Physics
Holiday Worksheet

1. Ans. Measurement is a process of comparison of the given unknown quantity with a fixed known quantity of the same kind. The value obtained on measuring a quantity is called its magnitude. The magnitude of a quantity is expressed as numbers in its unit.

2. Ans. Two smaller units of volume are cubic centimetre and cubic decimeter - SI Unit of volume is cubic metre.

Relationship between m^3 and cm^3.

$1m^3 = 1m \times 1m \times 1m$.
$1m^3 = 100 cm \times 100cm \times 100 cm$.
$1m^3 = 10^6 cm^3$.

Relationship between m^3 and dm^3.

$1m = 10 dm$.
$1m^3 = 1m \times 1m \times 1m$.
$1m^3 = 10 dm \times 10 dm \times 10 dm$.
$1m^3 = 10^3 dm^3$.

3. Ans. 3.1 Unit of density is kilogram per cubic metre (kg/m^3). C.G.S unit of density is grams per cubic metre (g/cm^3).

* $1g/cm^3$ is equal to 1000 kilogram per cubic metre.

4. Ans. i) Volume of the tank = $1m^3$.
ii) the density of liquid in kgm^{-3} = $800 kgm^{-3}$.

5. Ans. The volume of lead piece is :-
Mass = $115 g$

$V_1 = 20$ ml, $V_2 = 30$ ml.

Volume of lead piece $V = V_2 - V_1$.

= 30 ml - 20 ml.

= 10 ml or 10 cm^3 ($\because$ 1 ml = 1 cm^3).

And the density of the lead in kg m^{-3}.

= $d = m/v$.

= 115/10 cm^3 = 11.5 g cm^{-3}.

As, (1 g cm^{-3} = 1000 kg^{-3}).

= 11.5 × 1000 = 11500 kg m^{-3}.

6. In a rotatory motion a body rotates along a fixed axis whereas in circular motion a body moves at a fixed distance from a fixed point.

7. *The motion that repeats itself at regular intervals of time is known as periodic motion. For example motion of a pendulum of a wall clock.

* The motion which does not repeat itself after a regular interval of time is called non-periodic motion. For example. motion of tides in the sea.

8. The weight of a body is the force of gravity on it. The SI unit of weight is newton (N).

9. It is non-uniform motion as the speed is not constant.

* Total distance travelled = 30 m + 30 m = 60 m.

Total time taken :-

* $t = 1$ min + 1.5 min = 2.5 min

= 2.5 × 60 s = 150 seconds.

Average speed = $\frac{\text{total distance}}{\text{total time}}$.

→ $\frac{60m}{150 s}$ = 0.4 m/s $^{-1}$.

10. * Total distance travelled by the car
= Speed = d/t.
= Distance = s × t (∵ 30 mins = 0.5 hrs).
= Distance = 30 × 0.5 = 15 km.

⇒ Distance = s × t.
⇒ D = 40 km/h $^{-1}$ × 1 hr = 40 km.

So adding both the distances.
⇒ 15 km + 40 km = 55 km.

* Total time travel = 0.5 hr + 1.0 hr = 1.5 hr.
* Average speed = total distance/total time.
⇒ $\frac{5.5 km}{1.5 hr}$.
⇒ 36.67 km h $^{-1}$.

11. Two factors on which the potential energy of a body at a certain height above the ground depends are the mass of the body and its height above the ground.

12. Ans. Yes, a body posses energy even when it is not in a motion and is known as potential or stored energy. For example a ball at a certain height, its velocity is zero. Kinetic energy will be 0 but the ball will have P.E. = mgh.
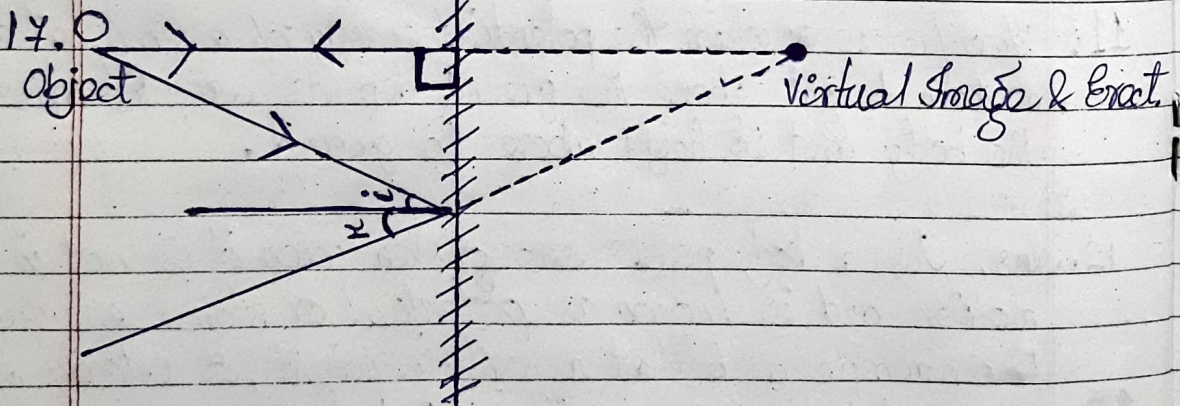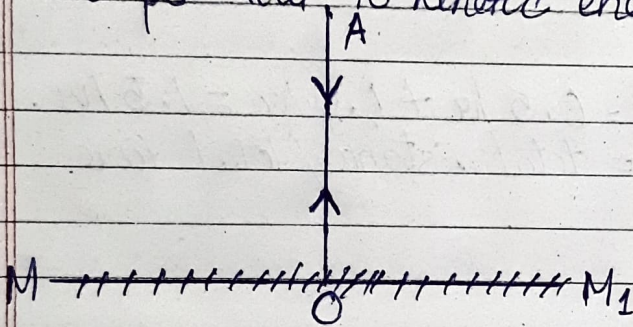
13. Water moving in the rivers or sea has the kinetic energy. The water stored in the dam has to potential energy. When water from a dam falls on the water turbine, the

potential energy changes into kinetic energy and as the water is transferred to the blades of turbine it changes into electrical energy to produce electricity.

14. Conservation of mechanical energy is when the total mechanical energy remains constant i.e, $K + O = $ constant when there are no frictional forces. This happens only in vaccum, as in vaccum, friction due to air is absent.

15. One example to show the conversion of potential energy to kinetic energy when put in use is a stone placed at a mountain cliff. When a stone is placed at a mountain cliff if we drop the stone from the edge it converts into potential to kinetic energy.

16.

M ⊢⊢⊢⊢⊢⊢⊢⊢⊢⊢⊢⊢⊢⊢⊢ M₁

A

17. O →
Object

Virtual Image & Erect.

18. Four characteristics of the image formed by a plane mirror :-

* The image is virtual.
* The image is of same size as of the object.

* The image is laterally inverted.

* The image is as far behind the mirror as the object is in front of it.

19. When the reflecting surface is rough, the parallel rays falling on it are reflected in different directions. Such reflection is known as irregular reflection. For example, reflection of light from the wall, wood, paper etc.

20. Ans. i) If a red rose is seen in green light, it appears black. The reason is that the rose absorbs the green light falling on it and reflects none.

ii) If a red rose is seen in red light, it appears bright red. This is because the rose reflects the red light falling on it and absorbs none of it.