

**VARADHI  
HIGH SCHOOL LEVEL  
CLASS - 9**

**SCIENCE  
WORKBOOK**



**State Council of Educational Research & Training  
Amaravati, Andhra Pradesh**

**Physical Science**  
**Chapter - 2 LAWS OF MOTION**

**Class:IX**

**Work Sheet - 1**

**Date:** \_\_\_\_\_

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**I. Fill in the blanks**

1. The mass of an object is a measure of \_\_\_\_\_
2. Laws of motion was proposed by \_\_\_\_\_
3. The body which is in motion always tries to move in same direction until some force acts on it. This property is known as \_\_\_\_\_
4. Inertia depends on the \_\_\_\_\_ of the object.

**II Answer the following questions.**

5. What is meant by static Inertia.

\_\_\_\_\_

6. State Newton's first law of motion.

\_\_\_\_\_

7. Which affects the motion of an object?

\_\_\_\_\_

8. What are the units for mass.

\_\_\_\_\_

**III. Read the passage and answer the following questions given below?**

Inertia is a property of matter that resists changes in its state of motion or rest. It depends on the mass of the object. The car has more inertia than a bicycle because of its mass.

9. Do all bodies has same inertia?

\_\_\_\_\_

\_\_\_\_\_

10. What factors can decide the inertia of a body?

\_\_\_\_\_

\_\_\_\_\_

**Physical Science**  
**Chapter - 2 LAWS OF MOTION**

**Class:IX**

**Work Sheet - 2**

**Date:** \_\_\_\_\_

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**I. Fill in the blanks**

1. Momentum = \_\_\_\_\_ x \_\_\_\_\_
2. Newton used the \_\_\_\_\_ phrase to represent the meaning of momentum.
3. The S.I. unit of momentum is \_\_\_\_\_
4. According to Newton's second law of motion  $F = \text{_____} \times \text{_____}$

**II Match the following quantities with their units.**

- |             |           |
|-------------|-----------|
| 5. 1) Force | a) N - S  |
| 2) Momentum | b) Kgs    |
| 3) Mass     | c) Newton |
6. Draw Free Body Diagram.

\_\_\_\_\_

7. What is momentum and write its units.<sup>x</sup>

\_\_\_\_\_

8. State Newton's second law of motion.

\_\_\_\_\_

**III. Read the passage and answer the following questions given below?**

$$\text{Momentum} = \text{mass} \times \text{velocity} = m \times v.$$

Momentum is a vector because velocity is a vector. Hence the direction of momentum is in the direction of velocity.

9. Write the units for momentum.

\_\_\_\_\_

\_\_\_\_\_

10. When does the object acquire momentum.

\_\_\_\_\_

\_\_\_\_\_

**Physical Science**  
**Chapter - 2 LAWS OF MOTION**

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**Work Sheet - 3**

**Date:** \_\_\_\_\_

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**I. Fill in the blanks**

1. The momentum of a 6kg bowling ball with a velocity of 2.2m/s is \_\_\_\_\_
2. Linear momentum of a body is the product of its mass and \_\_\_\_\_
3. The momentum of a ceiling fan when it is rotating \_\_\_\_\_
4. At wood used the system to prove \_\_\_\_\_

**II Answer the following questions.**

5. What is the momentum of a 25kg bicycle with a velocity of 1.5m/s?
6. What force is required to produce an acceleration of  $4\text{m/s}^2$  in an object of mass 3kg.
7. Draw a diagram of at wood machine.
8. Give two daily life examples where you experience inestia.

**III Read the passage and answer the following questions given below?**

A fly collides with the windshield of a fast moving bus. They both experience the same impact force how ever the fly will experience a greats acceleration because of it less weight compared to the bus.

9. Is the impact force experienced, same for fly and the bus?
10. Is the same acceleration experienced by the fly and bus? Why?

**Physical Science**  
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**Work Sheet-4**

**Date:** \_\_\_\_\_

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**I. Fill in the blanks**

1. Impulse is equivalent to the \_\_\_\_\_ that an object experiences during interaction.
2. Forces exerted over a limited time are called \_\_\_\_\_ forces.
3. Law of conservation of momentum states that in the absence of a net external force on the system, \_\_\_\_\_ of the system remains unchanged.
4. Two people push a car for 3S with a combined net force of 200N. Then impulse = \_\_\_\_\_

**II. Answer the following questions.**

5. Change in velocity = \_\_\_\_\_ / \_\_\_\_\_
6. What are the units for impulse.
7. What is impulse.
8. Why does a pole vault jumper land on thick mats of foam?

**III. Read the passage and answer the following questions given below?**

Take two eggs and drop them from a certain height such that one egg falls on a concrete floor and another egg falls on a Cushioned pillow.

9. What changes do you notice in both eggs after they are dropped?
10. Which factor determines whether the egg will break or not.

**Physical Science**  
**Chapter - 5 What is inside the Atom**

**Class:IX**

**Work Sheet - 1**

**Date:** \_\_\_\_\_

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**I. Fill in the blanks**

1. Who proposed that atoms could not be divided \_\_\_\_\_
2. \_\_\_\_\_ are the first sub atoms particles discovered and studies.
3. An atom is identically \_\_\_\_\_
4. Name the tuely charged sub atomic particle \_\_\_\_\_

**II. Match the following**

- | <b>5. Sub atomic particle</b> | <b>discoved</b>        |
|-------------------------------|------------------------|
| i) electron                   | [     ] James chadurek |
| ii) Proton                    | [     ] J.J. Thomson   |
| iii) Neutron                  | [     ] Gold stain     |

6. Who proposed plum feeddery model?

\_\_\_\_\_

7. What is the usual symbol for neutron?

\_\_\_\_\_

8. What is the position of electron inside the atom?

\_\_\_\_\_

**III Read the passage and answer the following questions given below?**

Atoms are made of small particles called Protons,Neutrons and Electrons. Each of these particles are discribed in terms of measurable proparties like mass and charge. Proton and electron have equal and opposite charges. A neutron has no electrical charge.

9. Name the three sub atomic particles present in an atom?

\_\_\_\_\_

10. What is the charge of neutron?

\_\_\_\_\_

**Physical Science**  
**Chapter - 5 What is inside the Atom**

**Class:IX**

**Work Sheet - 2**

**Date:** \_\_\_\_\_

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**I. Fill in the blanks**

1. Alphe particles do not have any \_\_\_\_\_
2. Rutherford used \_\_\_\_\_ foil in his alpha particles to catenary experiment
3. Most of the alpha particles pased through atom in a straight line without any \_\_\_\_\_
4. Most of the space inside the atom is \_\_\_\_\_

**II. Answer the following questions in one sentence.**

5. Who modified thomson model?

\_\_\_\_\_

6. Ruther model is also called as?

\_\_\_\_\_

7. Where is the tuely charged particles placed in an atom?

\_\_\_\_\_

8. Most of the space inside the atom is empty. Who conclded this?

\_\_\_\_\_

**III Read the passage and answer the following questions given below?**

An atom like hydrogen have one electron and one proton. The electon is attracted by the proton in the neclous.

9. Which atom has one electron and one proton?

\_\_\_\_\_

\_\_\_\_\_

10. Electron is attracted by which particles

\_\_\_\_\_

\_\_\_\_\_

**Physical Science**  
**Chapter - 5 What is inside the Atom**

**Class:IX**

**Work Sheet - 3**

**Date:** \_\_\_\_\_

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**I. Fill in the blanks**

1. Who introduced energy levels of an atom.
2. Electrons revolve round the nucleus in certain \_\_\_\_\_ of the atom
3. Bohr's model of atom successfully explains the properties of \_\_\_\_\_
4. \_\_\_\_\_ particle was not discovered until Bohr's model.

**II. Answer the following questions in one sentence.**

5. Electrons are represented by the letters?  
\_\_\_\_\_

6. Electrons must gain energy to move to which energy level.  
\_\_\_\_\_

7. Neutron was discovered in which year.  
\_\_\_\_\_

8. Do the electrons radiate energy while revolving around the nucleus.  
\_\_\_\_\_

**III. Read the passage and answer the following questions given below?**

We studies that mass of neutrons and proton is almost equal and about 1836 times heavier than mass of electron.

9. Which particles mass is almost equal  
\_\_\_\_\_  
\_\_\_\_\_

10. Which particle mass is 1836 times heavier than electron.  
\_\_\_\_\_  
\_\_\_\_\_



**Physical Science**  
**Chapter - 5 What is inside the Atom**

**Class:IX**

**Work Sheet - 4**

**Date:** \_\_\_\_\_

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**I. Fill in the blanks**

1. The shell closest to the nucleus is \_\_\_\_\_
2. The maximum number of electrons present in a shell is given by the formula \_\_\_\_\_
3. Each energy level is further divided into \_\_\_\_\_
4. K shell can accommodate maximum \_\_\_\_\_ electrons.

**II Answer the following questions in one sentence.**

5. Who proposed the rules for distribution of electrons?

\_\_\_\_\_

6.  The given arrangement of electrons belongs to which element?

\_\_\_\_\_

7. Atomic number of carbon is ?

\_\_\_\_\_

8. What is the valency of Mg?

\_\_\_\_\_

**III. Read the passage and answer the following questions given below?**

The number of electrons present in the outmost orbit of an atom is called its valency.

Valency explains the combining capacity of an element with other elements.

9. Electrons present in outmost shell are called as?

\_\_\_\_\_

\_\_\_\_\_

10. Valency of oxygen is ?

\_\_\_\_\_

\_\_\_\_\_

**Physical Science**  
**Chapter - 5 What is inside the Atom**

**Class:IX**

**Work Sheet - 5**

**Date:** \_\_\_\_\_

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**I. Fill in the blanks**

1. Neon and Argon have \_\_\_\_\_ electrons in their outer most shell.
2. Chemically inactive gases are known as \_\_\_\_\_
3. Noble gases except \_\_\_\_\_ have 8 electrons.
4. An outermost shell which has eight electrons is said to possess an \_\_\_\_\_

**II. Answer the following questions in one sentence.**

5. Which elements do not react with other elements to form compounds?

\_\_\_\_\_

6. (2.8.8) This electronic arrangement belongs to which element.

\_\_\_\_\_

7. Name the inert gas elements?

\_\_\_\_\_

8. Name one element which has multiple valency?

\_\_\_\_\_

**III. Read the passage and answer the following questions given below?**

Atoms of elements thus react with other atoms so as to achieve octet in their outer most shell. From this we can conclude that when an element reacts to form compounds their atoms must combine in such way that they can attain stable configuration.

9. Why do atoms of elements react with other elements?

\_\_\_\_\_

\_\_\_\_\_

10. How can the elements form compounds?

\_\_\_\_\_

\_\_\_\_\_

**Physical Science**  
**Chapter - 5 What is inside the Atom**

**Class:IX**

**Work Sheet - 6**

**Date:** \_\_\_\_\_

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**I. Fill in the blanks**

1. Nucleus is the centre of the atom which contains \_\_\_\_\_ and \_\_\_\_\_
2. Elements differ from one another according to number of \_\_\_\_\_ in then atomic nucler.
3. \_\_\_\_\_ is the no.of protons in the nuecleus of an atom.
4. Atomic number is denoted by the letter \_\_\_\_\_

**II. Answer the following questions in one sentence.**

5. No of neutrons of a nucler is denoted by better.

\_\_\_\_\_

6. No of protons and no of neutrons is called ?

\_\_\_\_\_

7.  ${}^9_{19}\text{F}$  what is the number of neutrons?

\_\_\_\_\_

8. What is the mass number of Alluminium?

\_\_\_\_\_

**III. Read the passage and answer the following questions given below?**

The number of nucleons is the total number of protons and neutrons is an atom. It is called atomic mass number and is denoted by Atomic mass number. Atomic mass number of neutron number.  $A=Z+N$

9. What are nucleons?

\_\_\_\_\_

\_\_\_\_\_

10. Atomic mass number is sum of ?

\_\_\_\_\_

\_\_\_\_\_

**Physical Science**  
**Chapter - 5 What is inside the Atom**

**Class:IX**

**Work Sheet - 7**

**Date:** \_\_\_\_\_

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**I. Fill in the blanks**

1. Every element has unique no of \_\_\_\_\_
2. \_\_\_\_\_ number of an element is not unique
3. An atom of hydrogen has \_\_\_\_\_ unites nucleus.
4. There are more than one type of atoms of same \_\_\_\_\_ present in nature in certain cases

**II. Answer the following questions in one sentence.**

5. Which atom has two nucleons in its nucleus?

\_\_\_\_\_

6. Which no of particles in hydrogen atom is not same?

\_\_\_\_\_

7. How many electrons are present in tritoun?

\_\_\_\_\_

8. How many protons are present in hydrogen deuteriumand tritium?

\_\_\_\_\_

**III. Read the passage and answer the following questions given below?**

The atoms of same element which have the same no of protons but have different no of netrons are called isolopes. Qeuterium and tutium are the isotopes of hydrogen the chemical properties of isotopes are similar. But then phyncal properties are different.

9. What are the isotopes of hydrogen?

\_\_\_\_\_

\_\_\_\_\_

10. Which properties of isotopes are similar and which properties are different?

\_\_\_\_\_

\_\_\_\_\_

# Physical Science

## Chapter - 5 What is inside the Atom

Class:IX

Work Sheet - 8

Date: \_\_\_\_\_

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### I. Fill in the blanks

1. Which has maximum no. of 36 Isotopes \_\_\_\_\_
2. Isotopes of chlorine occurs in nature in two isotpic masses with \_\_\_\_\_ unitic units
3. The average atomic mass of chlorine is \_\_\_\_\_
4. Units for atomic mass is \_\_\_\_\_

### II. Answer the following questions in one sentence.

5. What is the percentage of atomic mass 35 U present in nature?

\_\_\_\_\_

6. Atomic mass of chlorine is ?

\_\_\_\_\_

7. Write the isotopes of carbon.

\_\_\_\_\_

8. Which Isotope is used as fuel in nuclear reactors?

\_\_\_\_\_

### III. Read the passage and answer the following questions given below?

Some isotopes are used in medical mystences solving. The isotope of iodine is used in the treatment of goitre. The isotope of cobalt is used in the treatment of cancer.

9. Which isotope is used in the treatment of goitre?

\_\_\_\_\_

\_\_\_\_\_

10. The isotope of cobalt is used for the treatment of ?

\_\_\_\_\_

\_\_\_\_\_