Resultant forces

LOs:

* What is a resultant force
* What happens if resultant force is zero and greater than zero
* How to calculate resultant force on an object if forces are parallel
* What a free-body force diagram is

Forces are a vector. They have magnitude and direction. The unit is a newton(N)

Questions

1. 2000N – 500N = 1500N 🡪 resultant force
2. The car will be moving forward Accelerating
3. 1600N – 500N = 1100N 🡪 resultant force

If there is a resultant force on an object, it will accelerate

You can calculate the direction of the resultant force using trigonometry and writing the answer as a bearing

Balanced forces

Balances forces are when the resulted force = 0. This means the forces are in equilibrium

Zero force on an object can have 2 effects:

* If an object is stationary, it will remain stationary
* If it is moving, it will do so in the same direction at constant speed

If …

|  |  |
| --- | --- |
| Resultant force > 0 | Resultant force = 0 |
| Accelerate | Stationary |
| Decelerate | Constant speed |
| Change direction |  |

A free-body force diagram is a diagram showing all the forces acting on an object

This can be used to calculate resultant force.

What is a centre of mass?

The centre of mass is the point at which all the mass of an object seems to be concentrated

Finding centre of mass of a regular shape

Draw 2 diagonal lines from each of the corners and where they meet is the centre of mass

Finding centre of mass of an irregular shape

Get a holepunch and make a whole in one of the corners. Tie a string around the hole. Attach a weight to the string. Hold the object vertically and see where the string hangs. Draw a line here. Repeat for different corners. The centre of mass is where all the lines meet