

Force & Laws of Motion

Assignment

1) An object experiences a net zero external unbalanced force. Is it possible for the ~~object~~ object to be travelling with a non-zero velocity? If yes, state the conditions that must be placed on the magnitude & direction of the velocity. If no, provide a reason.

⇒ When $\text{Net } F = 0$, then ~~the~~ the change in ~~veloc~~ $v = 0$

$$F = m \times a$$

$$a = \frac{v_f - v_i}{t}$$

→ Final velocity
→ initial velocity

Now $F = 0$, $ma = 0$ and thus $a = 0$
Therefore,

$$a = \frac{v_f - v_i}{t} = 0 \Rightarrow v_f = v_i$$

Thus, if an object was moving with some uniform initial velocity then it would continue its motion with the same velocity with no change in direction even when it is acted by a net unbalanced force which is zero. Therefore, when an object experiences a net zero external unbalanced force, it is possible for the object to be traveling with a non-zero velocity.

2) Define balanced & unbalanced force.

⇒ Balanced force don't result in any change in motion. They are equal in size and opposite in direction.

⇒ Unbalanced forces are forces applied to an object in opposite directions that are not equal in size. It ~~result~~ result in change in ~~motion~~ motion.

3) Define inertia?

⇒ Inertia is a tendency to be ~~in~~ in ~~rest~~ rest or not doing ~~anything~~ something.

4) Whose inertia is more: ~~of a~~
→ bicycle → A five rupee coin
→ train → A one rupee coin.

⇒ The inertia of a bicycle is more.

⇒ The inertia is same in the coins.