

February/March STEM Challenge

Downhill Racer Challenge



Challenge: How can you build a bobsled or skier that will race down a ramp?

Materials:

Aluminum foil

Toilet paper tube

Straws

Small cup

Craft sticks (varied widths)

Pennies

Washers

String

Masking tape

A cardboard ramp (over 1 meter long)

Centimeter tape measure

Consideration: What are the things you should consider before building your racer?

Procedure:

- Choose a racer you would like to build; either a bobsled or a skier.
- Use appropriate materials that will help you build a successful racer. Create a plan for how you will build your racer.
- Build a ramp at least one meter long and determine angle for best distance
- Test your racer on the ramp to see if it is successful.
- Record the distance it was able to travel down the ramp. Measure the distance in centimeters.
- Make improvements to your racer to see if you can increase the distance it will travel down the ramp.
- Continue to record the distance it was able to travel.

**** Teacher demonstration:** At some point you might want to stop students and discuss with them the principles of gravity and balance.

Reflection:

- ✓ Draw or take a picture of your Downhill Racer. Make sure to include labels.
- ✓ Explain why you created your racer the way you did and the revisions you made.
- ✓ Explain how your racer was able to race down the ramp.
- ✓ Teachers please submit a list of students who participated by email to the **STEM Resource Center** stem@gstboces.org
- ✓ **Teachers- Please make sure that your list has your name, school district, grade level and return address included.**
- ✓ **This challenge is Due: March 29, 2019**

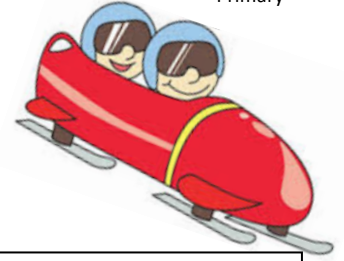


NAME _____ Grade _____

Primary



Downhill Snow Racing



Focus Question: How can you build a bobsled or ski racer that will make it to the end of the ramp?

Look closely at the materials you can use:

- ❖ Aluminum foil, toilet paper tubes, small cups, craft sticks, pennies, washers, string, masking tape
- ❖ Cardboard ramp at least 1 meter long

Draw and label the racer you built

A large rectangular area enclosed by a dashed black line, intended for students to draw and label their own bobsled or ski racer design.

Racing Data

How far did your bobsled or ski racer slide?

Record in centimeters how far down the ramp your racer went.

Distance in centimeters
1 st trial
2 nd trial
3 rd trial

Vocabulary

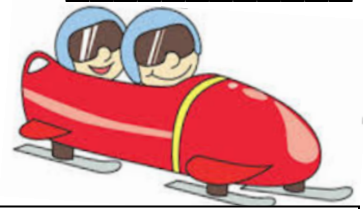
How did your racer work?

What did you do to improve your racer or the ramp?

NAME _____ Grade/Teacher _____



Downhill Racing



Focus Question: How can you build a bobsled or ski racer that will make it to the end of the ramp?

Look closely at the materials and make a plan before you begin:

- ❖ Aluminum foil, toilet paper tubes, small and large craft sticks, small cups, pennies, washers, string, masking tape
- ❖ Cardboard ramp at least 1 meter long and appropriate angle

What are things you should consider before you begin building?

Draw and label the racer you built

A large rectangular area enclosed by a dashed black border, intended for students to draw and label their bobsled or ski racer design.

Racing Data

What distance was your bobsled or ski racer able to complete?
Record in centimeters how far down the ramp your racer traveled.

Distance in centimeters
1 st trial
2 nd trial
3 rd trial

Vocabulary

What changes did you make to improve your racer or the ramp?

Why do you think your racer was successful?
