Ball Bounce — Trend task

Approach: Team *Level:* Year 8

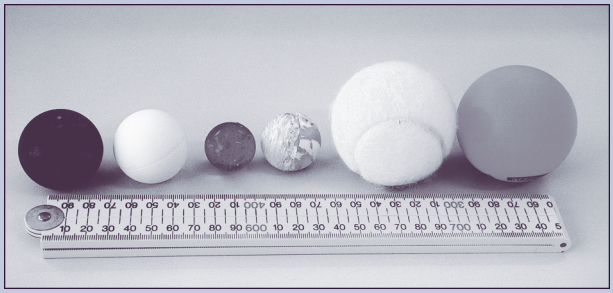
Focus: Plan, carry out and report results for an experiment involving measuring the bounciness of balls. Extrapolate results, check and interpret.

Resources: Tennis ball (yellow), small rubber ball, rubber ball (mottled), soft foam ball (pink), table tennis ball (white), squash ball (black), 1 metre folding ruler, activity card, results sheet.

Questions/instructions:

Get out 5 balls, keeping the black ball separate.

Soon I will give you these five different balls.



Your task is to work out a way to compare how bouncy the different balls are. You should take some measurements for each ball, so that you can use numbers to say how bouncy the balls are. Some of the balls bounce almost the same. You will have to measure carefully to put them in the right order, from least bouncy to most bouncy. You are to do your experiments on top of the table, in front of the camera. You are to work as a team, and try to make sure that everyone helps.

Activity card

1. Your task is to find a way to compare how bouncy the different balls are.
2. Think about how you will do the experiment.
   What will you keep the same?
   What will you measure?
   How will you use numbers to say how bouncy the balls are?
3. You are to work as a team, and try to make sure that everyone helps.
4. Record your measurements on the results sheet.

First, you should plan how you will do the experiment. Think about what things you will need to keep the same. Think about what you will need to measure. Think about how you will use numbers to say how bouncy each ball is. Sort out who is going to do the measurements and who will do the other jobs. Everyone should have a job. Here is your main tool.

Give the students the ruler.

Plan your experiment now, and tell me when you have finished your planning.

	% responses 1999 ('95) year 8
Planning to achieve:	
consistent height and release of balls	73 (73)
accurate measurement of bounce	68 (73)
check on consistency by replicating	5 (13)
requested member participation	94 (77)

After they have finished planning give the group the 5 balls — excluding the black squash ball.

Here are the five balls, and a sheet to record numbers for how bouncy each ball is. You can do your experiment now. Tell me when you have finished and recorded all your results.

Results sheet

Yellow tennis ball	
White table tennis ball	
Small ball	
Soft pink ball	
Mottled ball	

After they have finished experimenting:

What did you find out in your experiment? Put the balls in order, from most bouncy to least bouncy.

Are you sure that you have the two least bouncy balls in the right order? Show me by trying the balls again.

Record order of balls on their results sheet from 1 (most) to 5 (least).

	% responses 1999 ('95) year 8
Experimentation:	
good consistency in release of balls	56 (67)
good accuracy in measurement	33 (37)
included replication consistently	19 (20)
recorded results accurately	52 (40)
Reporting:	
clear and accurate	49 (46)
rather "fuzzy"	42 (46)
very unclear or inaccurate	9 (7)

Here is another ball.

Give the students the black ball.

How high do you think this one will bounce? Make a prediction and tell me why you think that.

	% responses 1999 ('95) year 8
Predictions and discussions:	
very good	33 (37)
moderate	56 (52)
poor	11 (11)

After discussion:

Test the ball and see if you were right.

Commentary:

Apart from replication, most teams of students included important issues in their planning for the experiment. Only 20 percent checked their measurements by replication. Measurements and recording were also not done particularly well. Overall, the results for 1995 and 1999 are very similar, despite some fluctuations on individual factors.