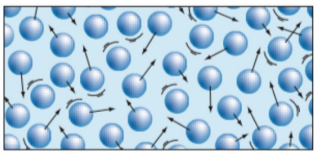
PRESSURE & COMPRESSION



- FLUIDS HAVE MANY USEFUL PROPERTIES → ONE IS **COMPRESSIBILITY**

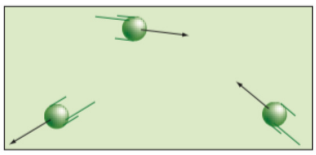
WHEN A FORCE PUSHES ON AN OBJECT, IT IS SAID TO BE UNDER COMPRESSION AND WILL USUALLY DEFORM IN SHAPE

GASSES CAN COMPRESS MUCH MORE THAN LIQUIDS. → FEWER PARTICLES TO SQUISH WHY? → PARTICLE MODEL OF MATTER



LIQUID

GAS



GASSES = HIGH COMPRESSION ABILITY
LIQUIDS = VERY LITTLE COMPRESSION IS POSSIBLE [IF ANY]

MATERIALS IN A LIQUID STATE ARE SAID TO BE INCOMPRESSIBLE

[CANNOT BE COMPRESSED EASILY]

→ VERY USEFUL B/C IT CAN TRANSFER PRESSURE IN HYDRAULICS OR PNEUMATICS

LIQUID

↳ GAS

IMPORTANT RELATIONSHIP BETWEEN FORCE, AREA, PRESSURE

★ PRESSURE = AMOUNT OF FORCE APPLIED TO GIVEN AREA.

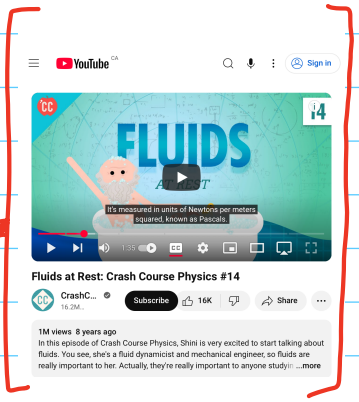
↳ MEASURED IN PASCALS (Pa)

$P = F/A$

- F → FORCE (N)
- A → AREA (SQUARE METERS / m^2)
- P → PASCALS (Pa)

→ 1 Pa = THE FORCE OF 1N OVER AN AREA OF $1m^2$

WATCH: CRASH COURSE FLUIDS



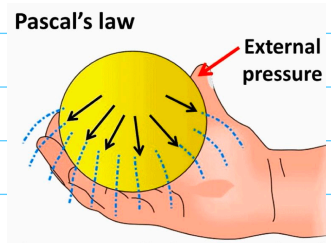
https://youtu.be/b5SqYuWT4-4?t=95&si=6aT5wwCO5BeA2W9K

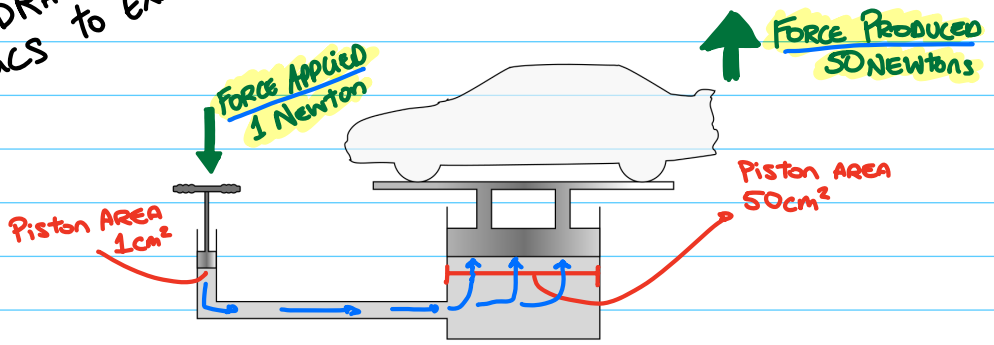
PASCAL'S LAW - AN ENCLOSED FLUID (LIQUID OR GAS) TRANSMITS PRESSURE, WITHOUT LOSS, EQUALLY IN ALL DIRECTIONS



BLAISE PASCAL

BIG BRAIN BLAISE ALLOWED HYDRAULICS AND PNEUMATICS to EXIST.

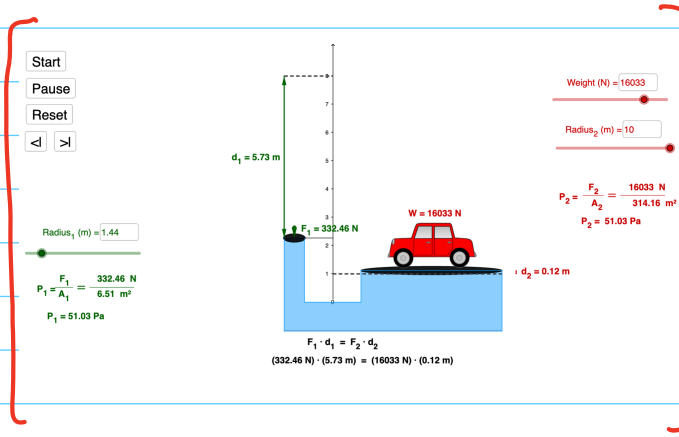




HYDRAULICS → USE LIQUIDS AS ENCLOSED FLUID → BRAKES

PNEUMATICS → USE GASSES AS ENCLOSED FLUID → BUS DOORS

* ENTIRE SYSTEM MUST BE COMPLETELY SEALED *
- A LEAK CAN CAUSE ENTIRE SYSTEM to fail



→ TRY FOR YOURSELF...

PASCAL'S LAW in A HYDRAULIC LIFT

https://www.geogebra.org/m/yb42hP5D