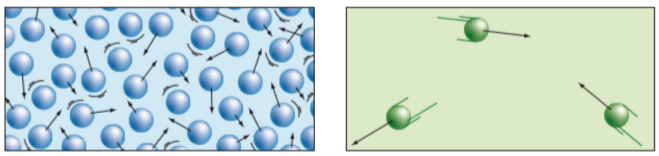
PRESSURE & COMPRESSION

- 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 (LIQUID) OR PNEUMATICS (GAS)

IMPORTANT RELATIONSHIP BETWEEN FORCE, AREA, PRESSURE

★ PRESSURE = AMOUNT OF FORCE APPLIED TO GIVEN AREA.
→ MEASURED IN PASCALS (Pa)

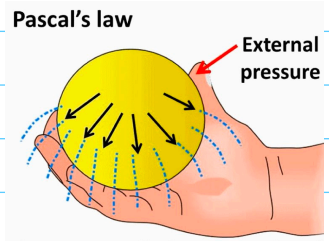
$P = F/A$
- F → FORCE (N)
- A → AREA (SQUARE METERS / m^2)
- P → PASCALS (Pa)

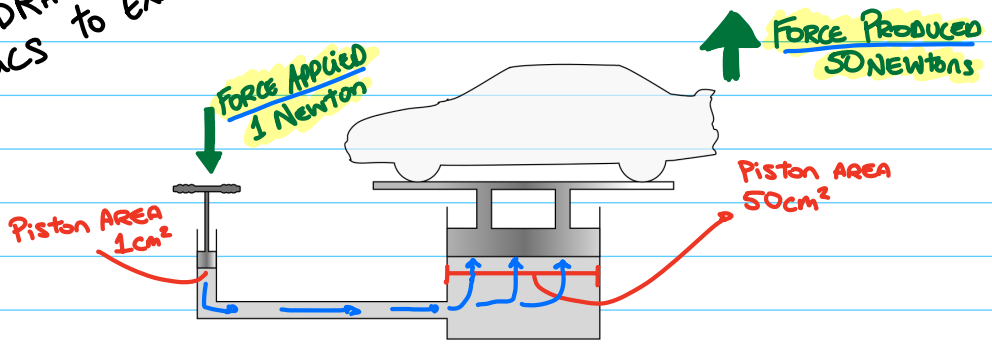
1 Pa = THE FORCE OF 1N OVER AN AREA OF $1 m^2$

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