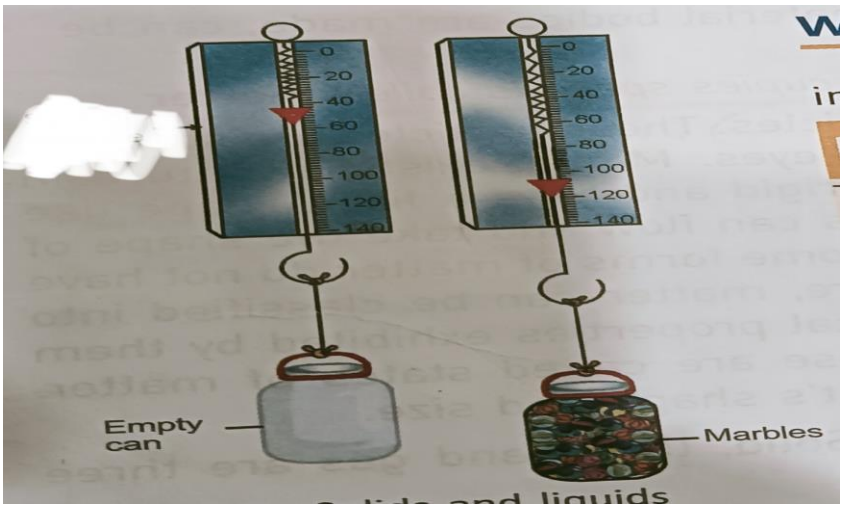
Matter and it's composition

Q1)COMPETENCY BASED QUESTIONS

A-:



Q1)What instrument is used in the image to measure weight?

A spring balance.

Q2)Which property of the marbles is getting investigated in the image?

A)Solid have weight and hence has mass.

Q3)What would happen if marbles replaced by milk?

A3)The spring balance records weight,which is less as compared to marbles

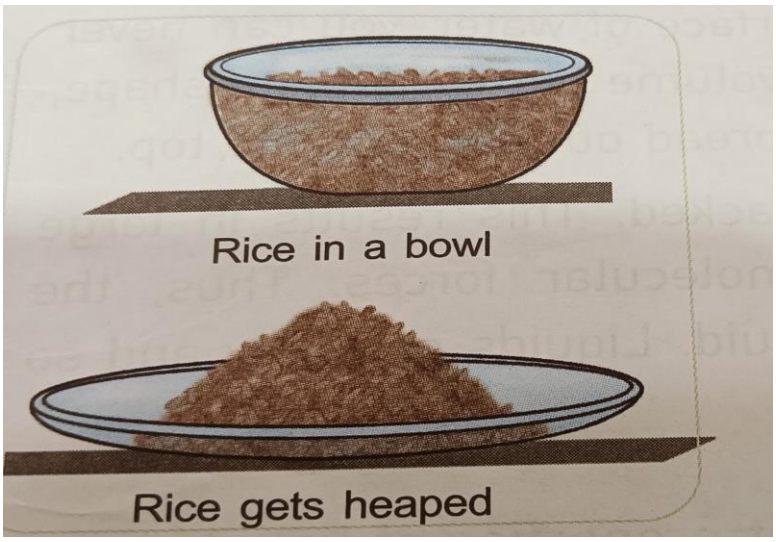
Q4)why does milk weigh less than the same volume of marbles?

A4)Milk weighs less than the same volume of marbles because milk has lower density than the material of the marbles. Since the volume is the same, the mass (and therefore the weight) of milk is less.

Q5)Compare the density, compressibility, and diffusion rate of solids, liquids, and gases.

Property	Solid	Liquid	Gas
Density	Highest	High	Lowest
Compressibility	Very low	Low	Very high
Diffusion rate	Very slow	Moderate	Very fast

B:-



Q1)Why can solids like rice be heaped in a bowl while liquids cannot?

A1)In solids, particles are closely packed with strong intermolecular forces and fixed positions, so they maintain their shape and can form a heap.

Q2)Why does a wooden block have a definite shape but wood shavings can be heaped like rice?

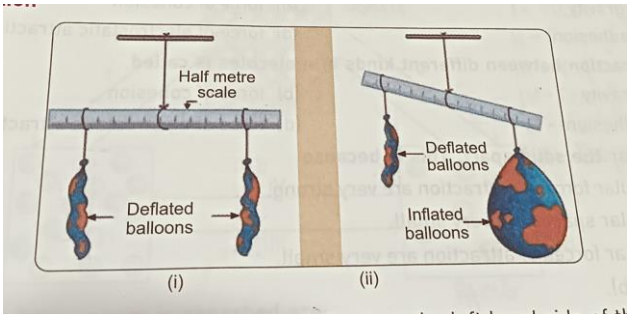
A2)Both are solids. In a wooden block, particles are held strongly in a fixed shape. Wood shavings are small solid pieces that can be arranged into a heap because each piece maintains its own shape, just like rice grains.

Q3)A student tries to heap kerosene oil. Will it form a heap like rice? Give reason.

Answer: No. Kerosene is a liquid. Its particles can flow and slide over each other, so it will spread and take the shape of the container instead of forming a heap.

B)PICTURE BASED QUESTIONS

A.



1)Question: Two identical deflated balloons balance a metre scale. What does this indicate? Answer: Both balloons have equal mass.

2)What property of air is demonstrated by this activity?

Answer: Air has mass.

3)Why is the inflated balloon larger than the deflated balloon?

Answer: Air occupies space inside the balloon.

4)What would happen if both balloons were inflated equally?

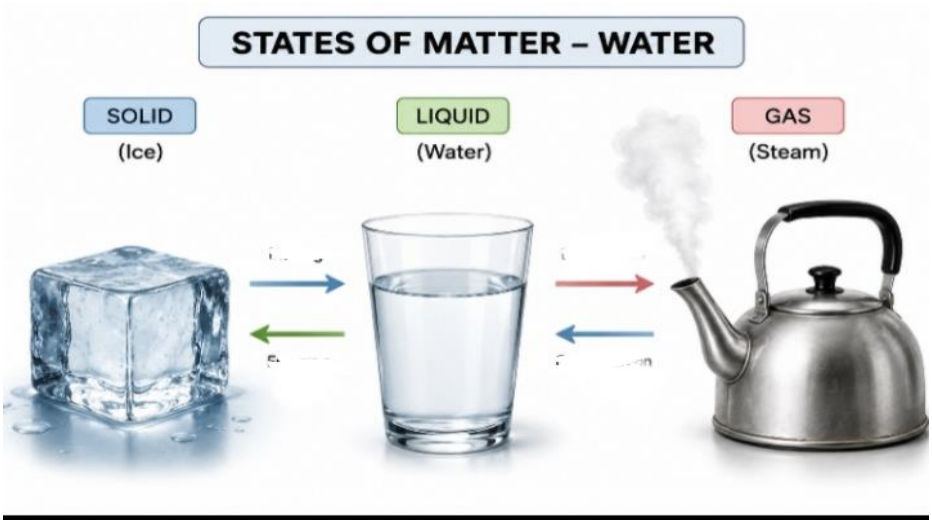
Answer: The scale would remain balanced.

5)Why does the balloon change shape when inflated?

Answer: Air exerts pressure on the balloon walls.

B.

Picture 1: Ice Cube, Water and Steam



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1. Identify the three states of matter shown in the picture.

Answer: Solid, Liquid and Gas.

2. Which state has a definite shape and volume?

Answer: Solid (Ice).

3. Which process changes ice into water?

Answer: Melting.

4. Which process changes water into steam?

Answer: Evaporation/Boiling.

5. In which state are molecules farthest apart?

Answer: Gas.

C.Case Based questions

A.A student opened a perfume bottle in one corner of a classroom. Within a few minutes, students sitting far away could smell the perfume.

Questions

1)Why could students far from the bottle smell the perfume?

Answer: Perfume vapours diffused through the air.

2) Which state of matter is mainly responsible for this process?

Answer: Gas.

3)What does this tell us about gas molecules?

Answer: Gas molecules move freely in all directions.

4) Would the fragrance spread faster on a hot day or a cold day? Why?

Answer: On a hot day because molecules move faster.

5). Name another daily-life example of diffusion.

Answer: Smell of cooking food spreading through a house.

B.A student filled a syringe with air and closed its nozzle. When he pushed the plunger, the air occupied less space.

Questions

1) What property of gases is shown here?

Answer: Compressibility.

2)Why can gases be compressed easily?

Answer: Because they have large intermolecular spaces.

3)Can liquids be compressed as easily as gases? Why?

Answer: No, because liquids have smaller intermolecular spaces.

4)Which state of matter is most compressible?

Answer: Gas.

5) Name one practical application of compressed gases.

Answer: LPG cylinders or CNG tanks.

C)Three containers held a stone, water and air respectively. The stone kept its shape, water took the shape of the container and air filled the entire container.

Questions

1)Which substance has a definite shape and definite volume?

Answer: Stone.

2)Which substance has a definite volume but no definite shape?

Answer: Water.

3)Which substance has neither definite shape nor definite volume?

Answer: Air.

4)Arrange solid, liquid and gas in increasing order of intermolecular spaces.

Answer: Solid < Liquid < Gas.

5)Arrange solid, liquid and gas in decreasing order of intermolecular force.

Answer: Solid > Liquid > Gas.

D.Assertion and Reasoning

For each question, choose the correct option:

A. Both Assertion and Reason are true, and Reason is the correct explanation of Assertion.

B. Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.

C. Assertion is true, but Reason is false.

D. Assertion is false, but Reason is true

1.Assertion (A): Gases can be compressed easily.

Reason (R): The particles in gases are far apart from one another.

Answer: A

2.Assertion (A): Melting is the process of changing a solid into a liquid.

Reason (R): Heat energy increases the movement of particles.

Answer: A

3.Assertion (A): The composition of air may vary from place to place.

Reason (R): Air is a mixture of different gases.

Answer: A

4.Assertion (A): Gases have a fixed shape.

Reason (R): Gas particles move freely in all directions.

Answer: D