Year 6: Science and Mathematics

Activity Sheet 1: Does a marble have energy?

In this activity you will learn about potential and kinetic energy by setting up a slope and determining what happens when you release a marble.

Materials

Materials required	Per experiment
Marble	1
Protractor	1
Chalk	1
Pens	1
Marking Pen	1
A metre ruler	1
Notepad	1
Triangular piece of wood	1

Work in a team of three or four. Decide on the following roles:

1. taking readings (Reader)
2. recording (Recorder)
3. observing and describing (Observer)
4. releasing the marble. (Releaser)

Rotate these roles amongst the group.

Method

1. Set up the equipment as shown in Figure 1.
2. Arrange a slope of a measured number of degrees using a protractor on the triangular block of wood.
3. Mark the number of centimetres from the bottom of the slope to the top.
4. Lift a marble onto the slope and release it (do not push it) from one of the marked centimetre lines.
5. Use chalk to mark the ground where the marble came to rest.
6. Measure the distance to the base of the slope.
7. Repeat the process from a number of starting points on the slope, recording the results.
8. Graph your team's results.
9. Show the distance travelled on the horizontal axis and the point of release on the vertical axis.
10. What patterns do you see?

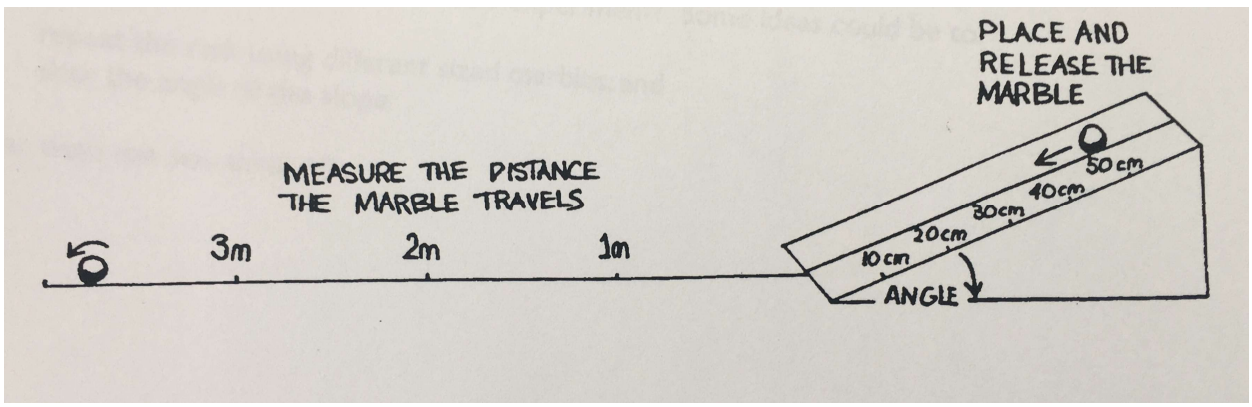

Figure 1 Set up of experiment.

Explore

1. Pick a point on the slope you have not already tested and estimate where the marble will come to rest if you were to release it, and then release the marble from that point.
    a. Did the marble stop close to the point you predicted?
    b. What things may cause changes to the results?
    c. Is this an accurate experiment? Why/Why not?
    d. At what points did the marble have potential energy and kinetic energy?

Extension

1. What other ways could you perform this experiment?
    a. Different sized marble?
    b. Alter angle of slope.