ODM EDUCATIONAL GROUP
Changing your Tomorrow

MATTER

SUBJECT-PHYSICS

CHAPTER NO- 1

Meaning and composition of matter.

PERIOD-1

Website: www.odmegroup.org
Email: info@odmps.org
Toll Free: 1800 120 2316
Sishu Vihar, Infocity Road, Patia, Bhubaneswar- 751024

LEARNING OBJECTIVE

- Students will be able to
- Define matter
- Know the examples of matter
- Familiarize with the composition of matter
- Sensitize the discovery of atoms and molecules

ODM EDUCATIONAL GROUP
Changing your Tomorrow

WARM UP ACTIVITY

- What are the things around us like water, soil, plants, minerals, animals etc called?

What do you mean by matter?

- **Matter** is anything that occupies space and has mass. All physical objects are composed of **matter**, and an easily observed property of **matter** is its state or phase. The classical states of **matter** are solid, liquid and gas.

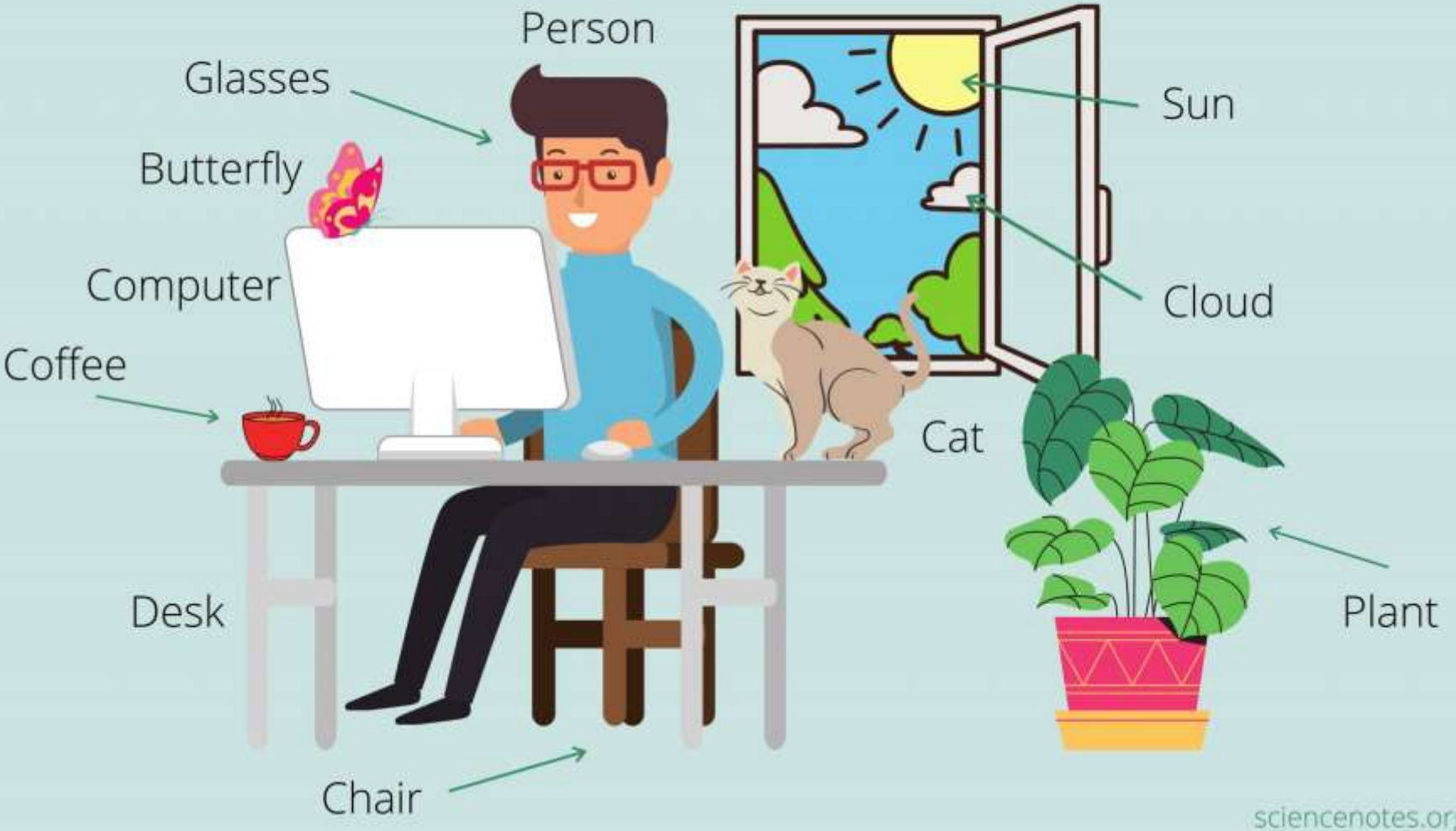
- Panchatatva
- (panch + tatva) means five elements or the "panchamahabhutas". These are: Prithvi(**Earth**), Jal (Water), **Agni** (**Fire**), **Vayu** (Air) and Akash (Space). The entire universe is created by these five elements

- Each of the five elements represents a state of **matter** in nature
- Solid **matter** is classified as the 'earth' element,
- water as liquid,
- air as everything that is gas and
- fire that transforms one state of **matter** into another,
- and space is the mother of all other elements

Explain the concept of matter by showing a video.
https://youtu.be/QQsybALJoew

Examples of Matter

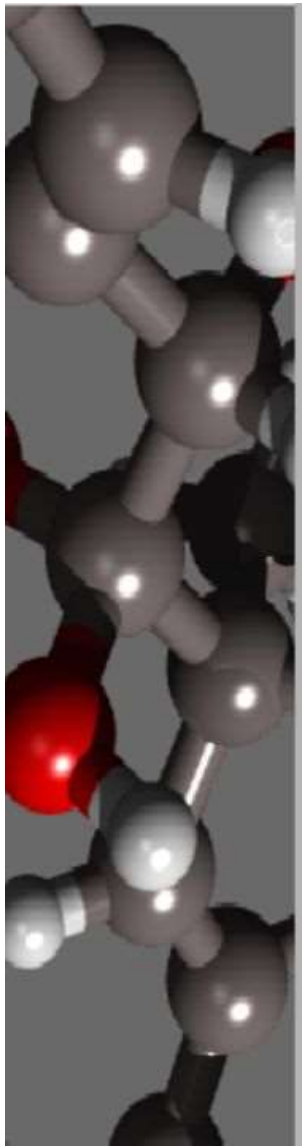
Matter is anything that has mass and takes up space.

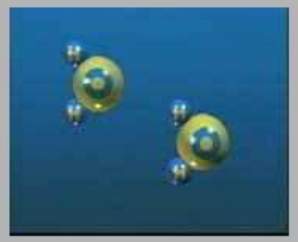


MATTER HAS MASS AND IT OCCUPIES SPACE

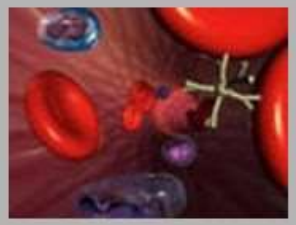
- https://youtu.be/FxS-pzysJJA

COMPOSITION OF MATTER

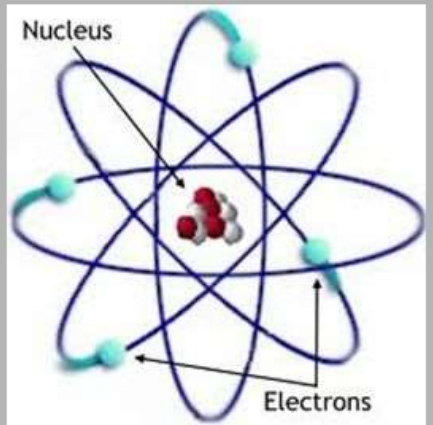


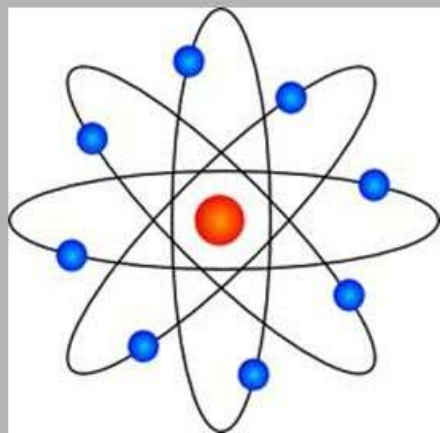


ATOMS



- ALL MATTER IS MADE OF ATOMS
- Definition: ATOMS ARE THE SMALLEST PIECE OF MATTER and CANNOT BE BROKEN DOWN INTO A SIMPLER SUBSTANCE.

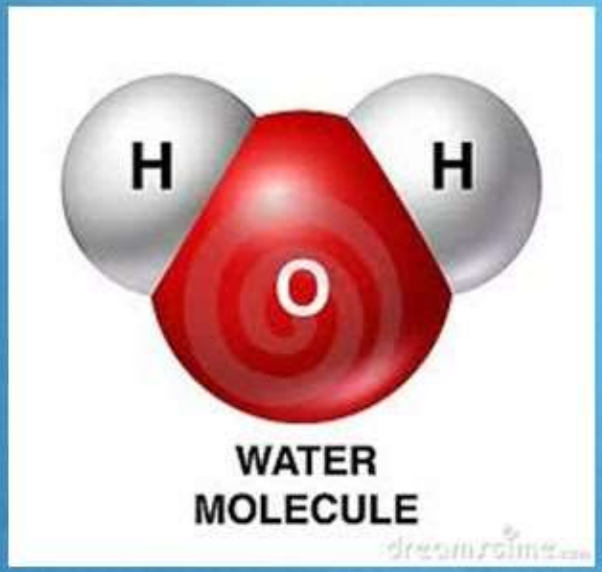


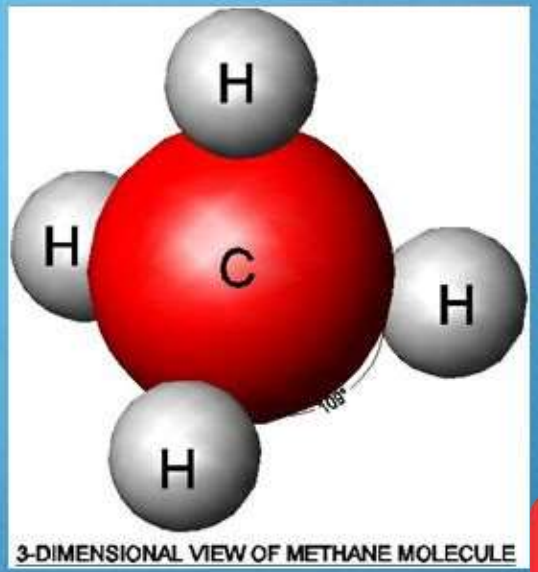


ODM EDUCATIONAL GROUP

What are molecules?

A group of atoms which are joined together are called molecules.
The chemical formula for water is H_20 because a molecule of water consists of two hydrogen atoms joined to an oxygen atom.
The formula For methane is CH_4. It has this formula because a molecule of methane
Consists of an atom of carbon joined to four atoms of hydrogen.





Methane molecule

Explain the composition of matter by showing a video https://youtu.be/CnHoohcd71o

HOME ASSIGNMENT

- Exercise- B 1,2
- Q. Elaborate the composition of matter
- Q. Define matter

THANKING YOU

ODM EDUCATIONAL GROUP

ODM EDUCATIONAL GROUP
Changing your Tomorrow

MATTER

SUBJECT-PHYSICS

CHAPTER NO- 1

Characteristics of particles of matter

PERIOD-2

Website: www.odmegroup.org
Email: info@odmps.org
Toll Free: 1800 120 2316
Sishu Vihar, Infocity Road, Patia, Bhubaneswar- 751024

LEARNING OBJECTIVE

- Students will be able to
- Familiarize the characteristics of particles of matter
- Describe the following
- 1. Particles of matter are very small in size
- 2. Particles of matter have space between them

WARM UP ACTIVITY

Recapitulate the previous topic by asking the following questions.

- Q. Define matter
- Q. Describe the composition of matter
- Q. What do you mean by atoms and molecules
- Q. Who found that matter is made up of molecules?

Characteristics of particles of matter-

1. Particles of matter are very small in size

ACTIVITY

https://youtu.be/wMTmsyPPFsQ

Characteristics of particles of matter-

2. Particles of matter have space between them

ACTIVITY

https://youtu.be/fUzKozeqDPo

HOME ASSIGNMENT

Exercise- B 18, 19

Q. List the characteristics of particles of matter

Q. What do you mean by intermolecular space?

THANKING YOU

ODM EDUCATIONAL GROUP

ODM EDUCATIONAL GROUP
Changing your Tomorrow

MATTER

SUBJECT-PHYSICS

CHAPTER NO- 1

Characteristics of particles of matter

PERIOD-3

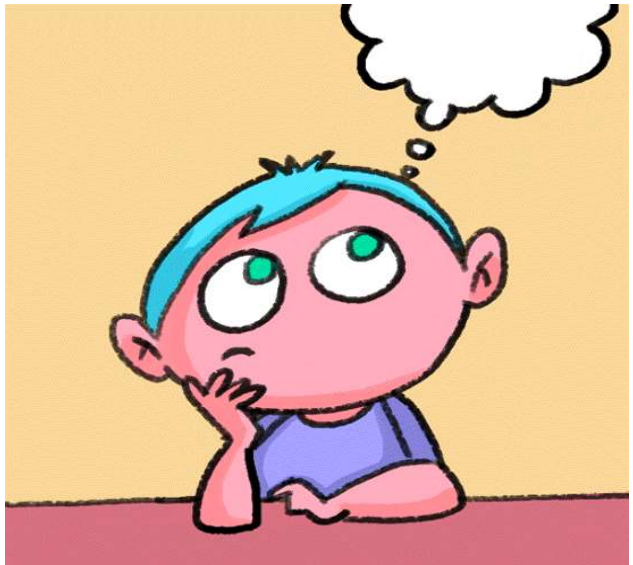
Website: www.odmegroup.org
Email: info@odmps.org
Toll Free: 1800 120 2316
Sishu Vihar, Infocity Road, Patia, Bhubaneswar- 751024

LEARNING OBJECTIVE

- Students will be able to
- Familiarize the characteristics of particles of matter
- Describe the following

  3. Particles of matter are in constant random motion

  4. Particles of matter attract each other



ODM EDUCATIONAL GROUP
Changing your Tomorrow

WARM UP QUESTIONS

- Recapitulation of the previous topic by asking the following questions.
- List the characteristics of particles of matter
- What do you mean by intermolecular space?

Characteristics of particles of matter-

3. Particles of matter are in constant random motion

https://youtu.be/_tbgGgxA29s

Characteristics of particles of matter-

2. Particles of matter attract each other

https://youtu.be/fUzKozeqDPo

HOME ASSIGNMENT

- Exercise- B 3,4
- Q. How can you explain that particles of matter are always in random motion?
- Q. Give any one example to explain particles of matter attract each other.

THANKING YOU

ODM EDUCATIONAL GROUP

ODM EDUCATIONAL GROUP
Changing your Tomorrow

MATTER

SUBJECT-PHYSICS

CHAPTER NO- 1

States of matter, distinction between solids, liquids and gases

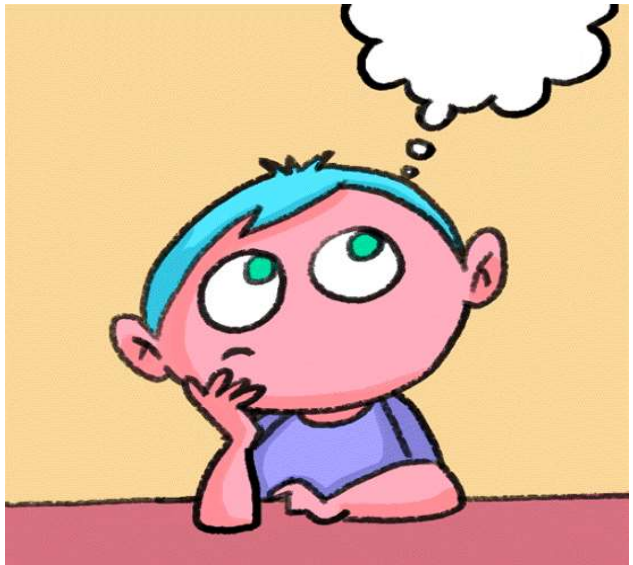
PERIOD-4

Website: www.odmegroup.org
Email: info@odmps.org
Toll Free: 1800 120 2316
Sishu Vihar, Infocity Road, Patia, Bhubaneswar- 751024

LEARNING OBJECTIVE

Students will be able to

- Familiarize with the states of matter
- Distinguish between solid, liquid and gas

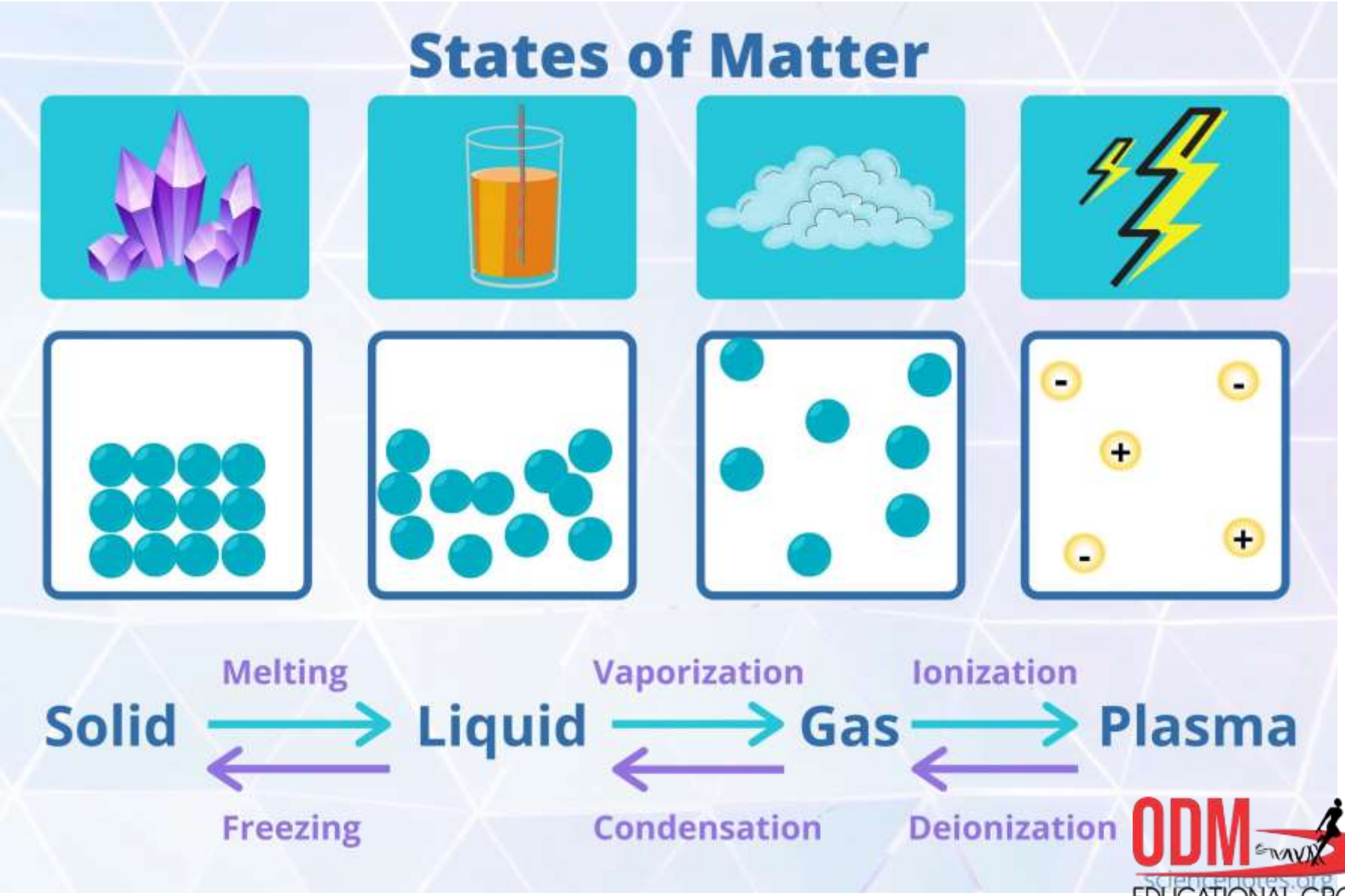


ODM EDUCATIONAL GROUP
Changing your Tomorrow

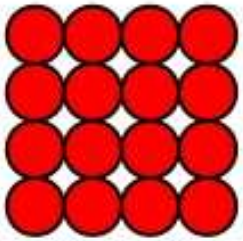
WARM UP QUESTIONS

- Recapitulation of the previous topic by asking the following questions.
- Explain that particles of matter have space between them.
- How can you explain that particles of matter are always in random motion?
- Give any one example to explain particles of matter attract each other.

States of matter

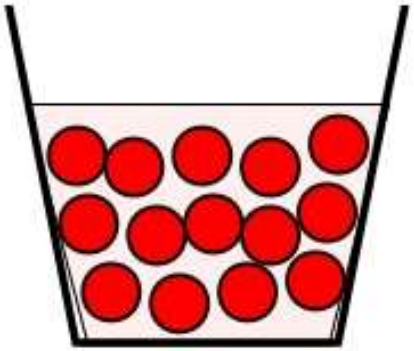


SOLIDS



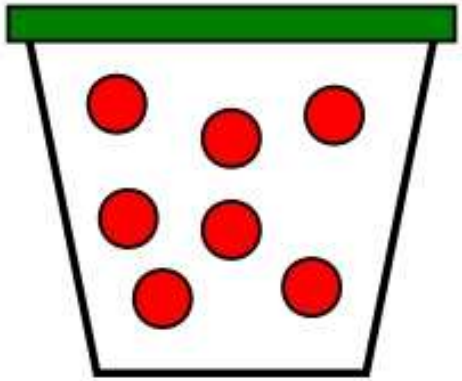
The molecules are held together with strong bonds. They don't move very easily so SOLIDS can keep their own shape and size

LIQUIDS



The molecules have weaker bonds. They can move around slightly so LIQUIDS can flow. They can't keep their shape unless they're in a container.

GASES



The molecules are free to move around. They can spread around an open space quickly and freely. GASES can't keep their shape unless they are kept in a *sealed* container.

- Explain the three states of matter.
- https://youtu.be/o2qM4o8e_Vo

Three properties which decides the states of matter

- The **kinetic energy** of particles due to their motion or movement of molecules
- Force of attraction between the molecules.
- Inter- molecular space.

Distinguish between solid, liquid and gas

	Properties	Solids	Liquids	Gases
1	Mass	Definite	Definite	Definite
2	Shape	Definite	Acquires the shape of the container	Acquires the shape of the container
3	Volume	Definite	Definite	Indefinite
4	Compressibility	Not possible	Almost Negligible	Highly Compressible
5	Fluidity	Not possible	Can flow	Can flow
6	Rigidity	Highly rigid	Less rigid	Not rigid
7	Diffusion	Slow	Fast	Very fast
8	Space between particles	Most closely packed 	Less closely packed 	Least closely packed 
9	Interparticle force	strongest	Slightly weaker than in solids	Negligible

- Explain the concept by the help of a video
- https://youtu.be/Asx1D31gRxA

HOME ASSIGNMENT

- Exercise- A 3,4
- Q. Distinguish between solid , liquid and gas
- Q. what are three properties which decides the state of a substance?

THANKING YOU

ODM EDUCATIONAL GROUP

ODM EDUCATIONAL GROUP
Changing your Tomorrow

MATTER

SUBJECT-PHYSICS

CHAPTER NO- 1

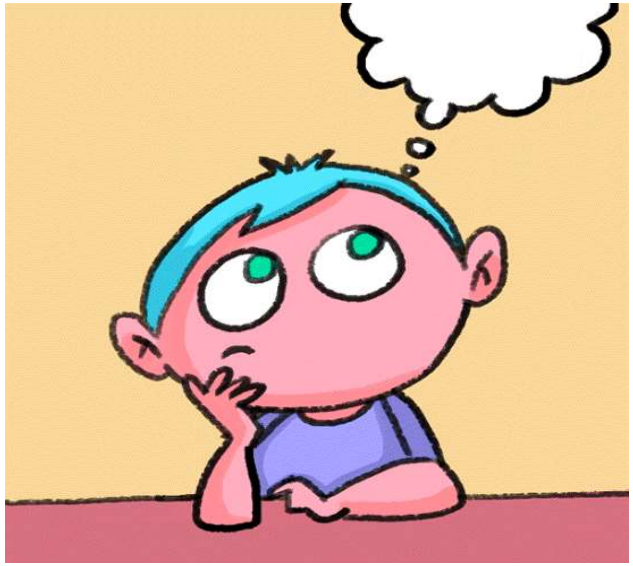
Properties of solids and liquids

PERIOD-5

Website: www.odmegroup.org
Email: info@odmps.org
Toll Free: 1800 120 2316
Sishu Vihar, Infocity Road, Patia, Bhubaneswar- 751024

LEARNING OBJECTIVE

- Students will be able to
- Familiarize with the properties of solids and liquids
- Sensitize the molecular model of solid and liquid state



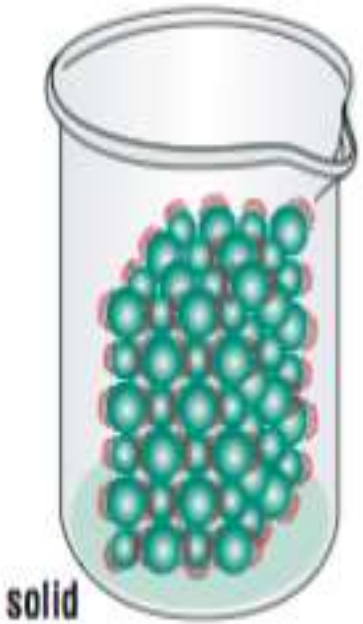
WARM UP QUESTIONS

- Recapitulation of previous topic by asking the following questions.
- Distinguish between solid , liquid and gas
- What are three properties which decide the state of a substance?

Properties of solids

Properties of solids:

- have a definite shape
- do not flow
- virtually impossible to compress
- expand if heated, but usually less than liquids and gases.



solid

Particles in solids:

- strongly bonded to each other
- vibrate a little, but not much compared to liquids and gases
- vibrate faster when heated.

Explain the properties of solids by the help of a video

https://youtu.be/5xJqGteJcnY

Explain the molecular model of solid state by the help of a video

https://youtu.be/6bHkWh5T3mk

properties of liquids

Properties of liquids:

- no definite shape
- can flow to take the shape of the bottom of a container
- very difficult to compress (virtually incompressible).

liquid

Particles in liquids:

- weakly bonded to each other
- break their bonds easily
- vibrate and move more than those in a solid
- move faster when heated.

- Explain the properties of liquids by the help of a video
- https://youtu.be/gqaNCkNZoz8
-
- Explain the molecular model of liquid state by the help of a video
- https://youtu.be/6bHkWh5T3mk

HOME ASSIGNMENT

Exercise- B 5,6

Q. Explain the molecular model of solids

Q. Explain the molecular model for liquids

Q. list the properties of solids

Q. list the properties of liquids

THANKING YOU

ODM EDUCATIONAL GROUP

ODM EDUCATIONAL GROUP
Changing your Tomorrow

MATTER

SUBJECT-PHYSICS

CHAPTER NO- 1

Properties of gases, distinguishing properties of solid, liquid and gases

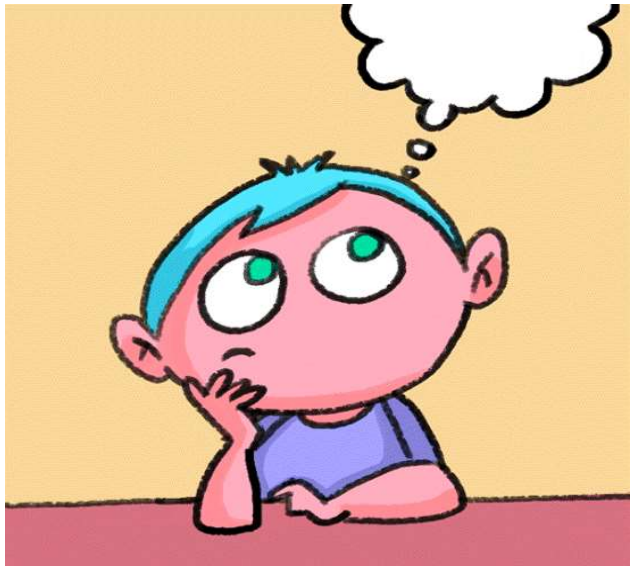
PERIOD-6

Website: www.odmegroup.org
Email: info@odmps.org
Toll Free: 1800 120 2316
Sishu Vihar, Infocity Road, Patia, Bhubaneswar- 751024

LEARNING OBJECTIVE

Students will be able to

- Familiarize with the properties of gases
- Sensitize the molecular model of gases
- Distinguish between the properties of solid , liquid and gases



ODM EDUCATIONAL GROUP
Changing your Tomorrow

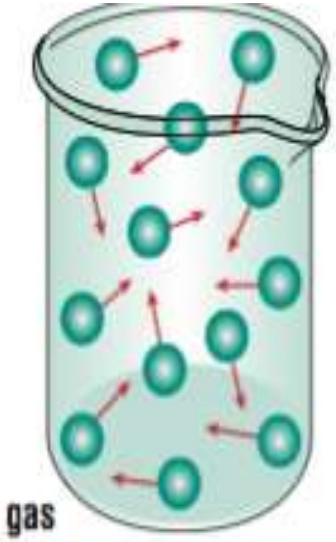
WARM UP QUESTIONS

- Recapitulation of previous topic by asking the following questions.
- list the properties of solids
- list the properties of liquids

Properties of gases

Properties of gases:

- no fixed shape
- gases spread (or diffuse) to completely fill a container
- gases are easily compressed.



Gas particles:

- are 'free', having no bonds between them
- have much more energy than those of a solid or liquid
- fly around, bouncing off each other and the walls of their container.

- Explain the properties of gases by the help of a video
- https://youtu.be/ZaIaNyKDG54
-
- Explain the molecular model of gaseous state by the help of a video
- https://youtu.be/6bHkWh5T3mk

Distinguishing properties of solid, liquid and gases

Properties	Solids	Liquids	Gas
1. Volume	Definite volume, as intermolecular forces between the constituent particles are very strong.	Definite volume, as intermolecular forces between the constituent particles are strong.	No definite volume, as intermolecular forces between the constituent particles are weak.
2. Diffusion	Can diffuse into liquids.	Diffusion is higher than solids.	Highly diffusible as particles move randomly at high speed.
3. Compressibility	Negligible	Negligible	High
4. Rigidity or Fluidity	Very rigid and cannot flow	Less rigid and can flow easily.	No rigidity and can flow most easily.
5. Density	High	Moderate	Low
6. Shape	They have a definite shape	They do not have a definite shape.	They do not have a definite shape.
7. Kinetic energy of particles at a given temperature	Least energy	Higher than solids	Maximum energy
8. Interparticle space	Least	Lesser	More than others
9. Interparticle force of attraction	Very strong	Less strong	Weak
10. Intermolecular forces	Strong enough to hold the constituent particles in fixed positions.	Strong enough to hold the constituent particles in aggregation within the bulk but not in fixed positions.	Extremely low, so that the constituent particles are free to move in a continuous random motion.
11. Arrangement of molecules WWW.MAJORDIFFERENCES.COM	Packed in definite pattern so they possess a definite geometry.	Packed weak in comparison to solids, shape not fixed.	Packed very poorly so they fill the container, no definite shape.

- Explain the distinguishing properties of solid, liquid and gases by the help of a video
- https://youtu.be/9d1jK_2FMu8
- https://youtu.be/bwGim-eceS8

HOME ASSIGNMENT

Exercise- B 7,8

Q. list the properties of gases

Q. Distinguish between properties of solid, liquid and gases

THANKING YOU

ODM EDUCATIONAL GROUP

ODM EDUCATIONAL GROUP
Changing your Tomorrow

MATTER

SUBJECT-PHYSICS

CHAPTER NO- 1

Changes in state of matter.

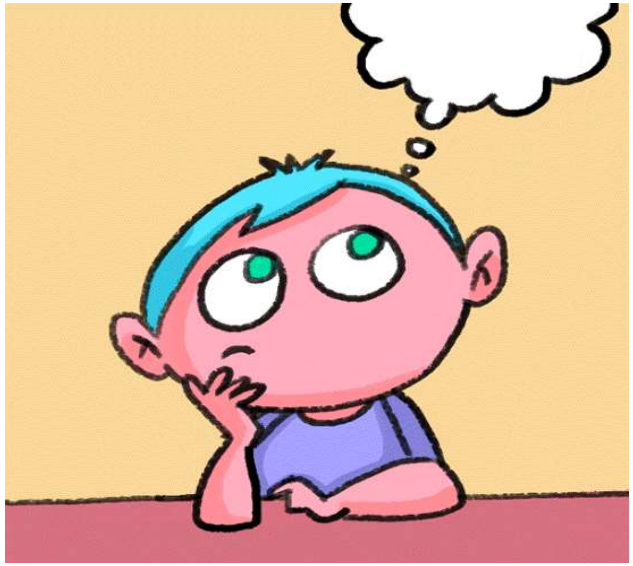
PERIOD-7

Website: www.odmegroup.org
Email: info@odmps.org
Toll Free: 1800 120 2316
Sishu Vihar, Infocity Road, Patia, Bhubaneswar- 751024

LEARNING OBJECTIVE

Students will be able to

- Understand the concept of inter conversion of states of matter
- Familiarize with the causes which results into the change in state of matter.
- Sensitize the change from solid to liquid state
- Sensitize the change from liquid to gaseous state

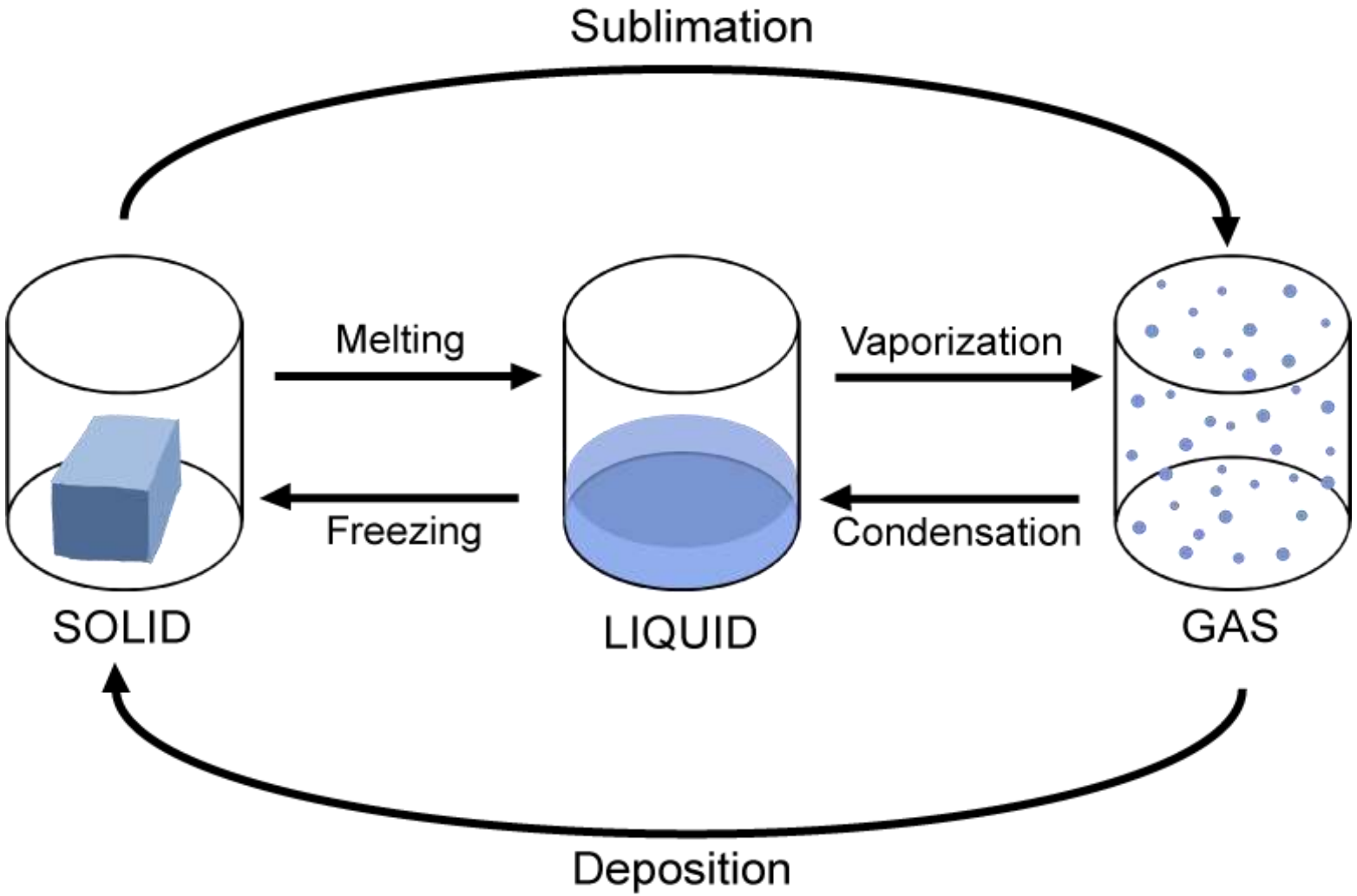


ODM EDUCATIONAL GROUP
Changing your Tomorrow

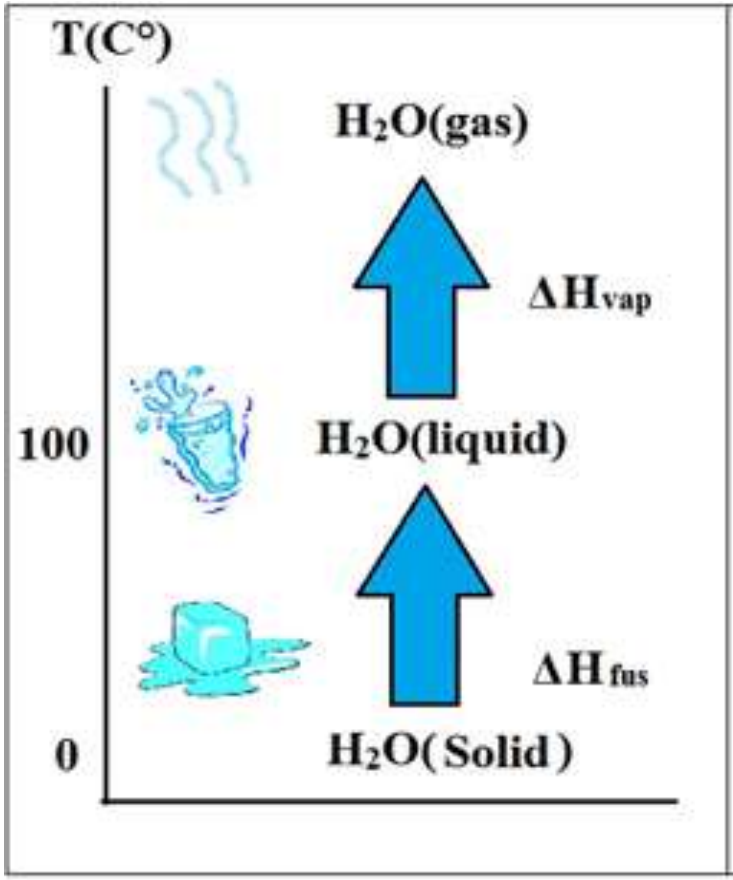
WARM UP QUESTIONS

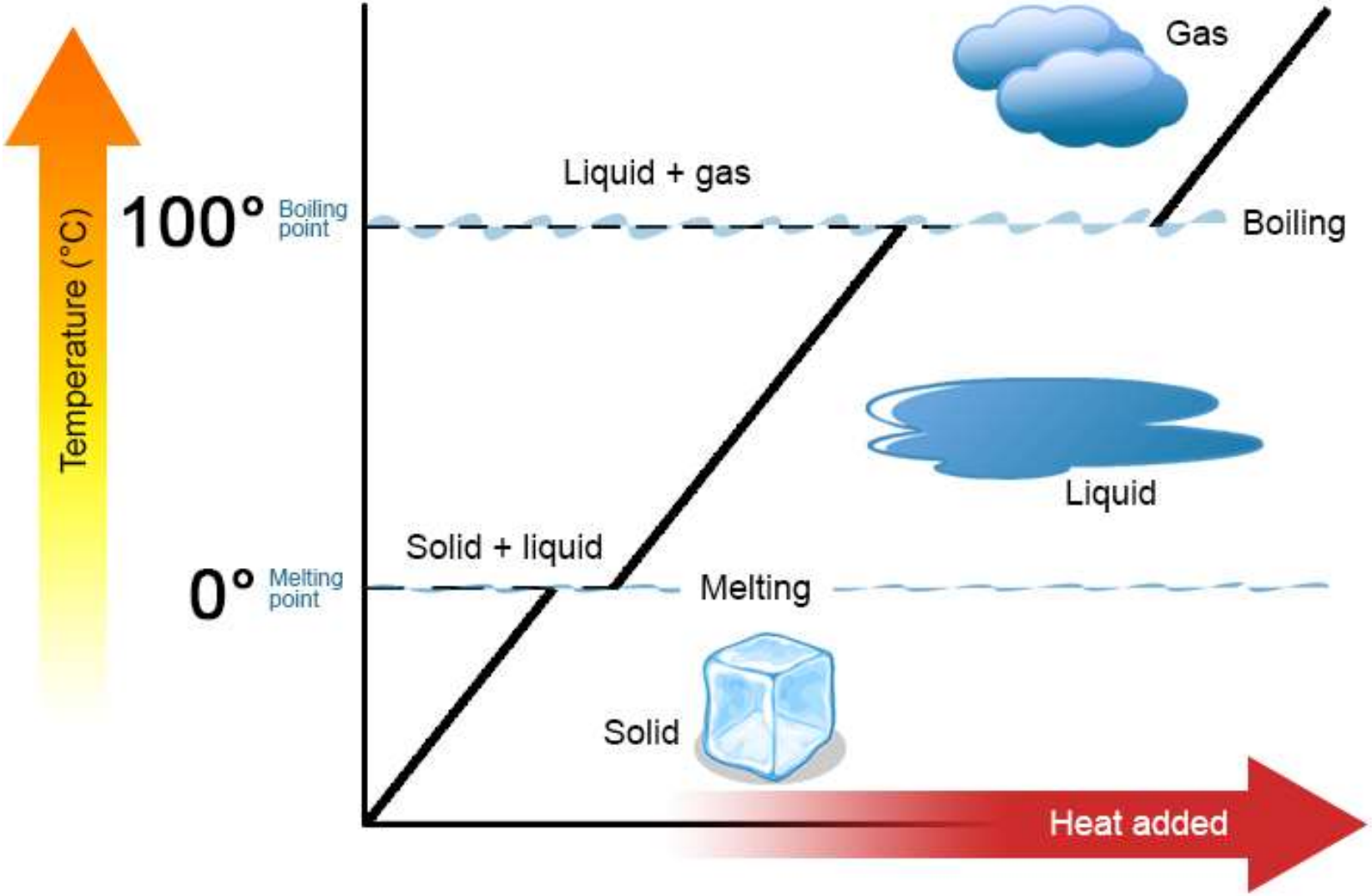
- Recapitulation of previous topic by asking the following questions.
- list the properties of gases
- Distinguish between properties of solid, liquid and gases

Change from solid to liquid state



Change from liquid to gaseous state




Temperature (°C)
100° Boiling point
0° Melting point
Gas
Liquid + gas
Boiling
Liquid
Solid + liquid
Melting
Solid
Heat added

HOME ASSIGNMENT

Exercise- 19,20

Q. Explain melting with one example.

Q. Heat is absorbed or released during the process of melting ?

Q. Define boiling

Q. What is the

a. melting point of ice

b. Boiling point of water

THANKING YOU

ODM EDUCATIONAL GROUP