

Mass, Friction, and Motion: Student Activity Sheet

Name:

Date:

Part 1: Effect of Mass on Speed

The wooden ball and the marble are the same sizes, but the marble is heavier. The marble weighs 5 grams and the wooden ball weighs 1.5 grams.

Record the speed of the marble from Part 1: Measuring Speed in the Measuring Speed Activity.

_____meter per second

How do you think the speed *(time it takes to travel 1 meter)* of the wooden ball will compare to the speed of the marble?

Set up **Ramp** A (40mm) and time the wooden ball rolling over the runway **three** times. Record your results for all three times below.

Wooden Ball	Trial 1	Trial 2	Trial 3	Average
Time				

Compare your results to your prediction.

How did changing the mass of the	ball affect the speed?
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Part 2: Friction Forces Foam

For this investigation use the **marble** and the **Ramp** A set-up (40mm). Set up **Ramp** A with the foam. What do you predict will happen to the speed of the marble?

Time the marble rolling over the runway three times. Record your results for all three times below.

Foam	Trial 1	Trial 2	Trial 3	Average
Time				

How did the speed change when the marble ran across the foam sheet?

What do you think could cause the difference?

Salt

Set up **Ramp A** (40mm) with a piece of paper at the end with a **small sprinkle** of salt. What do you predict will happen to the speed of the marble?

Time the marble rolling over the runway three times. Record your results for all three times below.

Salt - sprinkle	Trial 1	Trial 2	Trial 3	Average
Time				

How did the speed change when the marble ran across the sheet with salt?

Set up **Ramp A** (40mm) with a piece of paper at the end with **a lot** of salt. What do you predict will happen to the speed of the marble?

Time the marble rolling over the runway three times. Record your results for all three times below.

Salt - a lot	Trial 1	Trial 2	Trial 3	Average
Time				

How did the results compare to your prediction?

Using the term **friction**, explain how salt affected the speed of the marble.