

What is Elastic Potential Energy?

Elastic Potential Energy



is energy stored in something that has elasticity.

Elasticity



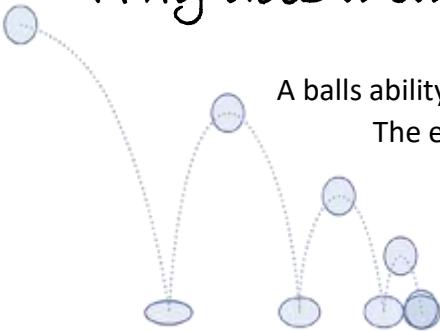
is the ability of a material or an object to resume its normal shape after being compressed or stretched.



Objects that can be stretched and compressed can hold elastic energy.

The amount of elastic potential energy is determined by the extent to which the object can stretch or compress. The more you stretch or compress it the higher the elastic potential energy.

Why does a ball bounce?



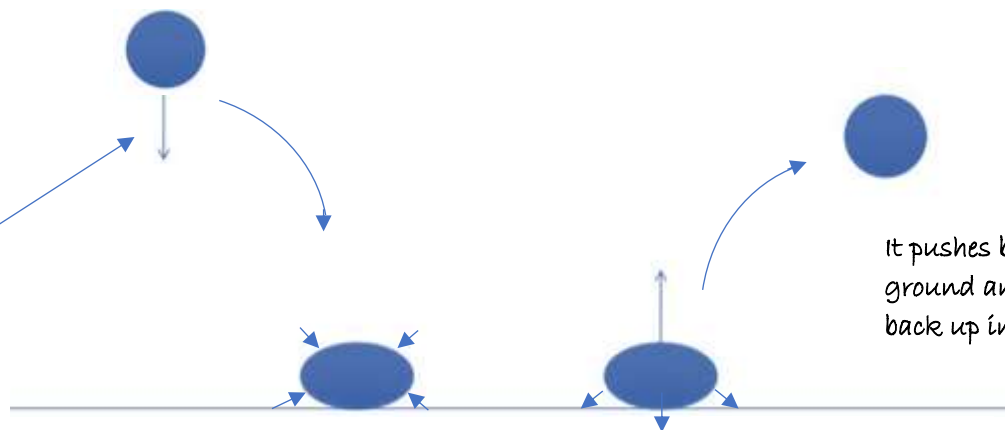
A ball's ability to bounce has to do with its elasticity.

The elasticity of a ball is determined by its material.

Its round shape guarantees an equal, uniform response – no matter on which point the ball hits the ground.

What happens during a bounce?

By lifting it up, the ball receives potential energy which is transformed into kinetic energy when you drop it.



When the ball hits the ground it gets compressed.

Due to its elasticity it quickly returns to its original shape.

It pushes back on the ground and shoots back up into the air.


For this experiment you will need:

- | | |
|--|--|
| | Different types of balls, e.g. a tennisball, golfball, marble, basketball... |
| | Tape measure |
| | Masking tape |
| | Pencil |

Instructions

- 1) Choose an area next to a wall or table where the ground is rather hard and flat.
- 2) Use the masking tape and the tape measure to mark different heights: 10", 15", 20", 25", 30"

- 3) Start with the first ball: Have a partner drop it from 30"
and record the height of the bounce in the Bounce Tracker below.
Repeat five times.

DROP the ball – 
DON'T throw it!

- 4) Calculate the average bounce heights:
 $(\text{height } 1 + \text{height } 2 + \text{height } 3 + \text{height } 4 + \text{height } 5) : 5 = \text{average bounce height}$
- 5) Repeat for every ball and find out which ball bounces the highest and therefore has the greatest elasticity!

Try the same experiment with the same types of balls

but on different types of ground: concrete, carpet, grass, water...



