

## How High Will it Bounce?

Tennis balls: Must rebound approximately 111cm when dropped from 200 cm.

Soccer balls: Must rebound approximately 120cm when dropped from 200cm onto a steel plate.

Basketballs: Must rebound approximately 53.5 inches when dropped from 72 inches onto a wooden floor.

Squash balls: Must rebound approximately 29.5 inches when dropped from 100 inches onto a steel plate at 70 degrees F.

*Which of the balls listed above is the bounciest? **Justify** your answer.*

**TASK:** Find the rebound ratio for a ball.

**MATERIALS:** Tennis ball, meter stick.

**Step 1:** Drop the ball from 100 cm. Measure how high it rebounds after the first bounce. Repeat three times, then find the average height after one bounce.

Trial #:	1	2	3	AVG.
Height:				

**Step 2:** Drop the ball from 100 cm. Measure how high it rebounds after the second bounce. Repeat three times, then find the average height after two bounces.

Trial #:	1	2	3	AVG.
Height:				

**Step 3:** Drop the ball from 100 cm. Measure how high it rebounds after the third bounce. Repeat three times, then find the average height after three bounces.

Trial #:	1	2	3	AVG.
Height:				

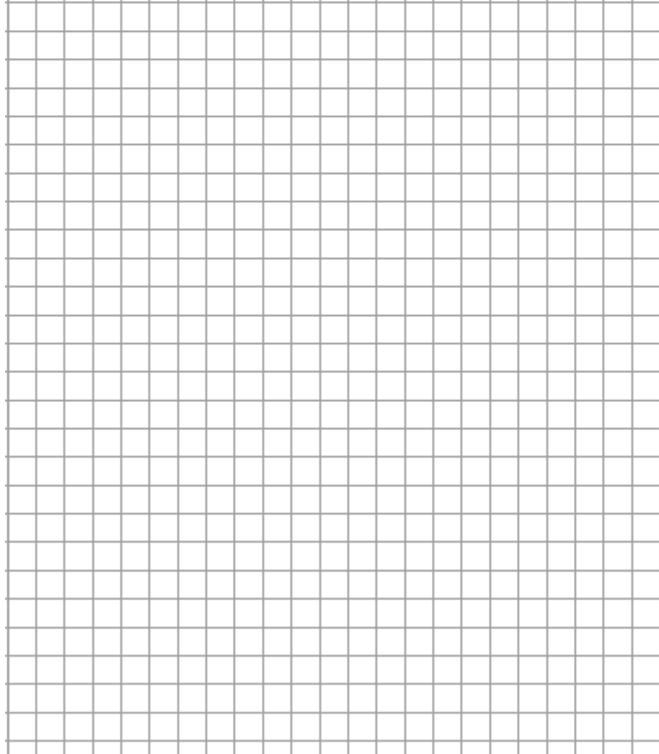
**Step 4:** Drop the ball from 100 cm. Measure how high it rebounds after the fourth bounce. Repeat three times, then find the average height after four bounces.

Trial #:	1	2	3	AVG.
Height:				

**Step 5:** Use your averages from the previous steps to create a table that represents the height of the ball.

Bounce #:	0	1	2	3	4
Height:					

**Step 6:** Create a graph of your results. Be sure to label.



**Step 7:** Write an equation for your curve.

**QUESTIONS:**

1. After how many bounces will the ball be at around 5cm?
2. If the ball were dropped from 200cm, what would you expect the rebound height to be after one bounce?
3. Drop the ball from 200cm and find the rebound height after one bounce.
4. How many bounces until the ball stops bouncing (i.e until it rebounds to a height of 0cm)?
5. Will the graph continue below the x-axis? Why or why not? What would this mean in real life terms?