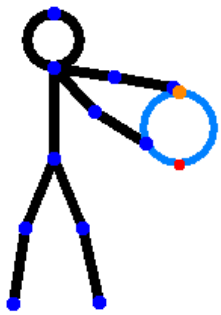
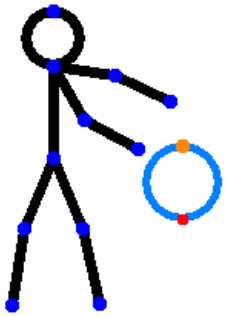
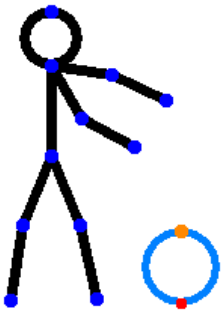
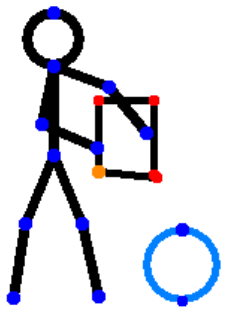
Maths for the Match

Football Bouncing Experiment

Hi Team, we need to work out what inflation does to the ball, and to help our players find a good amount of inflation for the big game.

The drill for the experiment:			
			
1. Hold the ball out at chest height.	2. Drop the ball.	3. Count the number of bounces.	4. Write down the score.

We're going to do this drill 5 times. Our average will be the most common number of bounces. Circle which ball and surface you are using. Write down your scores here:

Surface: **Hard Floor / Carpet / Astroturf / Grass**

Ball	Drop 1	Drop 2	Drop 3	Drop 4	Drop 5	Average (Mean)

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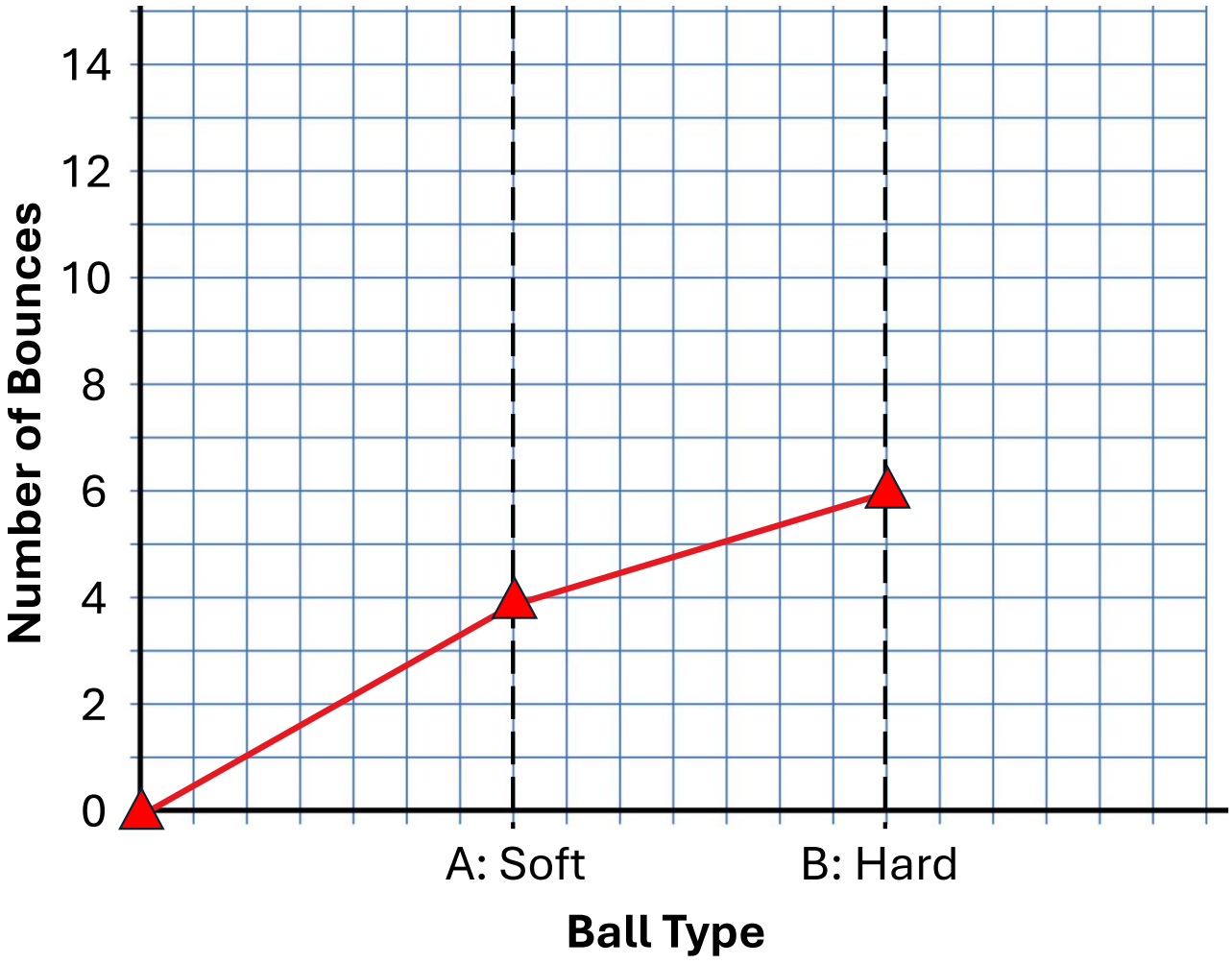
An example experiment has been done at Ashton Gate on the pitch, and plotted on the graph. Can you plot your data on the same graph?

1. Mark your average for each ball type you tested using a **x**.
2. Remember, we go along the the bottom of the graph for the ball type, and up the side of the graph to mark the number of bounces your team counted.
3. How many bounces would you expect if there was no air in the ball?
4. Mark this on the graph using a **x**.
5. We can now draw a line of best fit through our marked **x** data points.

Surface	Marker
Ashton Gate Stadium Pitch	▲
.....	×
.....	



Now lets have a think about why this happens, there are some words below that you can use to help you answer the questions on this page.

Energy *Gravity* *Friction* *Air Resistance* *Hardness* *Inflation*

Explain how the inflation of the ball effects the number of bounces?

Can you predict which ball would be best to score a penalty with? Explain your answer.

Sketch and label what happens to the ball when it hits the ground. Why do you think this happens?

Why do you think the surface changes how much the ball bounces? What surface do you think the team should play on?