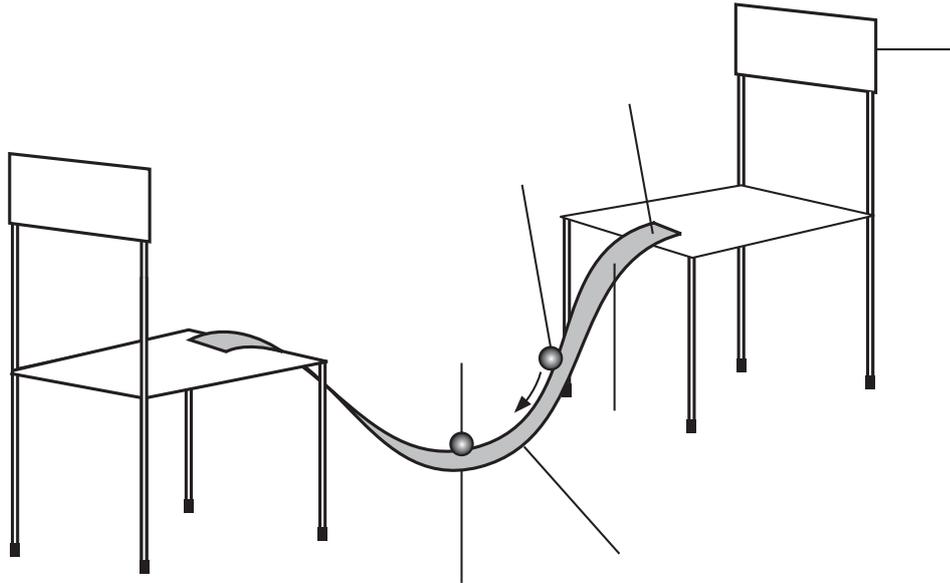


Exercise 1

Vocabulary

Label the diagram with the words in the box.

chair track loop marble in motion marble at rest top bottom



Exercise 2

Grammar

Match the words in column A with the correct definition in column B.

Column A

1. back and forth
2. roll
3. hang down
4. track
5. combination
6. loop

Column B

- a) not moving, stopped
- b) moving backwards and forwards, first one way and then back again
- c) several things together i.e. two marbles
- d) put something somewhere so the top part is fixed
- e) a shape made by a line that curls back on itself i.e. in the shape of the letter U
- f) movement that something makes

- 7. ratio
- 8. release
- 9. motion
- 10. at rest
- g) a relationship between two things that is usually expressed as two numbers or amounts
- h) to let go of something
- i) to move forwards by turning over and over, or to make something do this
- j) a path, way or line along which something moves

Exercise 3

Speaking, writing

Work in groups and complete the chart with the results of your experiment.

Number of marbles	Location	Number of rolls	Ratio
1	From top		
1	From half way down		

Exercise 4

Reading, writing

Read the short summary below and complete the missing information by looking back at the results of your experiment.

We conducted an experiment using a track and some marbles. We started by releasing one marble from the top of the track. It rolled back and forth _____ times. Then we tried releasing one marble from half way down the track. This time it only rolled back and forth _____ times. When we tried releasing two marbles together from the top of the track they rolled back and forth _____ times before coming to a rest. Placing one marble at the bottom of the track and then releasing another from the top resulted in _____.

Can you add more to the summary?

Roller-coaster ride
Adrian Tennant**Learning objectives**

Pupils learn about the difference between energy stored in a stationary object and one that is in motion. They discover that the energy of a moving object is dissipated over time so that eventually it will come to rest. They also discover how energy can be transferred from one object to another when they collide.

Content summary

Pupils conduct an experiment to see how energy of a moving object is dissipated over time so that eventually it will come to rest.

Skills

Reading, speaking, writing

Grammar

Present simple. Comparative and superlative adjectives: higher, highest, more, most, faster, fastest etc.

Vocabulary

Words and simple phrases connected to the experiment: track, loop, motion, at rest, marble, back and forth, roll, hang down, combination, ratio, release.

Time needed

30–60 minutes

Age group

7–11

Materials needed

2 chairs, (strong) tape, 3 marbles, a strip of vinyl ceiling moulding or a strip of tubing split in half lengthways (or some toy car racing track).

Practicalities

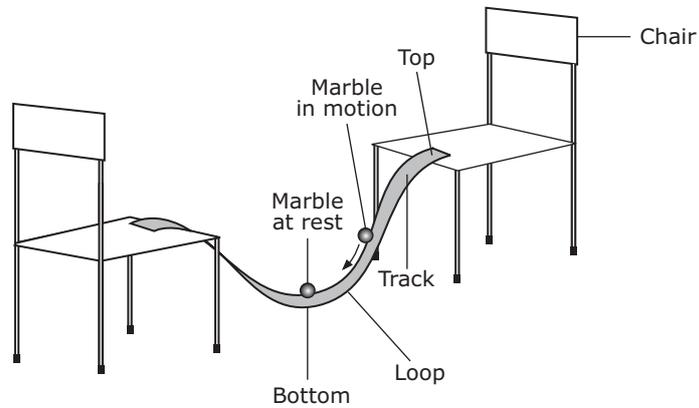
For large classes you will need space and enough sets of material to set up a few 'tracks'.

Procedure

1. Tell pupils they are going to conduct an experiment using marbles and a race track.
2. Don't introduce/pre-teach any vocabulary as this is part of the worksheet that pupils will complete after the experiment. If you think the pupils can't do the experiment without understanding the vocabulary get them to do exercises 1 & 2 from the worksheet before they conduct the experiment.
3. Hand out the experiment sheet and have pupils read out the instructions in class and carry out the experiment a few times.
4. Hand out the worksheet and ask the pupils to complete exercises 1 & 2. Encourage them to work with a partner or in small groups.
5. Next, ask the pupils to look at exercise 3 and to conduct the experiment again (a number of times) and complete the table.
6. Monitor and help where necessary.
7. Finally, ask the pupils to complete the short summary. If you think they can manage to add more details and to extend the summary then get them to do that as well, either in class or for homework.

Links to everyday life

Ask the pupils to think about how what they have learnt from the experiment might apply to the things around them i.e. playing ball games.

Roller-coaster
Adrian Tennant**Exercise 1****Exercise 2**

1b 2i 3d 4j 5c 6e 7g 8h 9f 10a

Exercise 3 & 4

Answers will depend on the results of the experiments.