

The Bouncing Ball Experiment!

This experiment is as old as the hills (maybe even older!) but it's plenty of fun and a great way to learn all about the conservation of energy too!

What do I need:

- A big heavy ball (like a football)
- A small light ball (like a mini foam ball, or tennis ball)

How do I do it?

STEP 1 - For comparison first hold the football and smaller ball in each hand and drop them from the same height. Make a note of which one bounces up higher and how high they bounce!

STEP 2 - Next, place the smaller ball on top of the larger one and lift them both up in the air.

STEP 3 - Drop em'!

STEP 4 - Watch as the smaller ball flies off into the air!

What's going on?

This is a beautiful example of the conservation of energy but first, let's look at the first example...When you drop the football it bounces back up to around half the height that you dropped it from!

When you lift the ball up you give it potential energy, when it falls this changes to kinetic energy ('movement energy') and when it bounces some of this energy is transferred into kinetic energy upwards and some is 'lost' as heat, sound etc, which is why it doesn't bounce up as high.

When we put the smaller ball on top of the football the same kind of thing happens. As the football is heavier it carries more energy that the smaller ball and when it rebounds lots of this energy is transferred to the smaller ball. But because the smaller ball is lighter the energy that's transferred is enough to make it bounce higher than where you dropped it from. Check out how small the bounce of the football is!

More Fun Please - Experiment like a real scientist!

- What happens if you put the football above the smaller ball?
- How about if you use a football and a ping pong ball?
- What kind of surface? Carpet or wooden floor does this work best on? Why?

