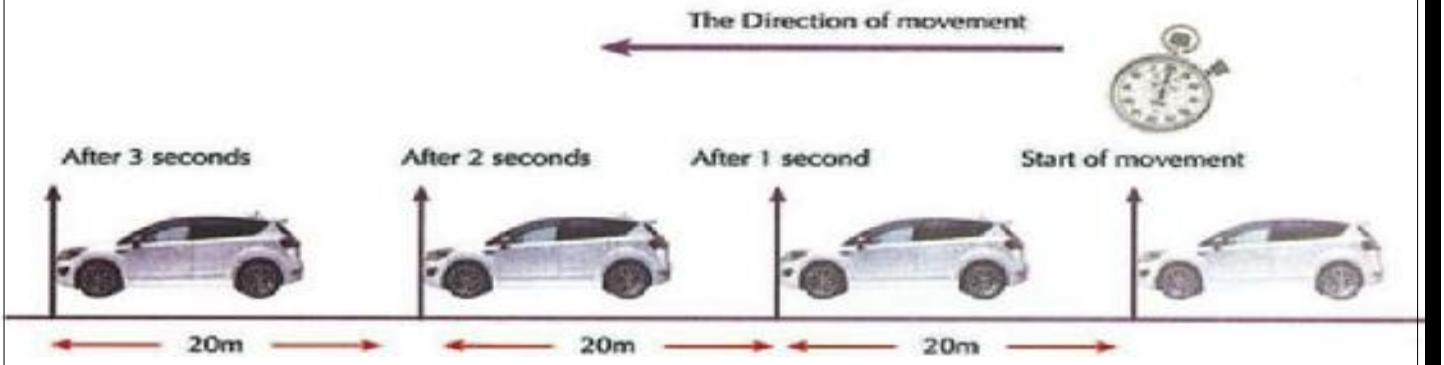
Motion:-
It is the change of an object's position as time passes according to the position of another object.

Speed:-
It is the distance moved through a unit time.

If an object covers a distance (d) with a short time span (t), the object's speed (V) during this time is $V = \frac{d}{t}$

Exercise:
A runner runs with a speed 8 m/s. Find the distance covered by the runner in 10 seconds.

Exercise:



Study this figure and answer the following questions:
1. What is the distance the car covers in one second? ……..
2. Does the car cover equal distances in equal periods of time? (Yes / No)
3. What is the speed of the car? ……..meter / second.

Scalar physical quantity:
It is the quantity that has magnitude only (it has no direction).

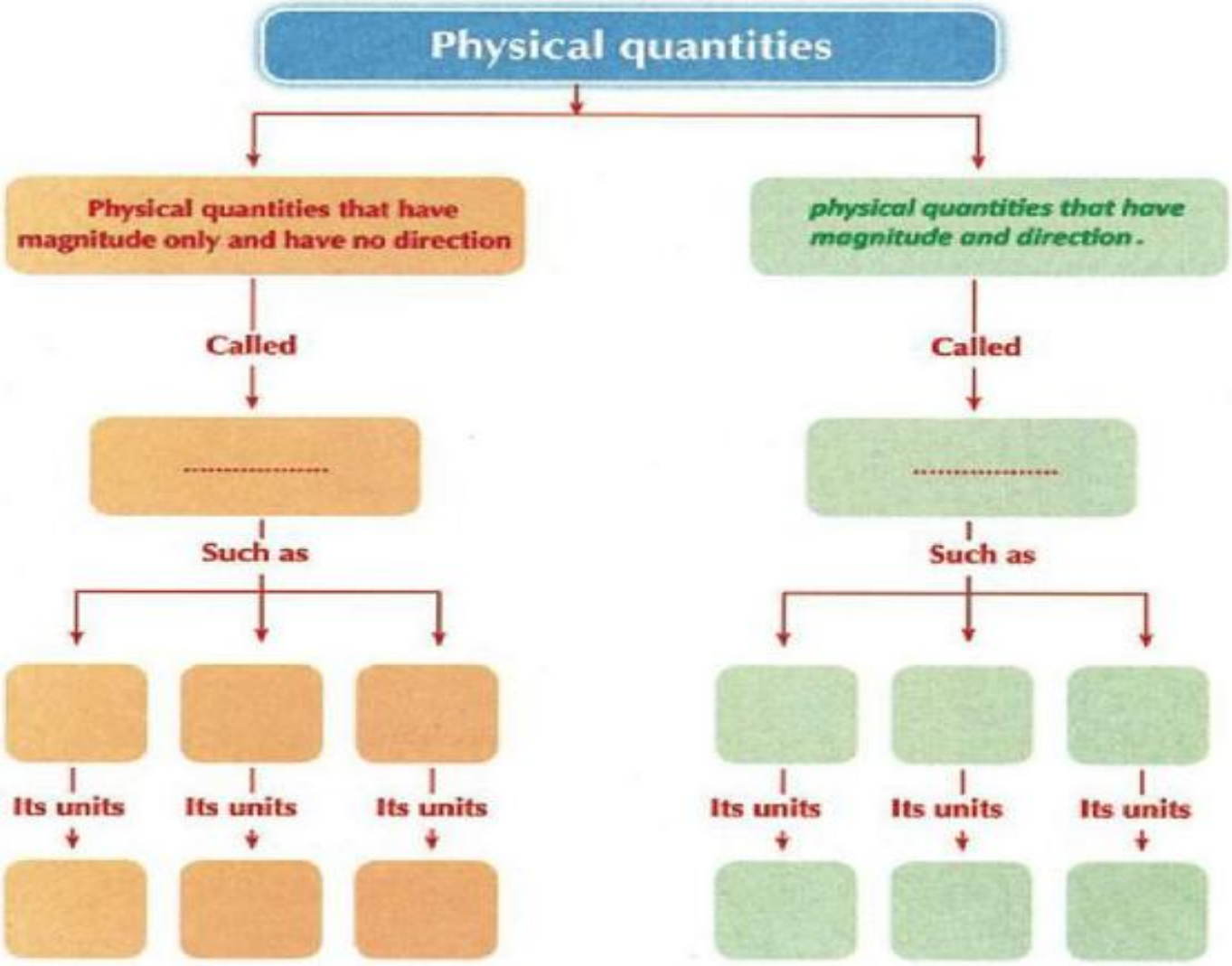
* **Examples of scalar's physical quantities** are mass (measured by kilogram), length (measured by meter) and time (measured by second) Speed (measured by m/s or Km/h) - Energy (joule) – Temperature (F or ^{0}C).

Vector physical quantity:

It is the physical quantity that has magnitude and direction.

* **Examples of these vectors are:** force (Newton) and acceleration (m/s^2) – Velocity (m/s) – displacement (meter) – weight (Newton).

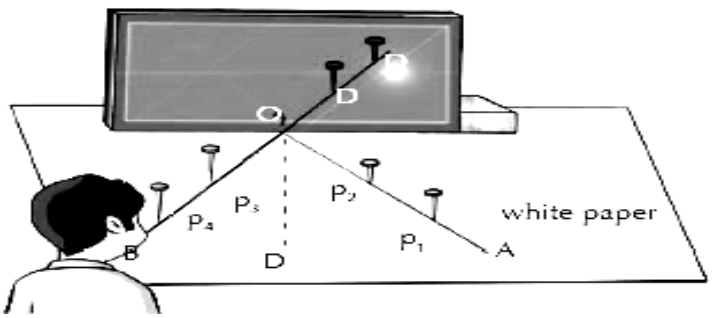
Exercise:



➘ **Activity:** (The two laws of light reflection)

➘ **Tools:**

A plane mirror – white paper sheet – pins - protector - ruler - plane mirror - White piece of paper



First law of light reflection: angle of incidence = angle of reflection.
Second law of light reflection:
the incident light ray and the reflected light ray and the normal all lie in the one plane perpendicular to the reflecting surface.

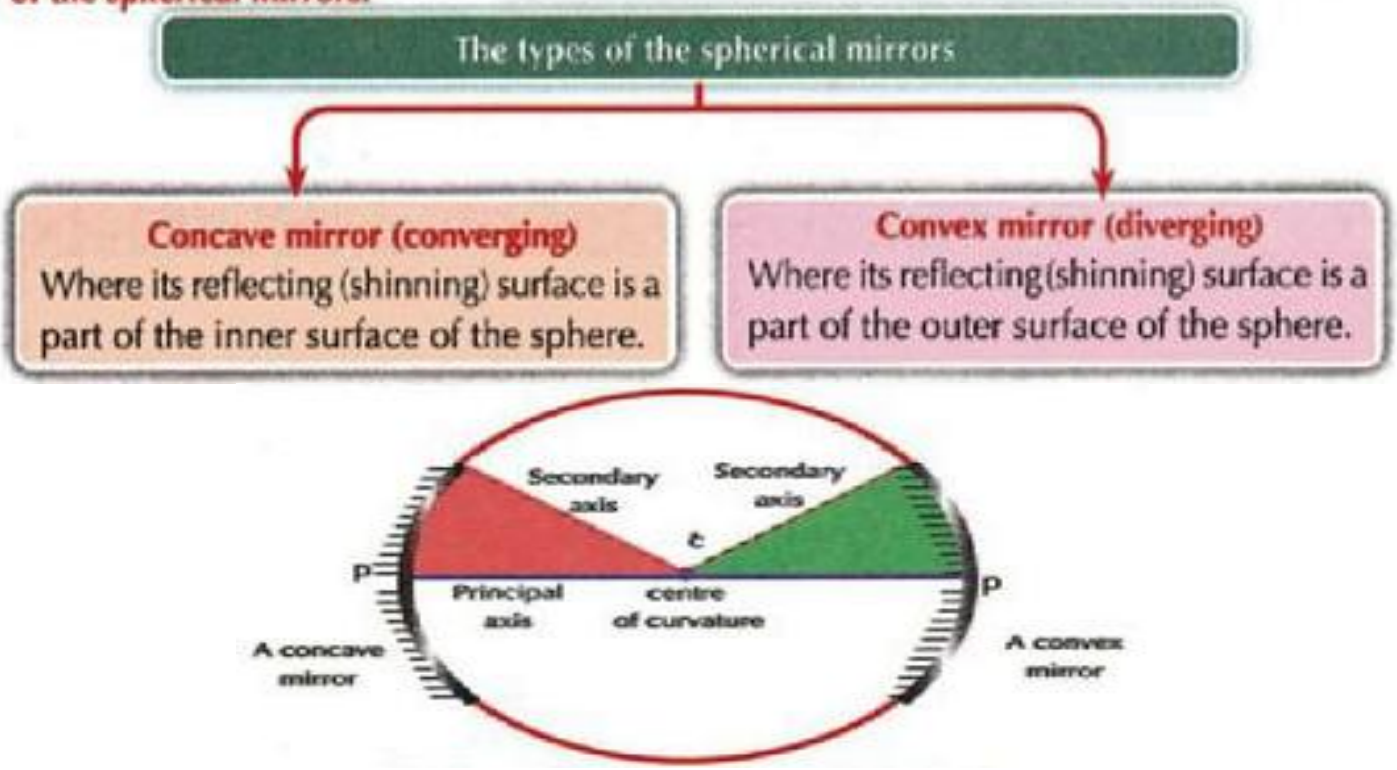
Exercise:
If the angle between the incident light ray and the reflected light ray a plane mirror = 120° Calculate the angle of incidence.

Exercise:
A light ray that fell on a plane mirror as in the figure it reflects where the reflection angle equals:
1- 30° 2- 60° 3- 90°

The spherical mirrors

What is the spherical mirror?

It is a mirror that its reflecting surface is a part of a hollow sphere, and there are two types of the spherical mirrors.



Exercise: Compare by drawing

Convex mirror	concave mirror

The Milky Way Galaxy

In the centre of the galaxy a lot of old stars gather surrounded by small stars located in the spiral arms of the galaxy. Our sun is a star of millions of stars in this galaxy.

The universe :

- It is a wide and extended space that contains galaxies. The number of galaxies in the universe is about 100,000 million galaxies.

Galaxies:

- Galaxies gather in clusters including the Milky Way which contains the sun.

The Milky Way:

- It contains the sun and the solar system.

The solar system:

- It is the sun and eight planets revolving around it

The earth:

- The planet of life

Humans