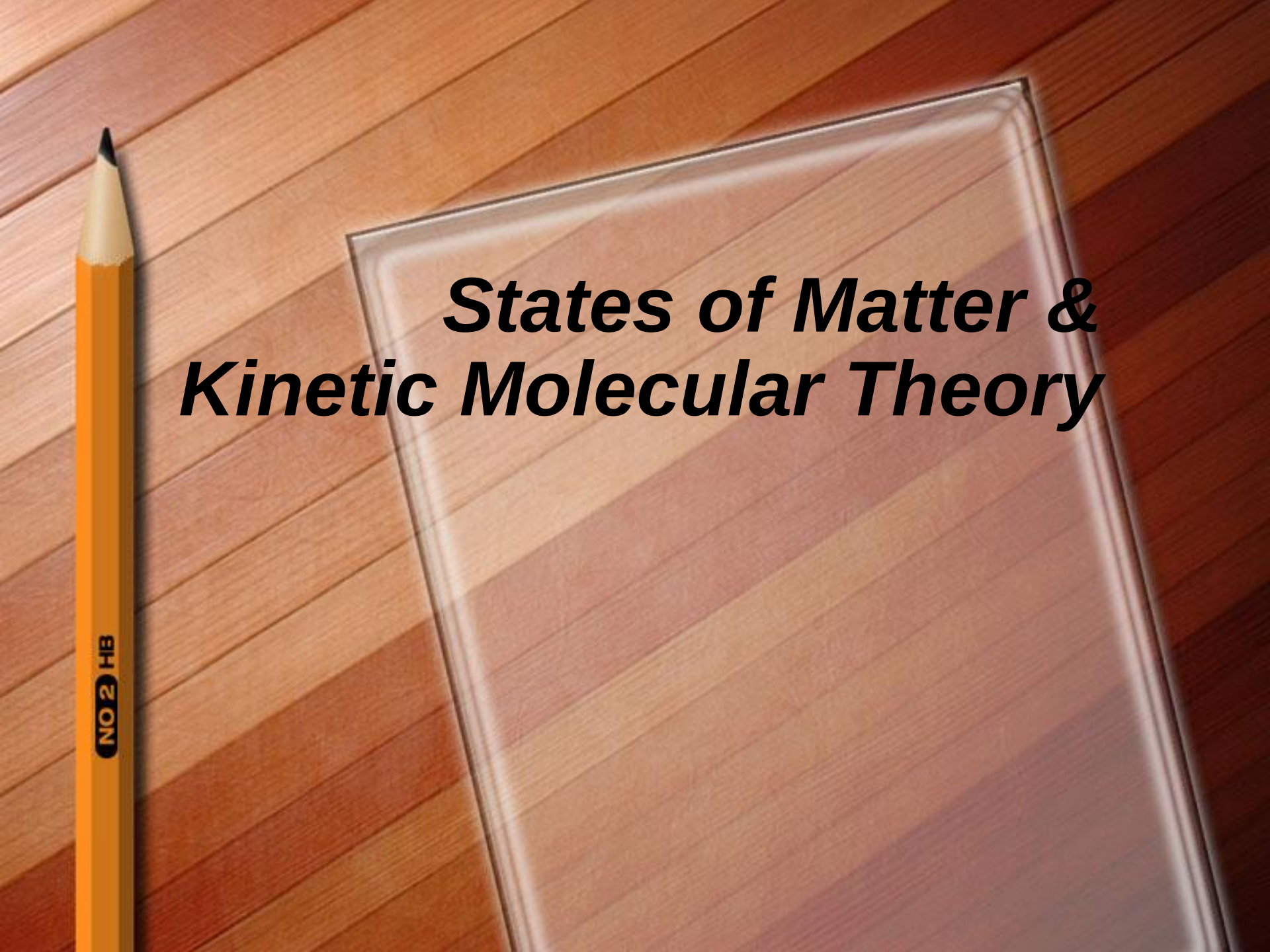
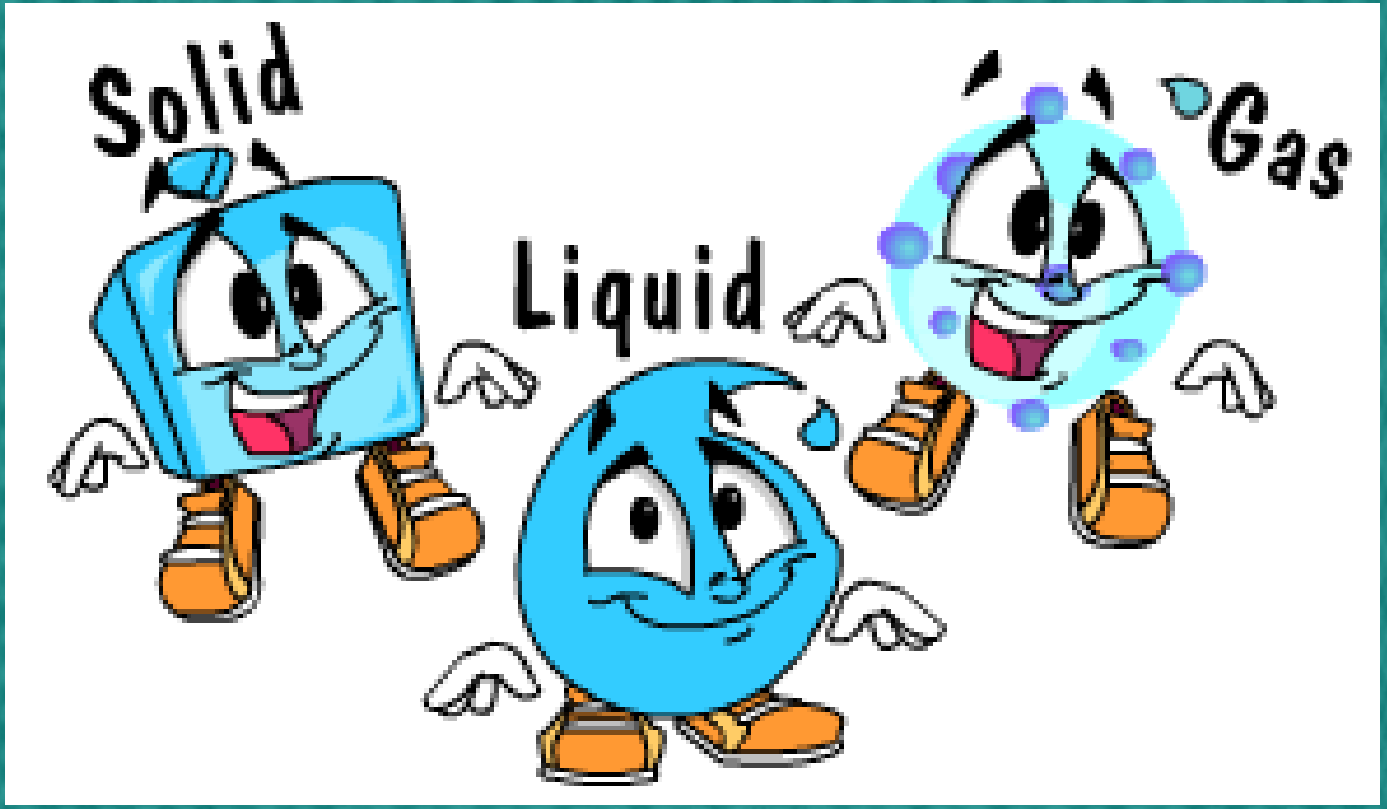


States of Matter & Kinetic Molecular Theory

What do you already know?



Look Around The Room….

- Take a moment and look around the room!
- Can you see things that are solid, liquid or gas?
- Find some, then share with the person next to you and write them down on your paper

Video

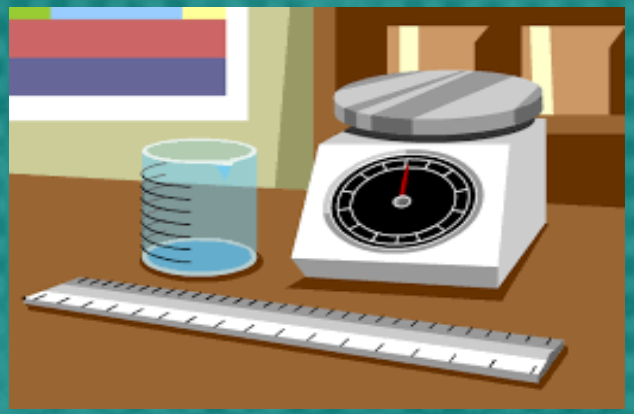
- https://www.youtube.com/watch?v=ELchwUIlWa8&ab_channel=CrashCourseKids

States of Matter

- Matter is anything that has mass and takes up space (volume)
- Volume is the amount of space taken up by an object/substance
  - Volume is measured in mL or L

States of Matter Cont'd

- Mass is the amount of matter in an object/substance
  - The more matter in an object, the more mass it has!
  - Mass is measured in g or kg



What are the 3 states of Matter?

- Solid (for example: books, paper, desk, chair)
- Liquid (for example: water, juice, soda)
- Gas (for example: air, helium, carbon dioxide (CO_2)

- Note: can also be called phases of matter

Video

- https://www.youtube.com/watch?v=1Jtw8g795Us

Kinetic Molecular Theory

- **The Kinetic Molecular theory (KMT) tells us that…**

1. **All matter is made up of small particles that are too small to see**
2. **There is space between the particles**
3. **Particles are always moving**
4. **Energy makes particles move**

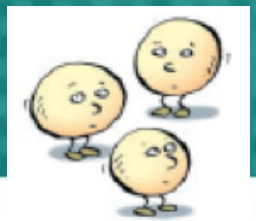
The Kinetic Molecular Theory

Solid: Particles are tightly packed

Particles vibrate in place

Cannot be compressed

Have a fixed shape

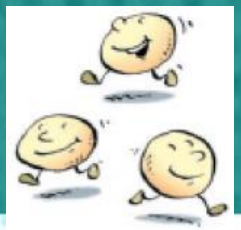


Liquid: Particles have more space between them than solids

Particles move by sliding past each other

Cannot be compressed

Change shape according to the container



Gas: Particles have large spaces between them

Particles can move around freely

Can be compressed and can expand to fill their container

What state would we classify fire to be?

1. Solid
2. Liquid
3. Gas
4. All of the above
5. None of the above

What state would we classify fire to be?

1. Solid
2. Liquid
3. Gas
4. All of the above
5. None of the above

https://www.youtube.com/watch?v=YV8TT9LRBrY&ab_channel=TED-Ed

How does energy effect matter?

- KMT explains that when kinetic energy (the energy of motion) increases or decreases, matter can change state as the space between particles gets larger or smaller

How does energy effect matter?

- When energy is added…
  - Particles move faster
  - The space between particles get larger
  - The material expands in volume and takes up more space
  - This is called thermal expansion

How does energy effect matter?

- When energy is removed…
  - Particles move more slowly
  - The space between particles get smaller
  - The material contracts in volume and takes up less space
  - This is called thermal contraction

Practice

- Do the worksheet on the back of your notes package