

Racing Toys

Summary

Students will design an experiment using the CBR motion sensor that will measure the speed of a moving toy showing the effect of various surfaces on its speed. The objective is to determine how friction can be used to control the motion of an object.

Time Frame

1 class periods of 60 minutes each

Group Size

Small Groups

Materials

- [student worksheet](#)
(attached)
- yardsticks or metersticks
- rolling toys
- Ranger motion sensors or stopwatches

Background for Teachers

The best way to control the motion of the toys is by making a track of yardsticks or metersticks. You will need to supply various surfaces for the students to use, and/or invite them to bring a surface of their choice. Try to have as many different surfaces as possible. You may use the Ranger motion sensor or a stopwatch to measure the speed of the toy. If using the Ranger, students should be instructed to set the time for longer than needed. When the toy stops, a flat line is produced. Using the time at which the flat line starts, students can compare the speed for each surface. Since the distance is the same for each test, the time will be adequate to determine speed. The Ranger will yield more accurate times than a stopwatch but a stopwatch will work. You may have each group use multiple surfaces, or compare the different surfaces from each group.

Instructional Procedures

Read the introduction on the student page with students. Show students the materials and read the procedures with them. You may also want to review the steps needed to set up the CBR to use.

Give students time to work in their groups to determine which surface or surfaces to place along their tracks and time to set up the track. They will also need to pick a moveable toy.

If you are not able to use a CBR, you will need to have a stopwatch or some other method of timing in seconds.

Have the students prepare a table that they can use to record their information on. They will need to repeat the experiment several times.

Have each group explain why they think they got their results.

Bibliography

Lesson Design by Jordan School District Teachers and Staff.

Authors

