

A decorative border surrounds the central text, featuring various science-related icons. On the left, there is a beaker labeled 'Dilute Acid', a test tube with blue liquid, a DNA double helix, and a beaker with green liquid. At the top, there are a test tube with red liquid, a gear, a green crystal, a purple crystal, a magnifying glass, a globe, and a microorganism. On the right, there is a microorganism, a globe, and a microorganism. At the bottom, there are a compass, a rock, a beaker with bubbles, a petri dish with green culture, a Bunsen burner, a metal cart, a gear, a pulley, and a beaker with red liquid.

LITTLE ROSE ACADEMY HIGH SCHOOL

SUBJECT: SCIENCE

CLASS: NINTH (9th)

IS MATTER AROUND US PURE? (DEFINITIONS)

(Note: To understand these concepts better, read through the chapter and write down appropriate examples for each definition provided. Additionally, if you come across any other important definitions or terms that are missing from these notes, feel free to add them to your notebooks.)

Basic Concepts

Pure Substance: A substance that consists of a single type of particle (atoms or molecules) of the same chemical nature.

Mixture: A substance formed by simply mixing two or more pure substances together in any proportion, without any chemical reaction occurring.

Types of Mixtures

Homogeneous Mixture: A mixture that has a uniform composition throughout. Its components cannot be easily seen or separated by simple physical methods.

Heterogeneous Mixture: A mixture that does not have a uniform composition throughout. Its constituents can be easily seen and physically separated.

Solution: A homogeneous mixture of two or more substances.

Solute: The component of a solution that is dissolved in the solvent (usually present in a lesser quantity).

Solvent: The component of a solution that dissolves the other component, the solute (usually present in a greater quantity).

Suspension: A heterogeneous mixture in which the solute particles do not dissolve but remain suspended throughout the bulk of the medium.

Colloid (or Colloidal Solution): A heterogeneous mixture that appears homogeneous, where the particles are intermediate in size between a true solution and a suspension.

Types of Pure Substances

Element: A basic form of matter that cannot be broken down into simpler substances by chemical reactions.

Compound: A pure substance composed of two or more elements chemically combined with one another in a fixed proportion by mass.

Methods of Separation

Evaporation: The process of separating a volatile component (the solvent) from a non-volatile solute by heating.

Centrifugation: The process of separating denser particles from lighter particles by spinning the mixture rapidly.

Sublimation: The process of converting a solid directly into vapor upon heating (used to separate a sublimable volatile substance from a non-sublimable impurity).

Chromatography: The technique used for the separation of those solutes that dissolve in the same solvent.

Distillation: The method used for the separation of components of a mixture containing two miscible liquids that boil without decomposition and have sufficient difference in their boiling points.

Assignments

Force and Laws of motion (Class –IX)

Q1 Action and reaction forces act;

- (a) on different bodies always (b) on same body always
(c) on same body sometimes (d) On different bodies sometimes.

Q2 It is difficult to push a truck parked on road as compare to a small car because;

- a) Inertia of rest car is more as its size is small.
b) Inertia of rest of truck is more as its size is big.
c) Inertia of rest of truck is more as its mass is much more.
d) Inertia of motion of truck is more as its mass is more.

Q3 If mass of a body is in kg, moving with uniform speed in m/s then its momentum is measured in;

- a) Kg cm/s b) kg m/s² c) kg m/s d) kg cm/s²

Q4 which law of motion is also known as law of Inertia?

Q5 A stone is falling from a height, the force acting on it is balanced or unbalanced.

Q6 Rate of change of linear momentum is called..... (fill in the blank).

Q7 A force of 50 Newton exerted on a body of mass 2kg can produce an acceleration of..... (fill in blank)

Q8 Give an expression to relate force and momentum.

Q9 Which has more inertia a box of mass 20kg or a box of mass 200kg ?Give reason to your choice.

Q10 Why is it difficult for fire men to hold hose pipe while putting out fire?

b) Why is a gun far heavier than a bullet?

c) Why do we get backward jerk in a bus as it starts suddenly?

Q11 How does first law of motion lie in second law of motion?

Q12 Define 1 Newton of force. If force of 10 Newton acts on a body, what is its value in cgs system of units?

Q13 Why does gun recoil when a bullet is fired? Derive an expression for recoiling velocity of gun.

Q14 How much force is required to change velocity of a body of mass 10kg from 2m/s to 6m/s.

Is this force balanced or unbalanced.

Q15 A cat of body mass 2.5 kg running with a speed of 2m/s jumps on a stationary skateboard of mass 0.5 kg. Will the skateboard move with cat on it if yes find the velocity of board and cat system?