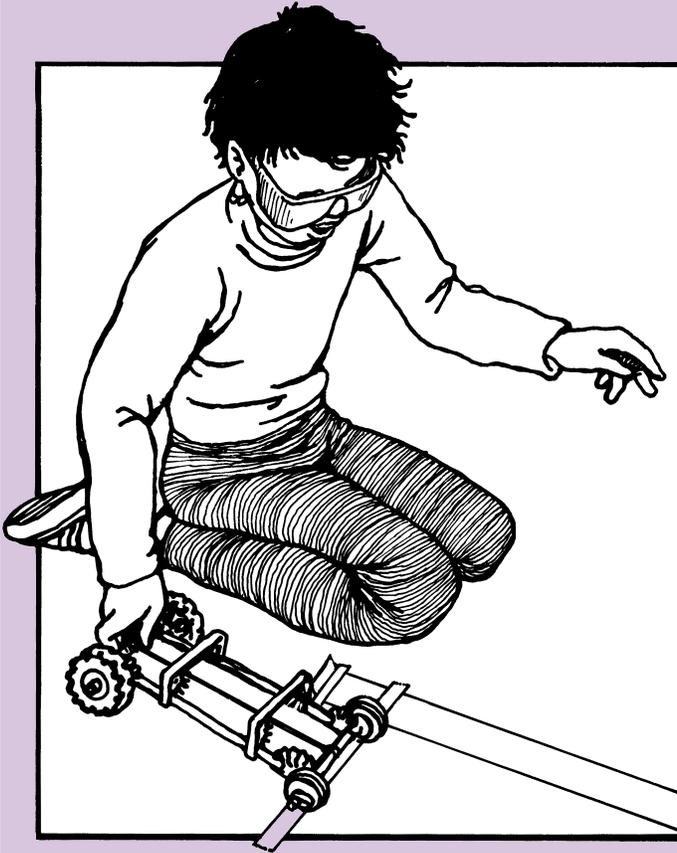
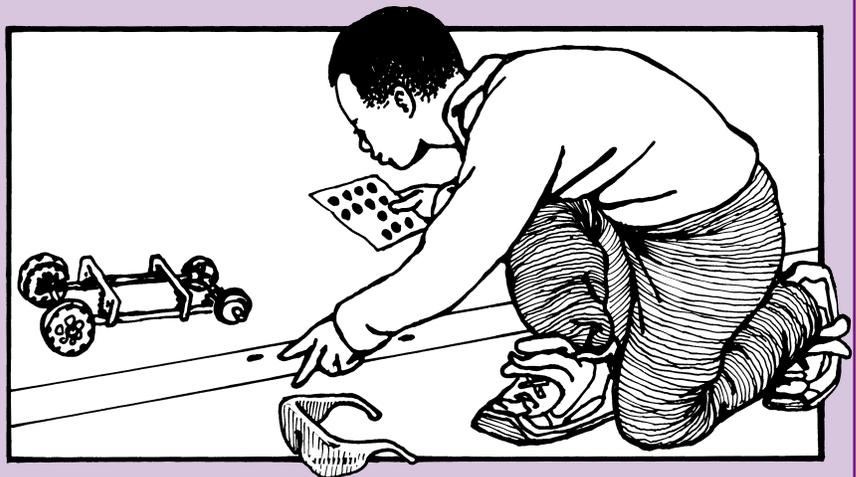


Student Instructions for Collecting Data on Rubber Band Energy

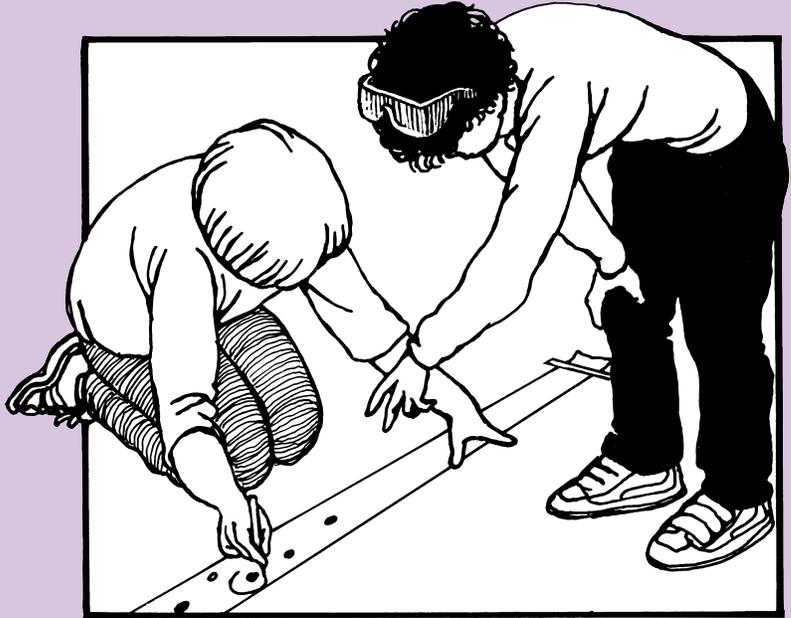


1. You will need an area of the floor where your vehicle can move a long distance—anywhere from 1 m (39 in) to 10 m (33 ft).
2. Roll out your strip of paper. Tape it to the floor.
3. Make a starting line with masking tape at one end of the strip of paper.
4. Wind your connected rubber bands two times around the axle that holds the large wheels. Put the vehicle's front wheels on the starting line. Before you let go of the vehicle, have your group make a prediction. Use a pencil to mark on the paper the distance you think your vehicle will travel.

5. Let go of your vehicle. Observe what happens.
6. Put a **red** dot on the paper strip where the front wheels of your vehicle stop.
7. Repeat the test two more times:
 - Wind the rubber band the same number of times (two) for each trial.
 - Use a pencil to mark a prediction each time.
 - Let go of the vehicle.
 - How far did your vehicle move? Mark the stopping point with a red dot.



8. Once you have three red dots on your paper, look at the dots. What do you notice about their positions? Record your observations in your notebook.
9. Which dot represents the distance your vehicle traveled most often? Circle that dot with a pencil.
10. Now wind your rubber band four times around the axle. Then do the following:



- Predict how far you think your vehicle will travel when the rubber band is wound four times. Use a pencil to mark your prediction on the paper strip.
 - Test how far your vehicle travels with four turns on the rubber band.
 - Put a **blue** dot on your paper strip to mark the distance.
 - Do this three times altogether, winding the band four times and marking a prediction each time.
11. Look at the blue dots. What do you observe about all the distances your vehicle traveled? How close was your prediction to the actual distances your vehicle traveled? Record your observations in your notebook.
 12. Which dot do you think best represents all the distances your vehicle moved? Use a pencil to circle that dot.
 13. Now wind the rubber band eight times around the axle. How does it feel to wind the rubber band eight times compared with two? Discuss this with your group.
 14. With the rubber band wound eight times around the axle, repeat the test as follows:
 - Record your prediction on the strip of paper. How far do you think the vehicle will move?
 - Let go of the vehicle. Use **green** dots to mark the distance.
 - Test the vehicle three times altogether.
 - Circle the dot that best represents all the distances your vehicle traveled.
 - Record your observations in your notebook.