



## WOW! on Wheels – STEM Labs

### Rolling Things

### The Big Picture

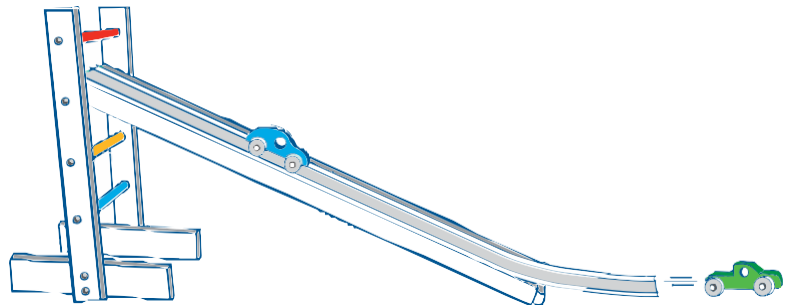
The Rolling Things activity was originally purchased from and created by SAE International.  
<https://www.sae.org/learn/education/curriculum/rolling-things>

At the primary level, the student experience should be focused on building a foundation for STEM learning, and creating excitement about science.

This challenge can be taught over a two or three-week period.

It is suggested for Kindergarten-3<sup>rd</sup> grade. However I can absolutely see a use for this in higher grades as well.

Students will explore the story *The Three Little Pigs Sledding Adventure* (copies included with the kit) while they study toy cars and car performance.



Launching the cars from ramps, the students will ...

- investigate the effects that different ramp heights have on distance traveled
- investigate the effects that different car weights have on distance traveled
- measure and record data gathered through variable testing

With older students, take the challenge even further. Students are experimenting with how ramp height and car weight affect momentum.

- Ramp height affects the velocity of the car when it strikes the crash box—the greater the height of the ramp, the greater the velocity of the car when it reaches the bottom of the ramp.



- Because momentum is the product of velocity and mass, it is greater when velocity is greater.
- The same holds true for mass—the greater the mass, the greater the velocity.

In the story *The Three Little Pigs' Sledding Adventure*, the wolf waits for the pigs at the bottom of the sledding hill. Because their sleds are different weights (masses), each pig has a different amount of momentum when he reaches the bottom of the hill. In the story, the first two pigs are not heavy enough to gain the momentum necessary to knock over the wolf, while the third pig (on his brick sled) has the momentum to overturn the wolf and free his brothers.

The WOW! on Wheels activity kit includes the necessary materials and lesson plan for all 7 activities.

- 1 · Playing with Cars and Ramps
- 2 · Crash and Bash
- 3 · Getting to Know the Cars and Ramps
- 4 · Ramp Height
  - Testing Ramp Height*
  - Ramp Height Results*
- 5 · Car Weight
  - Testing Car Weight*
  - Car Weight Results*
- 6 · Outfoxing the Big Bad Wolf
- 7 · Make it Happen!
  - Wolf Tails – Know the Wolf Over*
  - Wolf Tails – Leave the Wolf Standing*
  - The Best Crasher*



The WOW! on Wheels activity kit includes:

- all necessary materials
- a complete lesson binder from SAE (Society for Automotive Engineers) International
- specific directions for each of the 7 activities
- the “reproducible masters” necessary for each activity