Bouncing Back

You need

- graph paper or a computer graphing program
- access to a refrigerator
- a variety of balls
- a metre stick or tape measure
- a classmate

TECHNOLOGY

The equipment used in almost all sports has changed over the years as a result of developments in materials, design, and construction. Sports balls are one example of this technological change.

Activity One

Eleanor and Dai are organising an interclass table tennis competition. An important attribute of table tennis balls is bounce.

1. a. With a classmate, investigate how high a table tennis ball will bounce when dropped from heights of up to 1.2 metres (m).

   b. Make a scatter plot showing drop height and bounce height.

   c. What does your graph tell you?

   d. Using your graph, estimate how high the ball will bounce if dropped from 3 m.

2. a. Drop the ball from 3 m. Compare the result with your prediction.

   b. Discuss possible reasons for any difference.

3. Can you confidently predict the bounce of a table tennis ball dropped from 20 m? Why or why not?

4. Repeat the investigation using a bouncy ball. Make a generalisation about drop height and bounce.

Activity Two

1. Measure and record the bounce of an inflatable ball.
2. Place the inflatable ball in a refrigerator overnight.
   - a. Note any changes in the ball.
   - b. Measure the bounce again using the cold ball. Record your results.
   - c. Compare the bounce of the ball before and after it was in the refrigerator. What does your data show?
   - d. Why did cooling the ball have this effect on its bounce?

Activity Three

1. Repeat the experiment from **Activity Two**, but this time use a solid-core ball.
2.
   - a. Compare the results with those from the inflatable ball. Was one type of ball more influenced by the cold? If so, why?
   - b. Discuss your results and your reasoning with a classmate.

Focus Using graphs to determine relationships