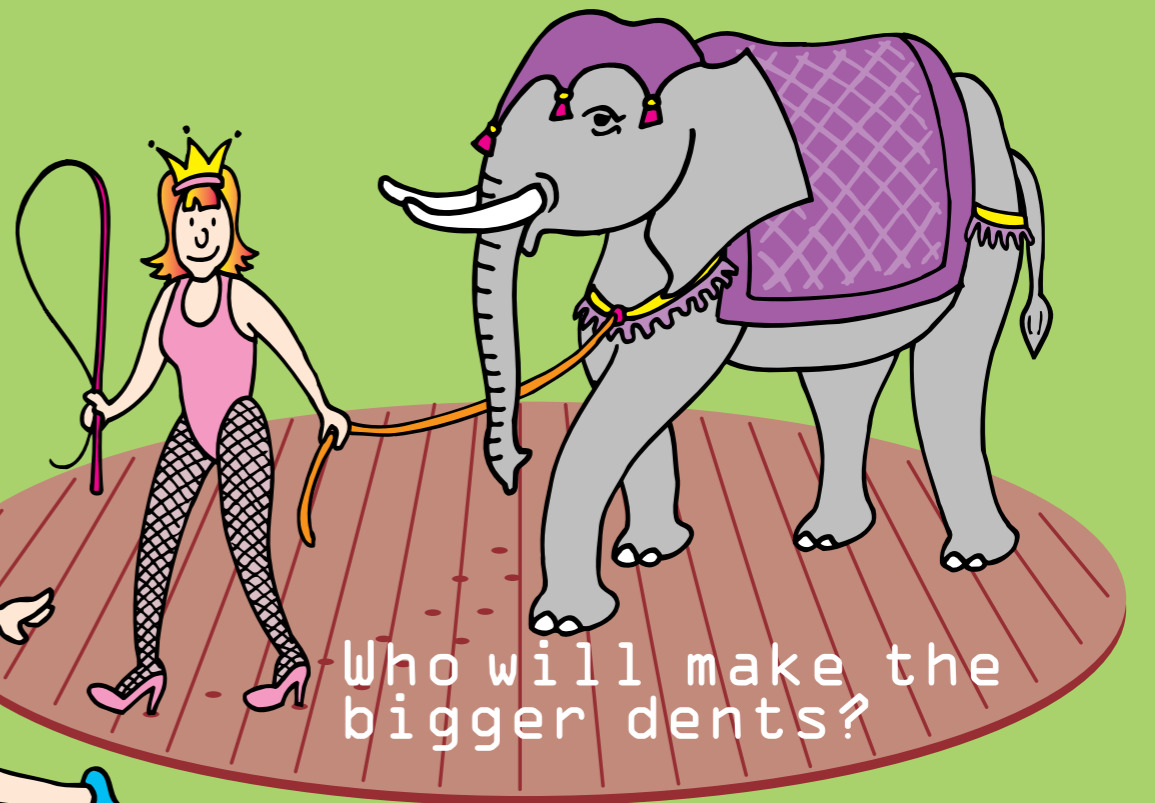


AEROSOLS & Pressure

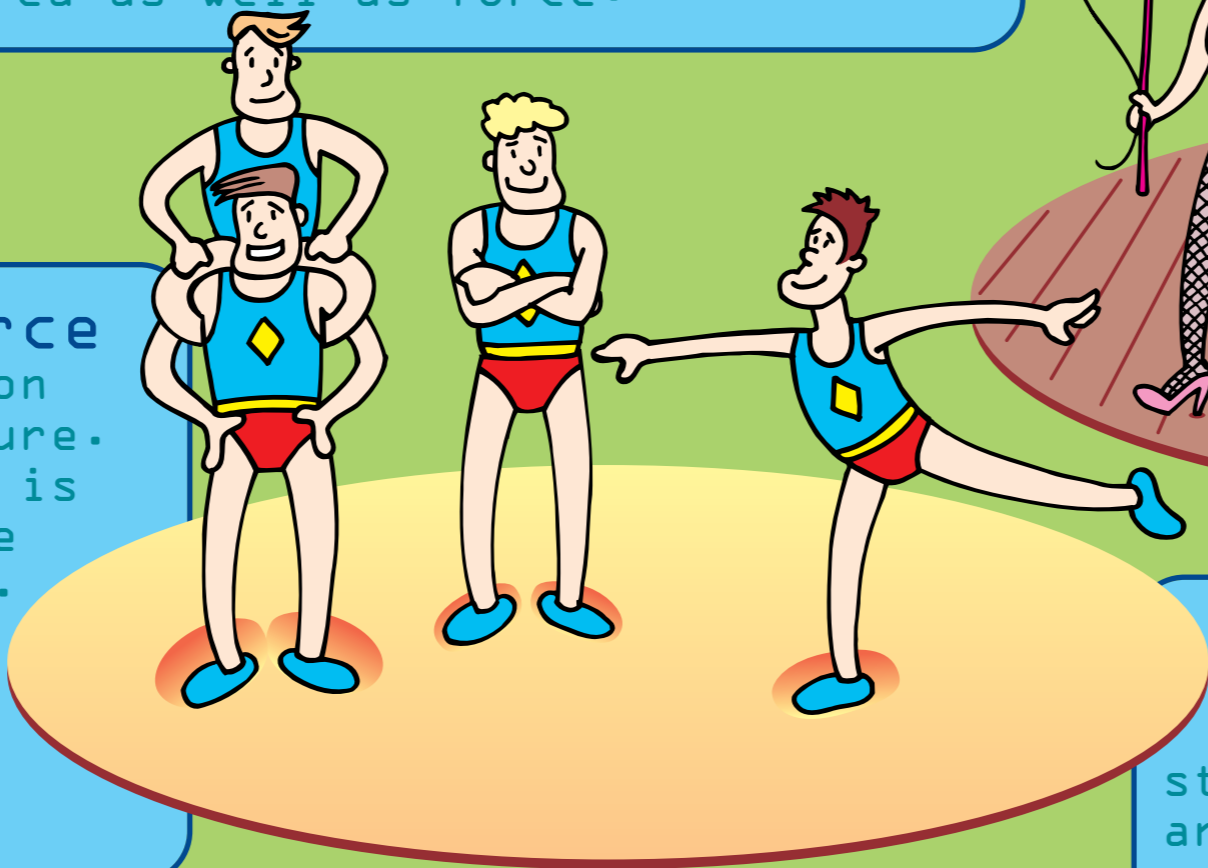
What is pressure?

Pressure is more than a force. The elephant is heavier than her trainer but which one will make the bigger dent in the floor? The Trainer will. This is because her thin stiletto heels make a bigger pressure on the floor.
Pressure depends on area as well as force.



Pressure and force

Look at the acrobats on the left of this picture. Their combined weight is bigger than the single acrobat in the middle. So they sink further into the sand. The pressure is bigger because the force is bigger.



Pressure and area

Standing on one foot produces a bigger pressure than standing on two feet. A smaller area concentrates the force producing a bigger pressure.

pascals

newtons

as the force goes up, the pressure goes up

The unit of pressure is the pascal (pa)
It is the same as a newton per metre squared (N/m^2)
(newtons divided by metre squared)

$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

metres²

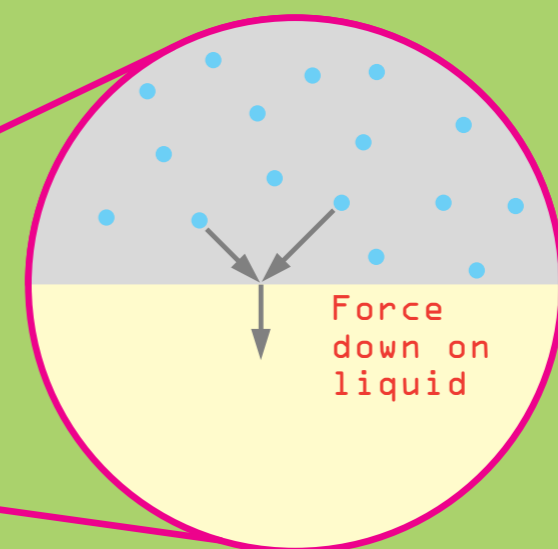
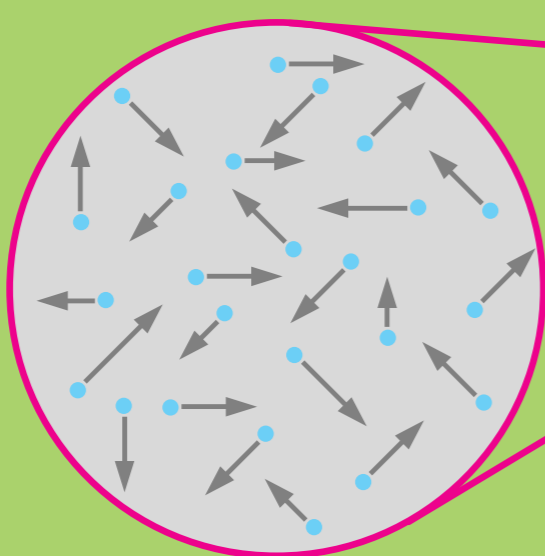
as the area goes up, the pressure goes down

Pressure in gases makes an aerosol work. A propellant produces a pressure inside the can. This pushes the spray out when we press the actuator button.

Pressure in aerosols

Propellants and pressure

A propellant is a gas under pressure. Sometimes, it even turns into a liquid. In which case its vapour produces the pressure.



How do particles make pressure?

Each time a particle bumps into the surface of the liquid, it pushes down on the liquid. There are billions of these tiny collisions. They add up to give enough pressure to force the liquid out of the can.

Gas and vapour particles

Both a gas and a vapour are made from billions of tiny particles. They are moving around randomly. They bump into each other and the edges of their container. These collisions produce a pressure.

