

# Autumn Holiday Homework

## Physics

Date

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1) Which change can occur when you add heat energy to water?  
ans) Water can change from liquid to a gas.

2) What is sublimation?  
ans) The process by which a solid changes directly into a gas.

3) Evaporation is when  
ans) a substance changes from a liquid to a gas naturally.

4) What are the states of matter?  
ans) The physical forms in which a substance can exist, includes solid, liquid, gas and plasma.

5) Force changes the  
ans) Motion of body, speed of body and shape of body.

6) Which of the following is responsible for wearing out of bicycle tyres?  
ans) c) Frictional force.

7) Force of friction depends on  
ans) roughness, smoothness and inclination of surface.

8) A toy car released with the same initial speed will travel farthest on  
ans) b) polished marble surface.

9) Friction is a  
ans) b) contact force.

10) Which of the following produces least friction?  
ans) b) Rolling friction

1) Force has to be applied to change the direction of moving object.

2) 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.

3) A ball was set rolling on a large table. If its motion is to be changed, a force will have to be applied on it.

4) The force of friction always acts against the motion.

15) a) An object falling from a tall building  
ans) Gravitational force

b) An aeroplane flying in sky  
ans) Mechanical force and Gravitational force

c) Squeezing sugar cane juice with a squeezer  
ans) Muscular force

d) Winnowing food grain  
ans) Muscular and Gravitational force

- 16) a) 10 quintal = 1 metric ton
- b) 1 cm = 0.01 metre
- c) 1 mm =  $\frac{1}{1000}$  metre
- d) 1 yard = 3 ft
- e) 1 decimetre =  $\frac{1}{10}$  metre
- f) 1 dekametre = 10 metre

- i) 1 hectometre = 100 metres
- ii) 1 gram =  $\frac{1}{1000}$  kg
- iii) 1 mg =  $10^{-6}$  kg
- iv) 1 lb = 453.59 g
- v) 1 h = 3600 s
- vi) 1 year =  $317 \times 10^7$  s
- vii) 1 day = 86400 s
- viii) 1 decametre<sup>2</sup> = 100 m<sup>2</sup>
- ix) 1 hectare<sup>2</sup> = 10000 m<sup>2</sup>
- x) 1 km<sup>2</sup> = 1000000 m<sup>2</sup>
- xi) 1 dm<sup>2</sup> = 100 cm<sup>2</sup>
- xii) 1 cm<sup>2</sup> =  $10^{-4}$  m<sup>2</sup>
- xiii) 1 mm<sup>2</sup> =  $10^{-6}$  m<sup>2</sup>
- xiv) 1 square yard = 0.836 m<sup>2</sup>
- xv) 1 square ft = 0.09290 m<sup>2</sup>
- xvi) 1 acre = 4046.85 m<sup>2</sup>

17) Sol) The effects of friction are :-

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

18) ans) The factors affecting the force of friction are :-

- i) The smoothness of the surface : The force of friction is more between rough surfaces and less between smooth surfaces.
- ii) The nature of medium in which the body moves.
- iii) The weight of the moving body on the surface.  
The greater the weight of moving body on a surface the more the force of friction and vice-versa.

19) ans) Static friction : The maximum force exerted by a surface on a body so long as it remains stationary is called the force of static friction.

Sliding friction:- The minimum force required to keep the body moving over a surface, such that it moves equal distance in equal time intervals of the time is called the force of sliding friction.

Rolling friction:- The minimum force required to roll a body on a surface is called the force of rolling friction.

2) The disadvantages of friction are:-

i) It reduces efficiency

ii) It causes wear and tear

iii) It produces heat

iv) It opposes motion.

3) The striking surface of the matchbox when rubbed with a match stick produces friction due to its rough surface. Friction produces heat and hence the matchsticks starts to burn.

4) When we walk on road, the friction will occur between the soles of our shoes and road so that slipping can be prevented. This frictional force causes the wearing out of the shoe soles.

23) i)  $12 \text{ inch} = 1 \text{ ft}$

ii)  $1 \text{ ft} = \underline{\hspace{2cm}}$

ans)  $1 \text{ inch} = 2.54 \text{ cm}$

$1 \text{ ft} = 12 \text{ inch} = 12 \times 2.54 \text{ cm} = 30.48 \text{ cm}$

$\therefore 1 \text{ ft} = 30.48 \text{ cm}$

ii)  $20 \text{ cm} = 0.2 \text{ m}$

iii)  $4.2 \text{ m} = 420 \text{ cm}$

ans)  $1 \text{ m} = 100 \text{ cm}$

$4.2 \text{ m} = 100 \times 4 + 20 \text{ cm}$   
 $= 420 \text{ cm}$

e)  $0.3 \text{ km} = 300 \text{ m}$

f)  $0.2 \text{ cm} = 2 \text{ mm}$

g)  $1 \text{ yard} = 0.9 \text{ m}$

ans)  $1 \text{ inch} = 2.54 \text{ cm}$

$1 \text{ foot} = 12 \text{ inch} = 12 \times 2.54 \text{ cm} = 30.48 \text{ cm}$

$1 \text{ yard} = 3 \text{ feet} = 3 \times 30.48 \text{ cm} = 91.44 \text{ cm} = 0.91 \text{ m}$

2) (a) Force - is that cause which changes the state of a body (either, the state of rest or the state of motion or the direction of motion) or changes the size or shape of the body.

i) The force of tension is a contact force that occurs when a load is suspended on a string.

ii) Friction is the force that opposes the relative motion between the two surfaces in contact with each other.

	Liquid	Gases
25) Solid		
1) It has a definite volume and a definite shape.	It has a definite volume but no definite shape.	It neither has a definite volume nor a definite shape.
2) The molecules are closely packed.	The molecules are loosely packed.	The molecules are wide apart.
3) The intermolecular forces are very strong.	The intermolecular forces are moderate.	The intermolecular forces are weak.

26) Physical conditions like temperature and pressure affect the state of matter. When thermal energy is added to a substance, its temperature <sup>or decreases</sup> increases, which can change its state. For ex: - solid changes into liquid on heating & liquid changes into solid on freezing, etc.

27) i) A machine is oiled from time to time to reduce friction between its body parts.

ii) An object thrown up comes down after reaching a point due to gravitational pull of Earth.

iii) We sprinkle fine powder on carrom board to reduce friction between the board and the dots. Therefore the dots can effortlessly move on the board while playing.

28) ans) When we suddenly push brakes of vehicle of high speed, it creates a lot of friction. We pour oil in hinges of door to make it free to open and close.

29) ans) Cartilage is found in our body's joints and helps to minimise friction during the joint movement. However, as this cartilage wears away, the power of friction increases reducing the fluidity of movement and causing joint pain. This increases friction which makes movement more difficult and causes joint pain.

30) ans) The mass is the amount of matter contained in a substance.

i) The S.I. unit of mass = kilogram (kg)

ii) The unit of mass in C.G.S. system = Gram (g/gm)

iii) The unit of mass in F.P.S system = Pound (lb)

i) 1 kilogram = 1000 gram

ii) 1 pound (lb) = 453.59 gm

31) i) 200 kg = 2 metric tonne      iv) 250g = 0.250 kg

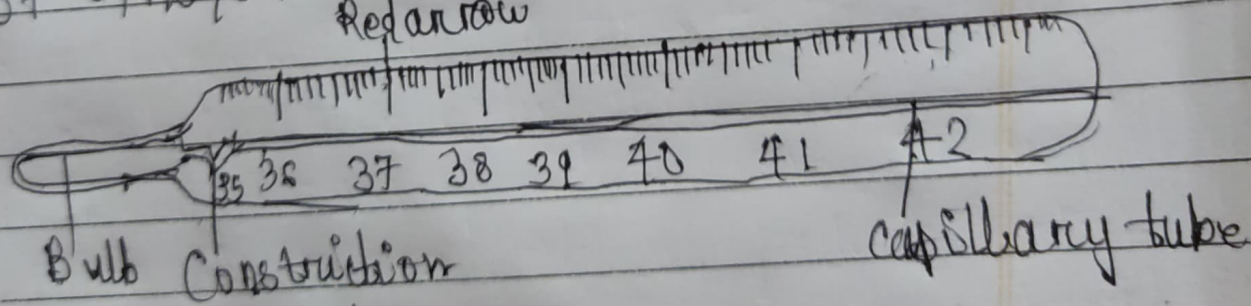
ii) 150 kg = 15 quintal

v) 0.1 kg = 10 g

iii) 10 lb = 4.5359 kg

vi) 5 mg =  $5 \times 10^{-6}$  kg

32) Doctors use a special thermometer called the clinical thermometer for measuring the temperature of the patient's body. This thermometer has the markings from  $35^{\circ}\text{C}$  to  $42^{\circ}\text{C}$ . It has a slight bend or kink in the stem just above the bulb. This kink is called the constriction. This construction. This constriction prevents the mercury from falling back all by itself. The temperature of a healthy person is  $37^{\circ}\text{C}$  or  $98.6^{\circ}\text{F}$ . This temperature is marked by a red arrow. To measure the temperature of the patient's body, its bulb is kept either below the tongue or under the arm's pit of the patient for about a minute. Then the thermometer is taken out and its reading is noted. When the temperature of patient's body is above  $37^{\circ}\text{C}$ , he/she is said to suffer from fever.



33) metre, second, kilogram  
temperature

- iii) 100 kg
- iv) ice
- v) clinical
- vi)  $37^{\circ}\text{C}$ ,  $98.6^{\circ}\text{F}$



Q. The observation of purple colour spreads 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. Another conclusion is potassium permanganate and water are made up of very tiny particles.