

AUTUMN HOLIDAY WORKSHEET PHYSICS

1- Multiple choice questions.

1- Which change can occur when you add heat energy to water? option-b: the water change from a liquid to a gas.

2- What is sublimation? option-c: the process by which a solid changes directly into a gas.

3- Evaporation is when option-b: A substance changes from a liquid to a gas (or vapor) naturally.

4- What are states of matter? option-d: A physical forms in which a substance can exist; includes solid, liquid, gas and plasma.

5- Force changes the option-a: motion, speed and shape.

of a body.

6- Which of the following is responsible for wearing out of bicycle tyres option-c: Frictional force

7- Force of friction depends on option-a: roughness, smoothness and inclination of surface.

8- A toy car released with the same initial speed will travel farthest on option-b: polish marble surface

9- Friction is a option-b: contact force

10- Which of the following produces least friction?

option-b: rolling friction

Choose the term to fill in the blanks.

11- Force has to be applied to change the direction of a ~~object~~ moving object.

12- When an elephant drags a wooden log over the land, the forces that are applied on the log are muscular force, gravitational force and frictional force.

13- A ball was set rolling on a large table. If its motion is to be changed, a friction will have to be applied on it.

14- The force of friction always acts against the motion.

15- One or more forces are acting in the following examples. Name them.

(a) An object falling from a tall building.

Gravitational force.

(b) An aeroplane flying in sky. Mechanical and gravitational force.

(c) Squeezing sugarcane juice with a squeezer. Mechanical force and muscular force.

(d) Winnowing pod grain. Muscular force

16 - Convert the follow

- a) 10 quintal = 1 metric ton
- b) 1 cm = 0.01 metre.
- c) 1 mm = 0.001 metre.
- d) 1 yard = 3 ft
- e) 1 decimetre = 0.1 metre.
- f) 1 decametre = 10 metre.
- g) 1 hectometre = 100 metre.
- h) 1 gram = 0.001 kg
- i) 1 mg = $1/1000000$ kg
- j) 1 lb = 453.59 g
- k) 1 h = 3600 s
- l) 1 year = 3.15×10^7 s
- m) 1 day = 86400 s
- n) 1 decametre² = 100 m²
- o) 1 hectare = 10000 m²
- p) 1 km² = 1000000 m²
- q) 1 dm² = 100 cm²
- r) 1 cm² = 0.0001 m²
- s) 1 mm² = 1×10^{-6} m²
- t) 1 square yard = 0.836 m²
- u) 1 square ft = 0.0929 m²
- v) 1 acre = 4046.85642 m²

17 - What are the effects of friction?

Ans: The effects of friction are:

- i) Friction opposes motion
- ii - Friction always acts in a direction opposite to the direction of motion.
- iii - Friction produces heat.
- iv - Friction causes wear-tear.

18 - What are the factors affect force of friction and how?

Ans: factors affecting force of friction by:

i- The smoothness of the surface: It is impossible to have perfectly smooth surfaces. Each surface will have its own roughness. This roughness combined with the roughness of sliding object will give rise to friction.

ii-5 The nature of medium (solid, liquid or gas) in which the body moves: Fluid friction is always less than solid friction. Fluid friction is the friction between an object and a fluid (liquid or gas). For example, lubricant works on the principle of fluid friction. During lubrication, a viscous fluid acts as a layer between two sliding surfaces and reduces the friction between them.

iii- The weight of the body on the surface: Heavier objects are more difficult to move and stop. Heavier objects resist change more than lighter objects. Example: pushing a bicycle or a car, or stopping them once moving. The more massive the object (more inertia) the harder it is to start or stop.

19- Define static friction, sliding friction and rolling friction.

Ans: Static friction is a force that hinders the movement of an object moving along the path. Sliding friction is the friction between two bodies that are in sliding contact also called kinetic friction.

Rolling friction occurs when a wheel, ball, or cylinder rolls freely over a surface, as in ball and roller bearings.

20- What are the disadvantages of friction?

Ans: The advantages of friction are:

i- Friction opposes the motion of a body, so it decreases the efficiency (i.e., more force is needed to move a body).

ii - Friction causes wear and tear in the moving parts.

iii - Friction produces heat.

21 - Why does a matchstick catch fire when rubbed on the rough surface of the box?

Ans: On rubbing the match stick in the rough surface, the friction converts this work into heat. The heat raises the temperature of the chemical present on the matchstick head to its ignition temperature. Due to this the chemical substance catches fire and the match stick starts burning.

22 - The sole of shoes get worn after some time. Explain why?

Ans: The soles of shoes are worn out due to the effect of friction. The soles of shoes increase the friction between surfaces because it makes the surface of the shoes rough. Thus, this is due to the fact that friction causes wear and tear of objects and reduces the life of the object.

23 - Convert the following quantities as indicated

(a) 12 inch = 1 ft

(b) 1 ft = 30.48 cm

(c) 20 cm = 0.2 m

(d) 4.2 m = 420 cm

(e) 0.2 km = 200 m

(f) 0.2 cm = 2 mm

(g) 1 yard = 0.91 m

24 - Define -

- Applied force: An applied force is a force that is applied to an object by a person or another object.
- Tension: It is a force developed in a rope, string, or cable when stretched under an applied force.
- Frictional force: Friction is the force that opposes motion between any surfaces that are in contact.

25- Compare properties of solid, liquids and gases (any 3)

Ans: i- ^{Properties of solid -} A solid has a definite shape and size. (Length, area and volume).

ii- A solid can not be compressed.

iii- A solid can not flow.

Properties of liquid:

i- Liquids have a definite volume, but no definite shape because they acquire the shape of the container in which they are kept.

ii- Liquids negligibly compressible.

iii- Liquids can flow.

iv- Properties of gases:

i- A gas has neither a definite shape nor a definite volume. It acquires the shape and volume of its container.

ii- Gases can flow.

iii- Gases are not rigid.

27- Why?

(a) Machines are oiled from time to time.

Ans: Machines are oiled from time to time, to reduce friction between its body parts. By doing so, the lifespan of a machine increases.

(b) An object thrown upwards comes down after reaching a point.

Ans: An object thrown upwards comes down after reaching a point. This is because of the Earth's gravitational pull.

(c) Powder is sprinkled on a carrom board.

Ans: Powder is sprinkled on a carrom board to reduce friction between the striker/carrom coins and the carrom board. The powder smoothens the surface of the board and thus the striker and coins move on it easily.

28 Explain increasing and decreasing friction with suitable examples.

Ans: When we suddenly push brakes of vehicle of high speed, it creates a lot of friction, it means increase in friction. We pour oil in hinges of door to make it free to open and close, it means decrease in friction.

By making the surface rough, friction force can be increase. Examples of increasing friction - the tyres of a motor car and bicycles are made rough to increase the friction. When a ground become slippery with rain or water splashing it is made rough by spreading sand to increase the friction.

29. Cartilage is present in joints of our body, which helps in their smooth movement. If cartilage wears off, how would this affect the movement of joints?

Ans: Cartilage is found in our body's joint and to minimise friction during joint movement. However, as this cartilage wears away, the power of friction increases, reducing the ability of movement and causing joint pain.

30- Define mass. State its (i) S.I (ii) C.G.S and (iii) F.P.S units. How are they related?

Ans: Mass is the quantitative measure of inertia, a fundamental property of all matter.

(i) S.I. unit of mass is Kilogram (kg).

(ii) C.G.S unit of mass is Gram (g).

(iii) F.P.S unit of mass is pound (lb).

31- Convert the following quantities as indicated:

(a) $200 \text{ kg} = 0.2 \text{ metric tonne}$

(b) $150 \text{ kg} = 1.5 \text{ quintal}$

(c) $10 \text{ lb} = 4.536 \text{ kg}$

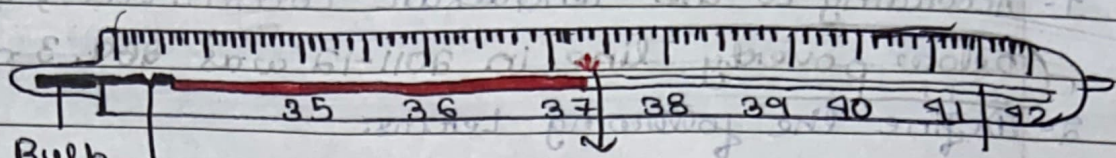
(d) $250 \text{ g} = 0.25 \text{ kg}$

(e) $0.01 \text{ kg} = 10 \text{ g}$

(f) $5 \text{ mg} = 5 \times 10^{-6} \text{ kg}$

32-20 What is clinical thermometer? State its. Draw a labeled neat diagram of a clinical thermometer showing the range of temperature marked on it.

Ans: Doctors use a special thermometer called the clinical thermometer for measuring the temperature of the patient's body. This thermometer has markings from 35°C to 43°C . It has a slight bend or kink in the stem just above the bulb, this kink is called the constriction prevents the mercury from falling back all by itself. The temperature of a healthy person is 37°C and is marked by a red arrow. What is the normal temperature of the human body? How is it indicated in a clinical thermometer?



Clinical thermometer

33- Fill in the blanks.

- (a) The S.I. unit of length is metre, of time is second, of mass is kilogram.
- (b) $^{\circ}\text{C}$ is the unit of temperature.
- (c) 1 metric tonne = 10 quintal = 1000 kg
- (d) The zero mark in Celsius thermometer is the melting point of ice.
- (e) The thermometer used to measure the human body is called the clinical thermometer.

15 The normal temperature of human body is 37°C or 98.6°F

34- When crystal of potassium permanganate is placed in a beaker, purple color spreads throughout the water. What does this observation tell us about the nature of potassium permanganate and water? Explain with an activity.

Ans! The observation of purple colour spreading throughout the water is that the crystal of potassium permanganate is made up of many small particles and these particles of potassium permanganate occupy the spaces between them.