AUTUMN

HOLIDAY HOMEWORK

classmate
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I. 1. Which change can occur when you add heat energy to water?

Ans⇒ The water can change from a liquid to gas

2. What is sublimation?

Ans⇒ The process by which a solid changes directly into a gas

3. Evaporation when

Ans⇒ A substance changes from a liquid to a gas (or vapour) naturally

4. What are states of matter?

Ans⇒ The physical forms in which a substance can exist; includes solid, liquid, gas and plasma

5. Force changes the

Ans⇒ All of these

6. Which of the following is responsible for wearing out of bicycle tyres?

Ans⇒ Frictional force

7. Force of friction depends on

Ans⇒ All of these

8. A toy car released with the same intial speed will travel farthest on

Ans⇒ Polished marble surface

9. Friction is a

Ans⇒ Contact force

10. Which of the following produces least friction?

Ans⇒ Rolling friction

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

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

13. 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.

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

15. a. An object falling from a tall building:

Gravitational force

b. An aeroplane flying in the sky:

Gravitational force, Frictional force

c. Squeezing sugarcane juice with a squeezer:

Muscular force

d. Winnowing foodgrain:

Muscular force, Gravitational force

16. a. 10 quintal = 1 metric tonne

b. 1 cm = $\frac{1}{100}$ metre

d. 1 yard = 3 ft

f. 1 decametre = 10 metre

c. 1 mm = $\frac{1}{1000}$ metre

e. 1 decimetre = $\frac{1}{10}$ metre

g) 1 hectometre = 100 metre

h) 1 gram = $\frac{1}{1000}$ kg

i) 1 mg = $\frac{1}{1000000}$ 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 decametre^2 = 100 m^2

o) 1 hectare = 10000 m^2

p) 1 km^2 = 1000000 m^2

q) 1 dm^2 = 100 cm^2

r) 1 cm^2 = $\frac{1}{10000}$ m^2

s) 1 mm^2 = $\frac{1}{1000000}$ m^2

t) 1 square yard = 0.836 m^2

u) 1 square ft = 0.09290 m^2

v) 1 acre = 4046.856 m^2

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 and tear.

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

Ans⇒ Factors affecting force of friction are:-

(i) The smoothness of the surface:

The force of friction will be more in rough surfaces and less in smooth surfaces.

(ii) The nature of medium (solid, liquid or gas) in which the body moves:

A solid, liquid or gas, all exert the force

of friction on a moving body. The force of friction ~~it is less~~ between a solid and another solid is more, it is less between a solid and a liquid and still less between a solid and a gas.

(11) The weight of the moving body on the surface:

Greater ~~we~~ the weigh of the moving body on the surface, more is the force of friction on the body by the surface.

19. Define static friction, sliding friction & rolling friction.

Ans→ Static friction: The maximum fore exerted by a body on a surface so long it remains stationery is called static friction.

Sliding friction: The minimum force required for a body to move over a surface such that it covers equal distance

20. What are disadvantages of friction?

Ans⇒ The disadvantages of friction are:-

(i) Friction produces heat which damages the moving parts of the machine.

and

(ii) Friction causes wear, tear of contacting surfaces. This reduces the life of machine part, shoesoles and wheels of vehicles.

(iii) A lot of energy is wasted due to friction to overcome it before moving.

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

Ans⇒ A matchstick catches fire when rubbed on the the rough surface of the box as the friction changes the work to heat as the molecules moves faster. The heat increases the temperature to the ignition temperature of the matchstick. So, the matchstick ~~st cha~~ catches fire and starts burning.

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

Ans→ The sole of shoes get worn after some time due to the frictional force. Frictional force causes wear and tear of the contacting surfaces. So, the frictional force between the ~~shoesole~~ soles of the shoes and the ground reduce the life of the soles of the shoes.

23. a) 12 inch = 1 ft

b) 1 ft = 30.48 cm

c) 20 cm = 0.2 m

= 1 cm = $\frac{1}{100}$ m

= 20 cm = $\frac{20}{100}$ m

= 0.2 m

d) 4.2 m = 420 cm

= 1 m = 100 cm

= 4.2 m = 4.2 × 100 cm

= 420 cm

e) 0.2 km = 200 m

= 1 km = 1000 m

= 0.2 km = 0.2 × 1000 m

= 200 m

f) 0.2 cm = 2 mm

= 1 cm = 10 mm

= 0.2 cm = 0.2 × 10 mm

= 2 mm

g) 1 yard = 0.91 m

24. i) Applied force - The force that we apply on an object is called applied force.

ii) Tension - A force is produced when a string is tied to the hook and a load suspened to it. The force which increases the length of string is the tension force.

iii) Frictional force - The force which slows down the motion of a body in contact ~~wint~~ with the surface of another body is called frictional force.

25.

Properties	Solids	Liquids	Gases
Mass	Definite	Definite	Definite
Volume	Definite	Definite	Indefinite
Shape	Definite	Indefinite, acquires the shape of container.	Indefinite, acquires the shape of container.

26. Most substances can change from one state to another under different conditions of temperature and pressure. Explain with examples.

Ans⇒ The change of state of ~~matter~~ matter either from solid to liquid or liquid to gas is brought by imparting heat energy to it at a particular temperature.

Ex- When a solid like ice is heated it changes to liquid water as by heating ice the amplitude of vibrations of the molecule increase and a stage is reached when they acquire more energy and overcome their force of attraction and become free to move. So, ice changes to water.

Pressure when applied on an object, it cools the object as it brings the molecules more closer which cools the object.

Ex- A gas like LPG when pressurized in a cylinder becomes liquefied as its molecules ~~come~~ come closer which cooled it. ~~So, LPG liquefied when kept in a cylinder in a very~~ form
So, LPG is found liquefied, when kept pressurized in a cylinder.

27.a. Machines are oiled from time to time.

Ans⇒ Machines are oiled from time to time as it reduces friction as oil acts as lubricant and helps the machines to slide smooth and perform better.

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

Ans⇒ An object thrown upwards comes down after reaching a point due to gravitational force of the Earth. The Earth attracts all objects towards its centre with its gravitational force. The Earth must have also attracted the object. So, the object thrown upwards comes down after reaching a point.

c. Powder is sprinkled on a carrom board.

Ans⇒ Powder is sprinkled on a carrom board as it reduces friction as the powder acts as a lubricant and helps in smooth movement of the striker.

28. Explain increasing and decreasing friction with suitable examples.

Ans⇒ We can increase friction with the following ways:-

① By making the surfaces rough:

Rough surfaces have better grip on each other.

Ex- We sometimes sprinkle sand on surfaces to make them rough ~~as it incre~~ to increase friction.

⑪ By using dry surfaces:

Dry surfaces have more friction and wet surfaces have less friction.

Ex- When water is fell on the ground we slip as it reduces friction.

(iii) By increasing the weight:

By increasing the weight of the moving body, friction increases which develops better grip between the body and the surface on which the body moves.

Ex - It is easy to move a empty trolley than a full trolley as it increases friction by increasing the weight.

We can decrease friction with the following ways:-

(i) By making the surfaces smooth:

The surfaces are made smooth by polishing them.

Ex - Roads are cemented to make them smooth.

(ii) By use of lubricants:

Oiling or lubrication (with oil or grease) reduces friction.

Ex- Machines are oiled from time to time to red friction.

(iii) By the use of ball bearings:

Rolling friction is much less than the sliding friction. Therefore, in place of wheels and axles, we use ball bearings to reduce friction.

Ex- We use ball bearings in cycles to reduce friction which changes sliding friction to rolling friction.

(iv) By streamlining:

Like solids, liquids and gases ~~offer~~ also offer friction to the bodies moving through them. ~~Gases offer~~ The friction experienced by a body moving in a liquid or a gas can be reduced by giving a special shape to the body.

Ex- Aeroplanes are streamlined to reduce the friction while moving in air.

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 helps in the smooth movement of joints as it reduces the friction. If the cartilage wears off the friction between the joints ~~and red~~ increases ~~and reduces~~ due to reduction of lubrication 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 of a body is the quantity of matter contained in it.

The S.I. unit of mass is kilogram which in short is written as kg.

The unit of mass in C.G.S system is centimetre (symbol - cm)

The unit of mass in F.P.S. system is pound (symbol - lb)

Relationship between kilogram, gram and pound

$1\ g = \frac{1}{1000}\ kg = 10^{-3}\ kg$

$1\ lb = 453.59\ g$

$1\ lb = 0.45359\ kg$

31.a) $200\ kg = \underline{0.2}$ metric tonne

$= 1\ kg = \frac{1}{1000}$ metric tonne

$= 200\ kg = \frac{200}{1000}$ metric tonne

$= 0.2$ metric tonne

b) 150 kg = 1.5 quintal

= 1 kg = $\frac{1}{100}$ quintal

= 150 kg = $\frac{150}{100}$ quintal

= 1.5 quintal

d) 250 g = 0.25 kg

= 1 g = $\frac{1}{1000}$ kg

= 250 g = $\frac{250}{1000}$ kg

= 0.25

c) ~~d)~~ 10 lb = _____ kg

= 1 lb = 0.45359 kg

= 10 lb = 0.45359 × 10 kg

= 4.5359 kg

e) $0.01\ kg = \underline{10}\ g$

• $1\ kg = 1000\ g$

$= 0.01\ kg = 0.01 \times 1000\ g$

$= 10\ g$

f) $5\ mg = \_\_\_\_\_\ kg$

$1\ mg = \frac{1}{1000}\ g$

$= 5\ mg = \frac{5}{1000}\ g$

$= 0.005\ g$

$1\ g = \frac{1}{1000}\ kg$

$= 0.005\ g = \frac{0.005}{1000}\ g$

$= 0.000005\ g$

33. a) The S.I. unit of length is metre, of time is second of mass is kilogram.

b) °C is the unit of temperature.

c) 1 metric tonne = 1000 kg

d) The zero mark in Celsius thermometer is the melting point of ice.

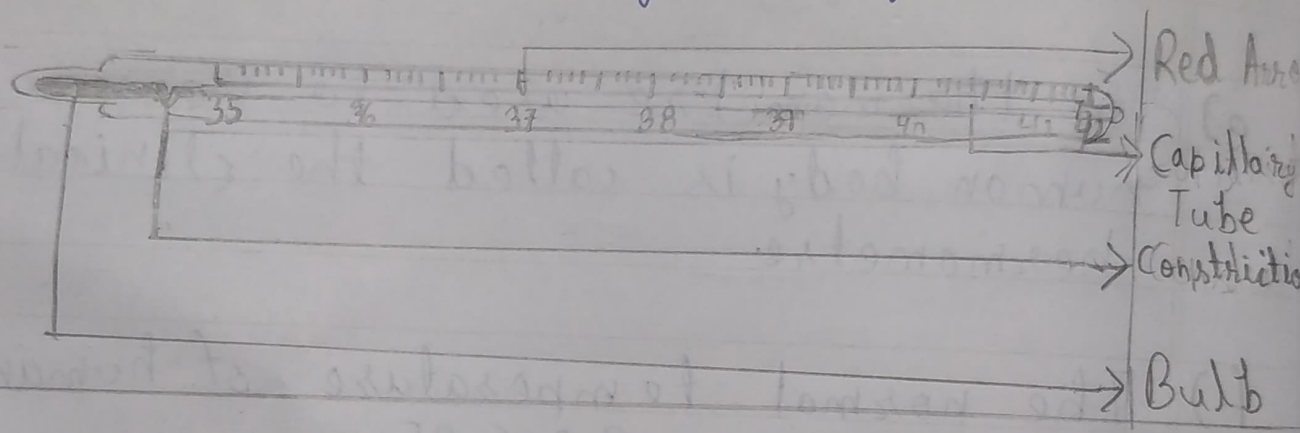
e) The thermometre used to measure the human body is called the clinical thermometre.

f) The normal temperature of human body is 37 °C or 98.6 °F.

32. What is a clinical thermometre? State its special feature. Draw a labeled neat diagram of a clinical thermometer showing the range of temperature marked on it. What is the normal temperature of the human body? How is it indicated in a clinical thermometer?

Ans→ The special thermometre used to measure the temperature of a patient's body is called clinical thermometre.

It measures from 35°C to 42°C. It has a slight bent kink in the stem just above the bulb. This kink is called constriction. The constriction prevents the mercury from falling all by itself.



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

To measure the temperature of a patient's body, its bulb is either kept below the tongue or under the arm's pit. Then the thermometre is taken out and the reading is noted. When the temperature of the patient's body is more than 37°C, he is said to suffer with fever.

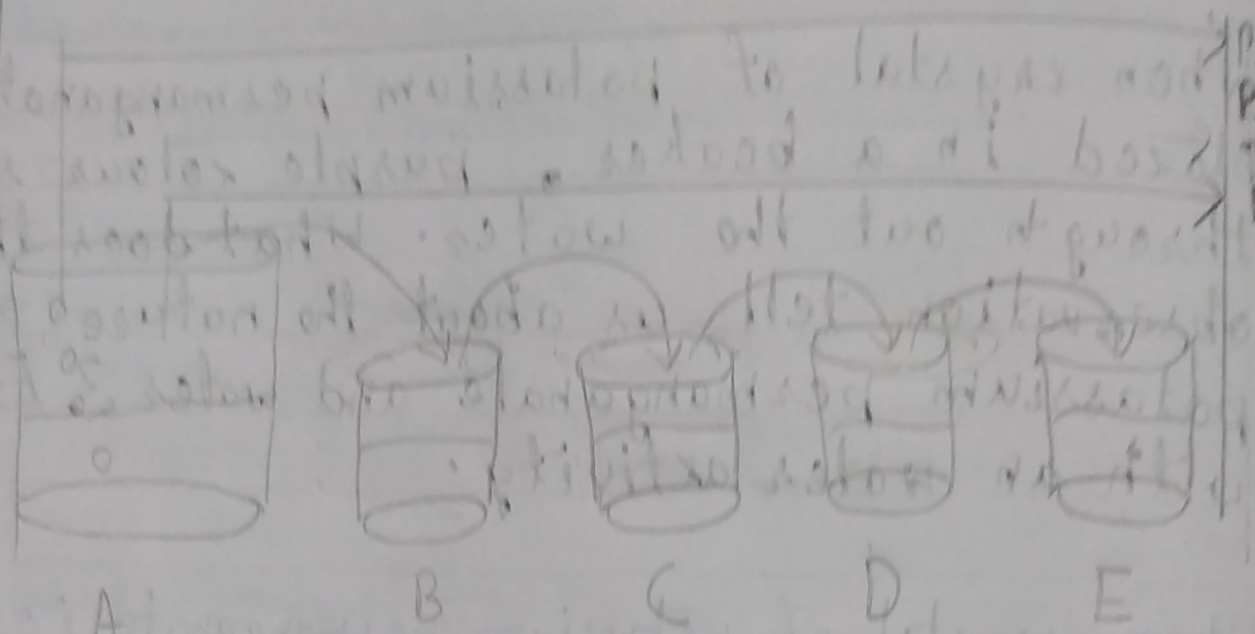
34. When crystal of potassium permanganate is placed in a beaker, purple colour spreads through out the water. What does this observation tell us about the nature of potassium permanganate and water? Explain with an ~~water~~ activity.

Ans⇒ When crystal of potassium permanganate is placed in a beaker, purple colour spreads through out the water. This ~~ex~~ observation shows that a single crystal of potassium permanganate is made up of a large number of tiny particles which can colour a large volume of water. i.e. the particles of matter are very small in size.

To prove this we have to peform the following ~~following~~ activity:

Aim: To show that particles of matter are very small in size.

Materials required: 2-3 crystals of potassium permanganate, 5 beakers, ~~and~~ water.



Experiment showing that matter is made up of very small particles

Prodecure:

We will take 100ml of water in a beaker A and dissolve 2-3 crystals of potassium permanganate. We will get a deep coloured solution.

Take 10ml of this solution and ~~make this~~ mix ~~this~~ it with 90ml of water in beaker B. We will observe that the colour of the solution is not as dark as solution in beaker A.

Take 10ml of the solution from beaker B and mix it with 90 ml of water taken in beaker C. The colour of the solution becomes still lighter.

Keep on diluting the potassium permanganate solution like this a number of ~~this~~ times and ~~you will fe~~ we will find that the colour of the solution becomes fainter and fainter, but it is still pink.

Observation:

This activity shows that a single crystal of potassium permanganate is made up of a large ~~amou~~ number of tiny particles which can colour a large volume of water.

Conclusion:

This shows that the particles of matter are very small in size.