the school
- ▶ Discuss and justify answer to the driving question

## Teacher Reflections

"Students were given the opportunity to view an authentic problem using their choice of mathematical tools. Each student saw the problem in a different way, and there was no one right way to solve the problem." Hank Classen

"What made it interesting was that it was open-ended. You can change the units of measurement, which is part of the Common Core making flexible measurements, you could get to see them as thinkers...One of the extensions I like to do is have them think about the ramp and if it is too steep for people in wheelchair. I'd like to have them do more with the construction of ramps." - Misti McDaniel

## Student Reflection

"If ramps are too steep, handicapped people (especially ones in wheelchairs) might not be able to wheel themselves up the steep slope when going up the ramp, and might not be able to control themselves from descending too fast and possibly suffering a bad fall, unable to stop, while going down. The U.S. government has laws to ensure the safety of these handicapped people." - Alina

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