**Particle Model**

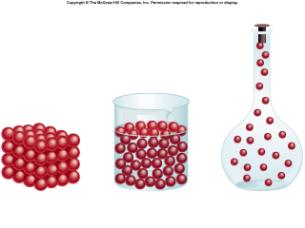
Models are visual representations of abstract things. They:

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The particle model is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

It can help explain how particles behave and are arranged in the 3 phases of matter (solid, liquid and gas).

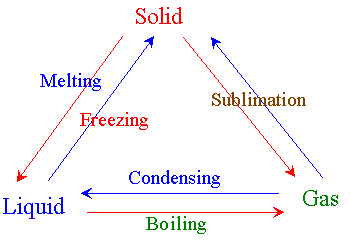
* Matter is not \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ but is made up of specific kinds of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (extremely small)
* Forces of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ hold particles together
* Particles are always \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* At \_\_\_\_\_\_\_\_\_\_\_\_\_\_ temperatures, particles move \_\_\_\_\_\_\_\_\_\_\_\_\_ (at low temperatures particles move slower)



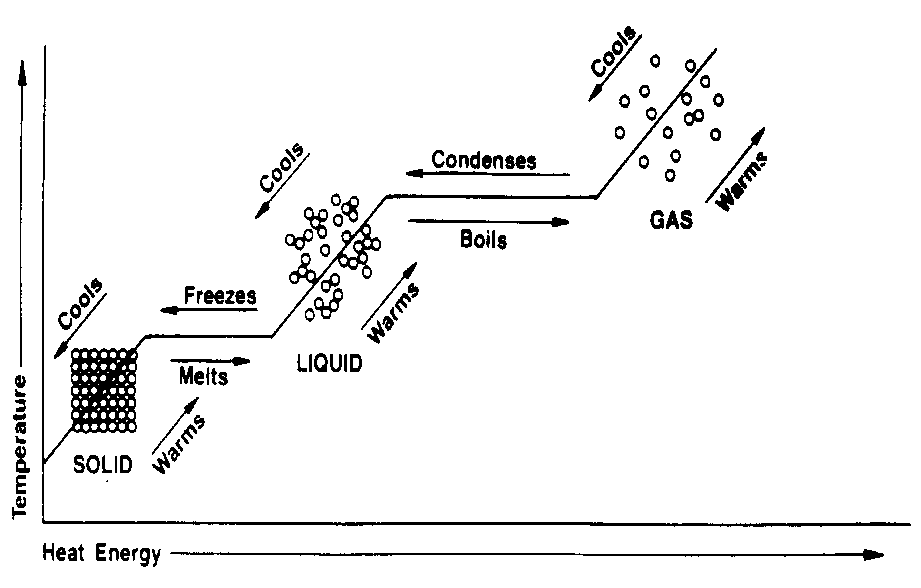
|  |  |  |  |
| --- | --- | --- | --- |
|  | Solid | Liquid | Gas |
| Description |  |  |  |
| Space between particles |  |  |  |
| Force of attraction |  |  |  |
| Movement of particles |  |  |  |
| Energy |  |  |  |

**Phase Changes**

|  |  |
| --- | --- |
| **Chemical changes signs** | **Physical changes signs** |
| * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |



|  |  |
| --- | --- |
| Boiling Point |  |
| Melting Point |  |



**Fluids**

**Def**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Examples in the body:** blood = liquid, air = gas

**Exception:** Powders such as flour or sand are not considered fluids even though they have no form and flow. They are composed of small particles with a definite form.

**Properties of Fluids**

|  |  |
| --- | --- |
| Viscosity |  |
| Density |  |

These properties vary between fluids.

|  |  |  |
| --- | --- | --- |
|  | **Compressible Fluids** | **Incompressible Fluids** |
| **Definition** |  |  |
| **State** |  |  |
| **Examples** |  |  |
| **Why?** |  |  |
| **Pressure vs. Volume** |  |  |

**Pressure**

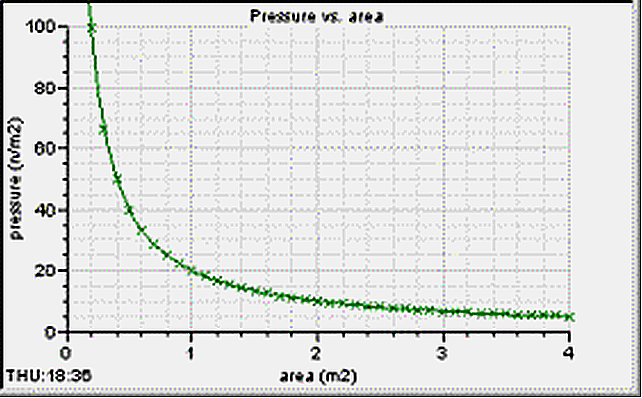
**Def**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* When we push something we are applying a force to it.
* If that force is large enough it will move or deform the object.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Force = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Pressure (newtons/meter2) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(newtons) (meter2)

**Relationship between Pressure and Area**

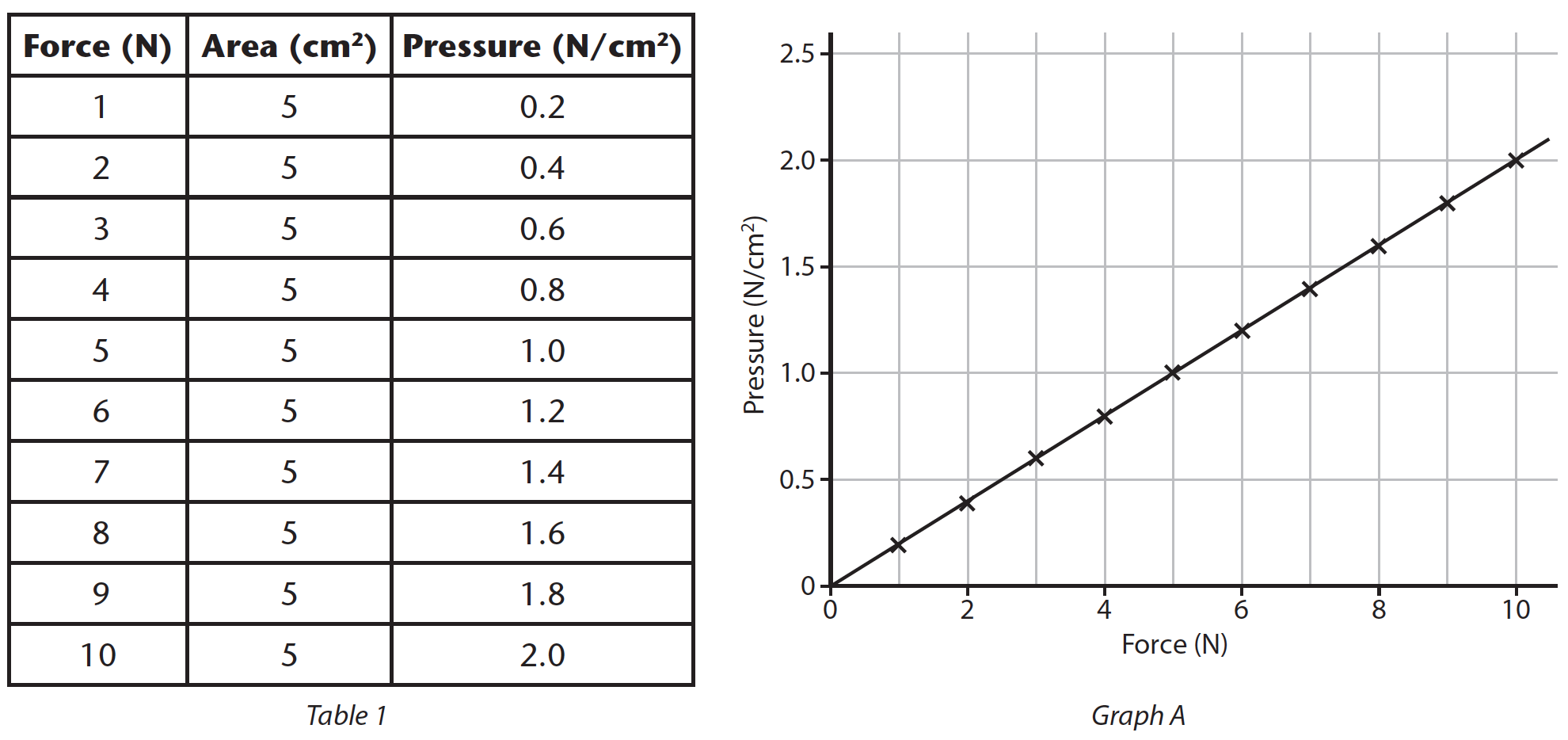
* The force an object exerts on the floor consists of the person’s mass and the gravitational pull
* This is what we call an objects:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |
| --- |
|  |

If 1,000N were applied to an area of 100m2 what would the exerted pressure be?

If the same force (1000N) were applied to ½ the previous area (50m2) what would the pressure be?

**The Relationship Between Pressure and Force**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* The pressure at the bottom of the barrel = the weight of the column of water directly above an area of 1cm2
* If the barrel were \_\_\_\_\_\_\_\_\_ high there would be \_\_\_\_\_\_\_\_\_\_\_ of water (1kg) pushing down (1cm3 =1g)

|  |
| --- |
|  |

If 1,000N were applied to an area of 100m2 what would the exerted pressure be?

If a larger force (2000N) were applied to the same area (100m2) what would the exerted pressure be?

**Particle Theory**

* A tire pumped up with air has a \_\_\_\_\_\_\_\_\_\_ exerted upon it by the air inside.
* If the pressure is \_\_\_\_\_\_\_\_\_\_\_ enough the tire will remain firm even if \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is applied to it.
* This is explained by the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ inside the tire having lots of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ hitting the walls
* Adding more “air” \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the number of molecules pushing outward = harder tire

**Compressible fluid Pressure**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* With each \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the fluid particles exert a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on the obstacle
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that create the pressure from a compressible fluid
* Depends on: \_\_\_\_\_\_\_\_\_\_\_\_ (the more collisions = more pressure)
  + Factors that increase collision:
    - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (the more particles = the more collisions)
    - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (speed of particles increase when temp. increase) (Higher temperature= more pressure. Lower temperature=less pressure)
    - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (available space)

**In the Body**

* In the body, fluids exert pressure on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (arterial pressure)
* The pressure \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ causes fluids to move (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
  + - Lungs – air moves into lung

**Atmospheric Pressure**

