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

It) The water can change from liquid to gas.

2. What is sublimation?

It) the process by which solid changes directly into a gas.

3. Evaporation is when

It) a substance changes from a liquid to a gas (or vapour)

4. What are the states of matter

It) The physical forms in which a substance can exist; includes solid, liquid, gas and plasma.

5. Force changes the

It) all of these

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

It) Frictional force.

7. Force of friction depends on
a) all of these
8. A toy car released with the same initial speed ~~with~~ will travel fastest on
b) polished marble surface.
9. Friction is a ~~non-contact~~
a) contact force
10. Which of the following produces least friction?
a) Rolling friction
- Choose the term to fill in the blanks.
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~~ 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 force will have to be applied on it.

11. The force of friction always acts against the motion

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

a) An object falling from a tall building...

Ans. Gravitational force

b) An aeroplane flying in the sky...

Ans. Mechanical force, frictional force, Gravitational force

c) Squeezing sugarcane juice with a squeezer...

Ans. Mechanical force, muscular force

d) Winnowing foodgrain

Ans. Muscular force, ~~Gravitational~~ Gravitational force

16. Convert the following quantities as indicated.

a) 10 quintal = 1 metric ton.

b) $1 \text{ cm} = \frac{1}{100} \text{ metre}$

c) $1 \text{ mm} = \frac{1}{1000} \text{ m}$

d) 1 yard = 3 ft

e) $1 \text{ dm} = \frac{1}{10} \text{ m}$

f) $1 \text{ dam} = 10 \text{ m}$

g) $1 \text{ hm} = 100 \text{ m}$

h) $1 \text{ g} = \frac{1}{1000} \text{ kg}$

i) $1 \text{ mg} = \frac{1}{10^6} \text{ or } 10^{-6} \text{ kg}$

~~1~~ $1 \text{ mg} = \frac{1}{1000} \text{ or } 10^{-3} \text{ g}$

$$10^{-3} \text{ or } \frac{1}{1000} = \frac{1}{1000 \times 1000} = \frac{1}{1,000,000} \text{ or } 10^{-6} \text{ kg.}$$

j) $1 \text{ lb} = 453.59 \text{ g}$

k) $1 \text{ h} = 60 \text{ s}$

l) $1 \text{ year} = 3.15 \times 10^7 \text{ s}$

$$1 \text{ year} = 365 \text{ days} = 365 \times 86400 = 3.15 \times 10^7 \text{ s}$$

m) $1 \text{ day} = 86400 \text{ s}$

$1 \text{ day} = 24 \text{ h}$

$1 \text{ h} = 3600 \text{ s}$

$$\therefore 24 \times 3600 \text{ s} = 86,400 \text{ s}$$

n) $1 \text{ decametre}^2 = 100 \text{ m}^2$

o) $1 \text{ hectare} = 10000 \text{ m}^2$

p) $1 \text{ km}^2 = 10^6 \text{ m}^2$

q) $1 \text{ dm}^2 = 100 \text{ cm}^2$

12) $1 \text{ cm}^2 = \frac{1}{10000} \text{ m}^2$ or 10^{-4} m^2

13) $1 \text{ mm}^2 = \frac{1}{1000000} \text{ m}^2$ or 10^{-6} m^2

14) $1 \text{ square yard} = 0.836 \text{ m}^2$

15) $1 \text{ square ft} = 0.09290 \text{ m}^2$

16) $1 \text{ acre} = \frac{4046.856}{1} \text{ m}^2$

17. What are the effects of friction?

Ans- Effects of friction-

- * Friction opposes motion
- * Friction acts in a direction opposite to the direction of the moving body.
- * Friction produces heat
- * Friction causes wear and tear.

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

Ans- Factors ~~of~~ affecting ^{the} force of friction-

- * The roughness or smoothness of a surface. If the surface is rough, then friction will increase while, on smooth surfaces, friction decreases.
- * The presence of solid, liquid or gas on the surface. Solids offer more friction ~~that~~ than liquids and liquids offer more friction than ~~gases~~.
- * The weight of the body moving ~~of~~ over the surface. If the weight of the moving body is more then

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

Ans → static friction - The minimum force exerted by a ~~to~~ surface on the moving body as long as it remains stationary is called as the force of static friction.

* Sliding friction - The minimum force exerted by a surface on a moving body such that, the body covers equal distances in equal amounts of time is called sliding friction.

* Rolling friction - The minimum force exerted by a surface on a moving body ~~to~~ so that it rolls is called rolling friction.

20. * What are the disadvantages of friction?

Ans - Disadvantages of friction -

* Friction ^{motion} opposes, which reduces the efficiency of machines.

* Friction produces heat which can damage the machine parts.

* Friction causes wear and tear which ~~causes~~ ~~damage to the~~ reduces life of machines.

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

Ans- A matchstick rubbed on a rough surface produces fire ~~at~~ because of friction which produces heat.

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

Ans- The sole of shoes get ~~worn~~ worn after some time because after its long use friction causes wear and tear of the soles of shoes.

23. Convert the following quantities as indicated.

a) $12 \text{ inch} = 1 \text{ ft}$

b) $1 \text{ ft} = \underline{30.48 \text{ cm}}$

c) $20 \text{ cm} = \underline{0.2 \text{ m}}$

d) $4.2 \text{ m} = \underline{420 \text{ cm}}$

e) $0.2 \text{ km} = \underline{200 \text{ m}}$

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

g) $1 \text{ yard} = \underline{0.91 \text{ m}}$

24. Define -

Applied force - The force applied on an object which changes its motion is called applied

- Tension - Force of tension is the force that acts on a spring whose one end is tied to a brick and is pulled down by the force of gravity.
- Frictional force - Frictional force is the ~~net~~ force that opposes the relative motion of an object moving on the surface.

25. Compare properties of solids, liquids and gases.

Ans- Properties	Solid	Liquid	Gases
Mass	Definite	Definite	Definite
Shape	Definite	Indefinite	Indefinite
Volume	Definite	Definite	Indefinite

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

Explain with examples.

Ans- ~~Solid~~ Most substances can change from one state to another under different conditions of temperature and pressure, like ice, a solid on heating melts into water. The point at which it changes into water is fixed.

melting point, 0°C whereas water ^{a liquid} changes into gas by heating, at a fixed point ~~is~~ called boiling point which is 100°C . ~~Both the temperatures are different. This tells that many sub~~
 This tells us that substances can change from one state to another because of changes in temperature and pressure, like ice does not turn into water if the temperature is below 0°C . If the temperature is changed to 0°C , then, it can change to water.

27. Why?

a) Machines are oiled from time to time.

Ans- Machines are oiled from time to time because the surface of a machine ~~can~~ can become rough by use and can cause increased. So, to reduce this friction, machines are oiled from time to time.

b) An object thrown upwards come downwards after reaching a point.

Ans- This is because force of gravity pulls ~~the~~ ^{the ball} down towards the earth.

c) Powder is sprinkled on carrom board.

Ans- Powder is sprinkled on carrom board to reduce the

friction so that the carrom coins can easily move.

28. Explain increasing and decreasing friction with suitable examples.

Ans- Friction increases when the surface is rough but, decreases if the surface is smooth.
E.g. We cannot walk on wet and finely polished surfaces easily because friction is less, but, we can walk without falling on roads because of interlocking of small projections and ~~due to~~ which causes more friction.

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

Ans- As cartilages help in smooth movement of joints, ~~the~~ then, if the cartilages wear off, the movement will not be smooth and due to friction, we will need more force to walk than usual. It may also cause joint pain.

Q. Define mass. State its (1) S.I. (2) C.G.S and (3) F.P.S units. How are they related?

~~Mass is the weight of an object.~~

Mass is the amount of matter contained in an object. S.I. Unit - kilogram (symbol - kg)

(2) C.G.S - Gram (symbol - g)

(3) F.P.S - Pound (symbol - lb)

$$1 \text{ kg} = 1000 \text{ g}, 1 \text{ kg} = 2.205 \text{ lb}, 1 \text{ lb} = 453.59 \text{ g}$$

$$1 \text{ lb} = 0.45359 \text{ kg}, 1 \text{ g} = \frac{1}{1000} \text{ kg}, 1 \text{ g} = \frac{1}{453.59} \text{ lb}$$

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

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

c) $10 \text{ lb} = 4.5359 \text{ kg}$

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

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

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

32. To measure the temperature of a patient's body, doctors use a special ~~thermometer~~ thermometer, called the clinical thermometer. ~~To measure the temperature,~~ It contains markings from 35°C to 42°C . Normal temperature of human body is 37°C , marked by a red ~~arrow~~ arrow. It has a slight bend or kink in the ~~stem~~ stem just above the bulb, this prevents the mercury from falling back all by itself, and

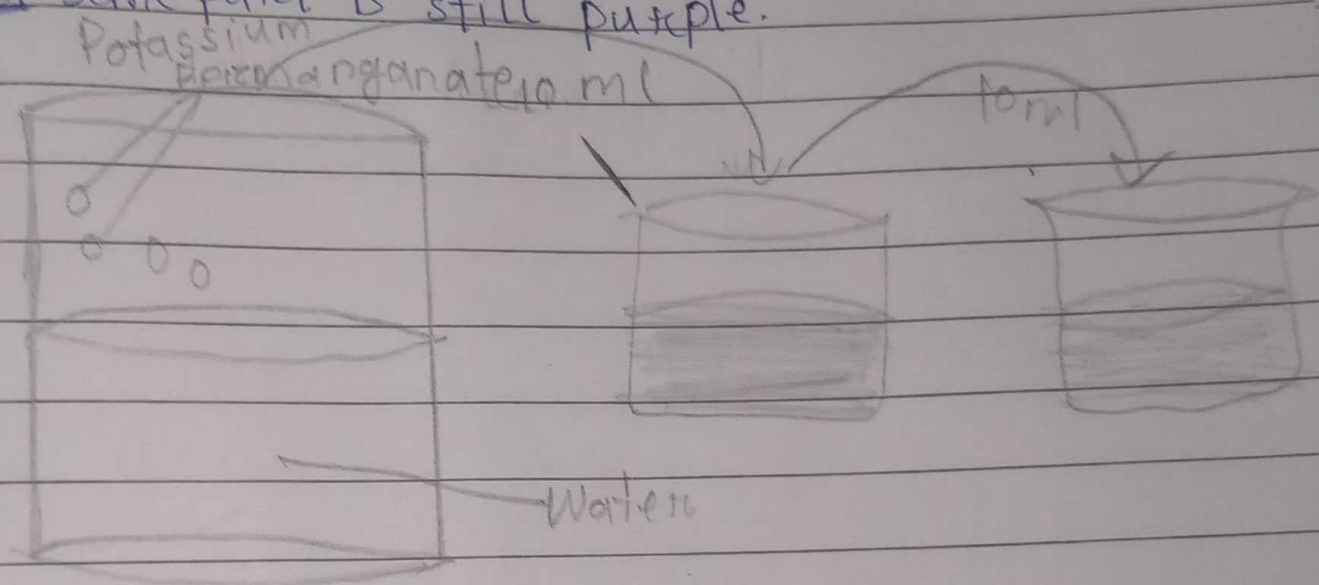
this bend is called constriction.



34. a) The S.I. unit of length is metre, of time is second and of mass is kilogram
- b) $^{\circ}\text{C}$ is the unit of temperature
- c) 1 metric tonne = ~~1000~~ 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 temperature is called the clinical thermometer.
- f) The normal temperature of human body is 37°C or 98.6°F .

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

Ans - Take 100 ml of water in beaker A. Dissolve 2-3 crystals of potassium permanganate in it. There will be a deep purple colour solution, if we pour some amount of it in other beakers, we will notice the colour is fading, but the ~~rest~~ some part is still purple.



This shows that the particles of potassium permanganate are very small and the water particles have gaps between.