

# Forces

# 4. Pressure

## CONCEPT 2

## LESSON GUIDE

### PRESSURE IN A FLUID

#### PRECISE LEARNING POINTS

##### KNOW

I know what air pressure and water pressure is.

##### APPLY

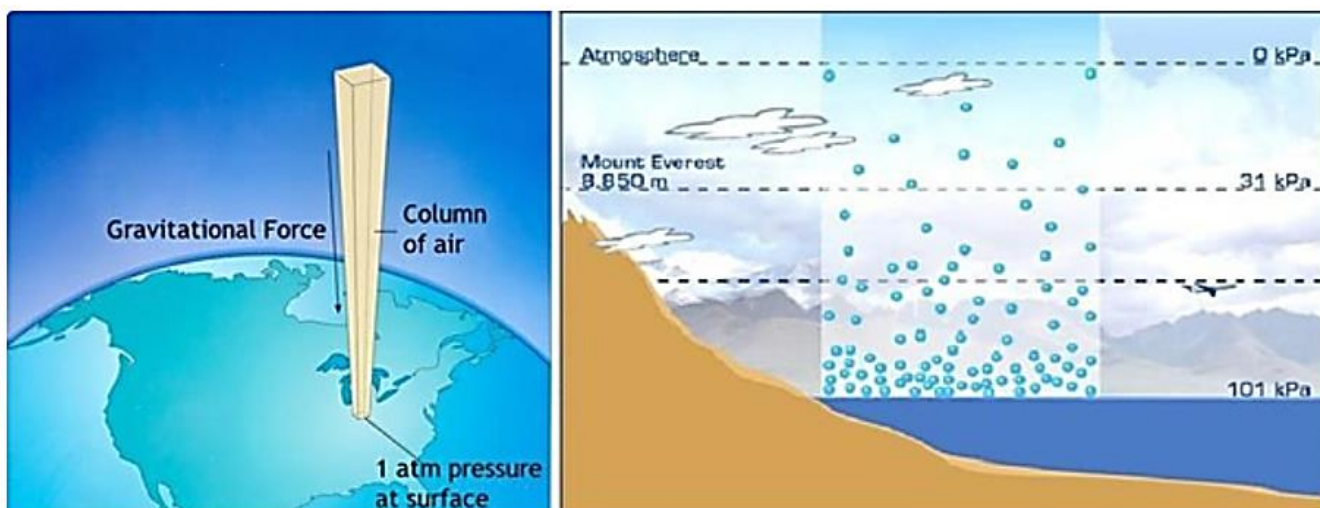
I can apply my knowledge to explain why pressure under water changes with depth.

##### EXTEND

I can extend my knowledge to explain why air pressure changes in the Earth's atmosphere.

#### NOTES

Air pressure, also known as atmospheric pressure is the pressure within the atmosphere of the Earth. Every particle found in the air will have a weight, be it very small, however all of these particles add up. Air pressure is created by the weight of the air particles pushing down on the Earth's surface (or you!).



If you imagine that you have a column of air that runs from the surface to the edge of our atmosphere, at the top of this column you would have no particles because there are no particles in space (it is what we call a vacuum). As you start to come down the column towards the surface of the Earth, the number of particles in any given area will start to increase. Particles at the top will apply force downwards of the particles further down and this will be a cumulative effect. Therefore, you have much more pressure nearer the surface because there are lots of particles pushing down from above. Low pressure at the top of the column, high pressure at the bottom.

Pressure in water follows a similar pattern to that of air pressure. Near the surface of a body of water you will have a few water molecules this means that there are not many water molecules pushing down on you if you are swimming near the surface. You will experience low pressure. However, the deeper that you go, the more water molecules there are above you and therefore the more force will be applied onto your body. If you have more force being applied to the same area then you will experience high pressure when you are swimming at lower depths. Submarines and vessels that are able to dive to huge depths below sea level will experience

