Edexcel IGCSE Physics
1 - Forces and Motion

Flashcards

Explain what is meant by a scalar quantity. Give 2 examples

Explain, with examples, a scalar quantity.

A scalar quantity is a magnitude. It can be described fully with a single numerical value

Ex:distance, speed, time, mass, energy..

Explain what is meant by a vector quantity. Give 2 examples

Explain, with examples, a vector quantity.

A vector quantity has both a magnitude and a direction.

Ex: Force, velocity, displacement, momentum, moment...

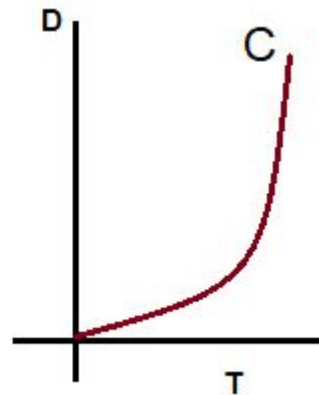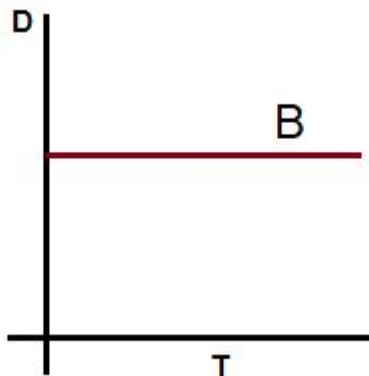Which property of a distance-time graph can be used to calculate speed?
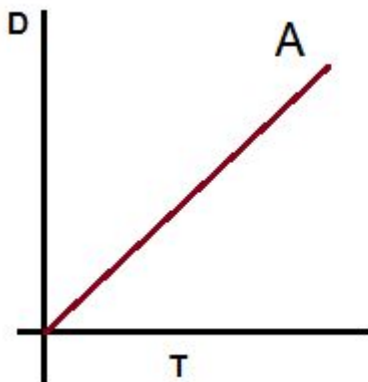
Which property of a distance-time graph can be used to calculate speed?
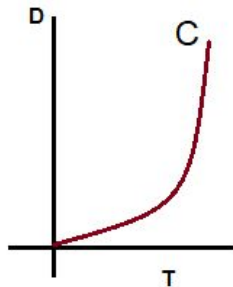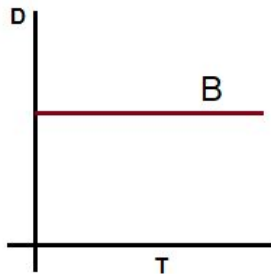
Gradient (or Slope)

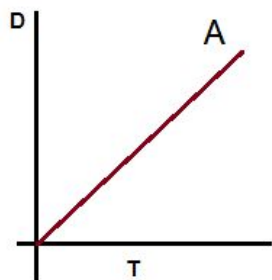For the d-t graphs given below, decide which one is at rest, which one is moving with constant speed and which one is accelerating

For the d-t graphs given below, decide which one is at rest, which one is moving with constant speed and which one is accelerating

A = constant speed
B = at rest
C = accelerating

State an equation linking distance moved, time taken and average speed with their respective units.

State an equation linking distance moved, time taken and average speed with their respective units.

Average speed(m/s) = Distance(m) / Time(s)

$v = d/t$

What is meant by acceleration? Give its unit.

What is meant by acceleration?
Give its unit.

Acceleration is the change in velocity per unit of time.

SI Unit: m / s^2

State an equation linking acceleration, change in velocity and time taken

State an equation linking acceleration, change in velocity and time taken

Acceleration =(Change in velocity)/ time

$a = (v-u) / t$

v:final velocity   u:initial velocity

Which property of a velocity-time graph can be used to calculate acceleration?

Which property of a velocity-time graph can be used to calculate acceleration?

Gradient (slope)

Which property of a velocity-time graph can be used to calculate distance travelled?
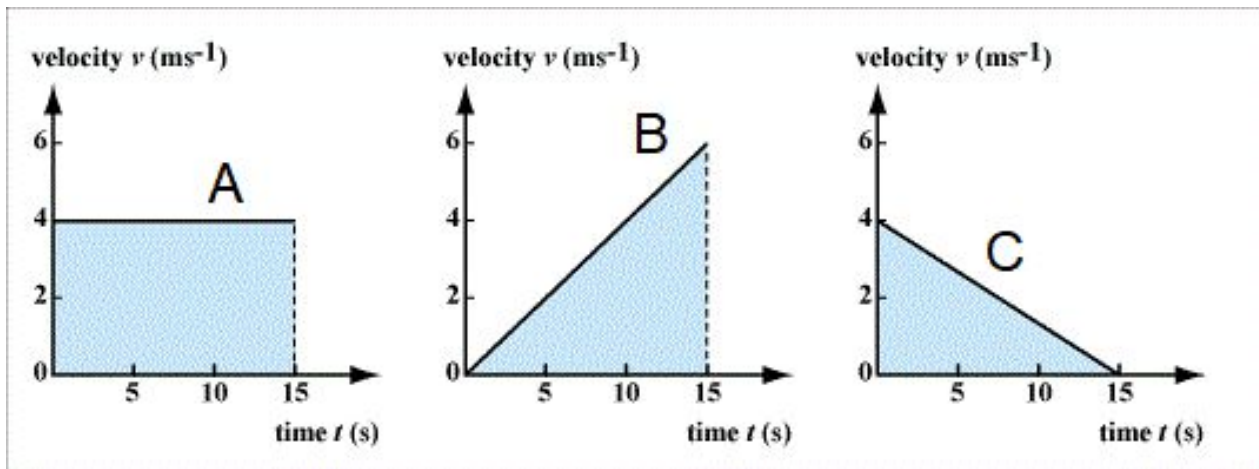
Which property of a velocity-time graph can be used to calculate distance travelled?
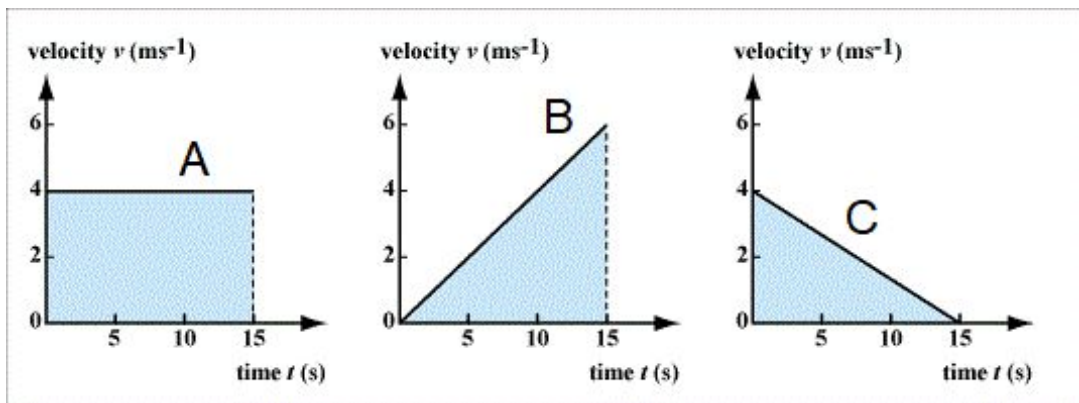
Area under the graph

For the v-t graphs given below, decide which one is accelerating; moving with constant speed or decelerating

For the v-t graphs given below, decide which one is accelerating; moving with constant speed or decelerating

A = constant speed
B = accelerating
C = decelerating

State an equation linking final speed, initial speed, acceleration and distance travelled

State an equation linking final speed, initial speed, acceleration and distance travelled

$$v^2 = u^2 + 2as$$

Identify the types of forces acting on the objects

Identify the types of forces acting on the objects

A = weight
B = Air Resistance (Drag)

Name two types of forces that always opposes motion

Name two types of forces that always opposes motion

1. Friction
2. Air Resistance (Drag)

a) Which type of force holds planets around the Sun?
b) Which type of force holds electrons around nucleus?

a) Which type of force holds planets around the Sun?
b) Which type of force holds electrons around nucleus?

A) Gravitational Force
B) Electrostatic Force

State the ways that a force can affect the body that it is being applied on.

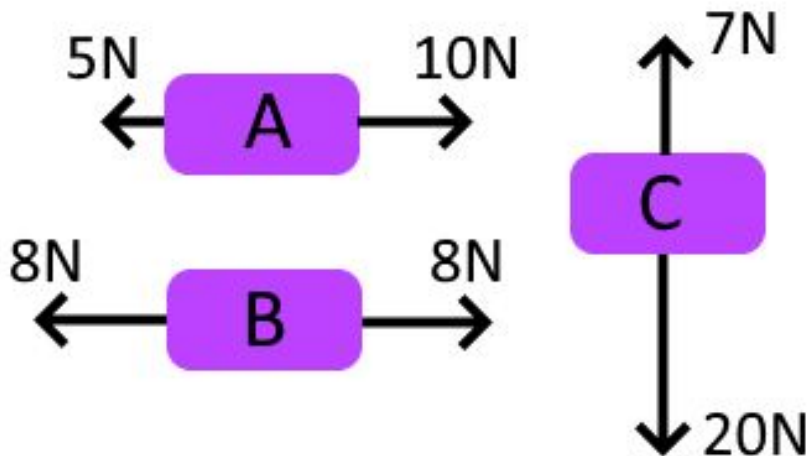State the ways that a force can affect the body that it is being applied on.

-It can change the shape of the object (extension/compression)

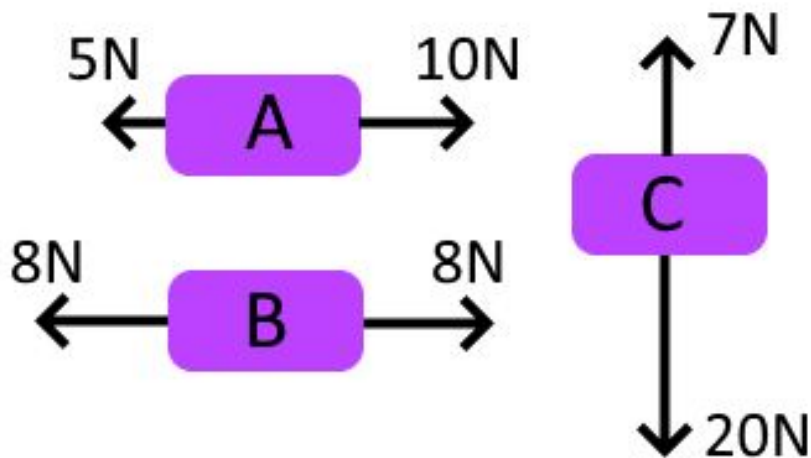-It can change the speed of the object

-It can change the direction the object is moving

Calculate the resultant force for the objects below and state the direction

Calculate the resultant force for the objects below and state the direction

5N ← A → 10N

8N ← B → 8N

7N ↑ C ↓ 20N

A: 5N to right
B: 0N (balanced)
C: 13N downwards.

What magnitude would the resultant force have and in what direction would it be pointing?
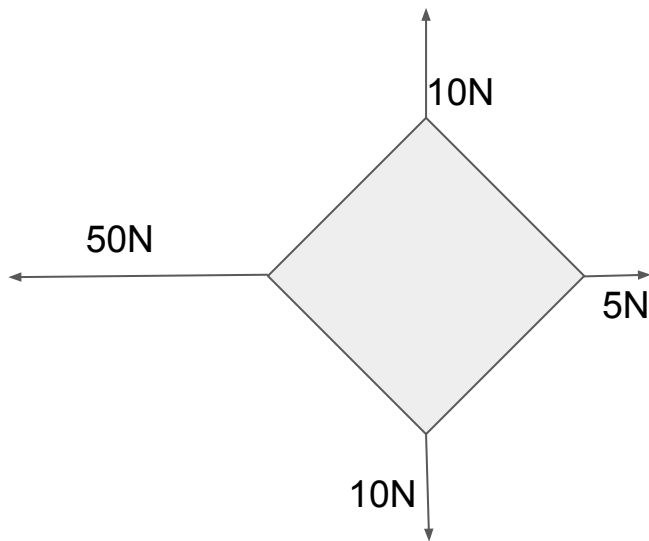
10N

50N

5N

10N

What magnitude would the resultant force have and in what direction would it be pointing?

45N
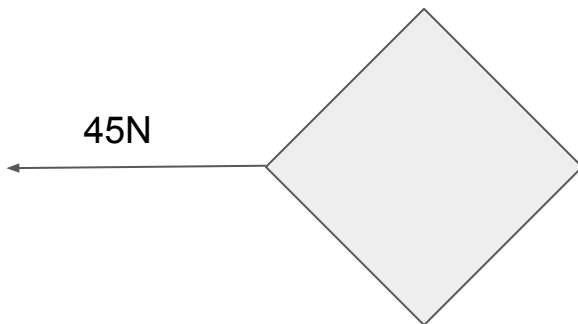
State an equation linking unbalanced force, mass and acceleration

State an equation linking unbalanced force, mass and acceleration

Force (N) = Mass(kg) x Acceleration (m / s^2)

F = m x a

State an equation linking mass, weight and gravitational acceleration

State an equation linking mass, weight and gravitational acceleration

Weight(N) = Mass(kg) x g (m / s^2)

W = mg

What is the relationship between stopping distance, braking distance and thinking distance of a car while stopping?

What is the relationship between stopping distance, braking distance and thinking distance of a car while stopping?

Stopping Dist. = Thinking Dist. + Braking Dist.

State 4 factors that affect the stopping distance of a car

State 3 factors that affect the stopping distance of a car

- Reaction time
- Initial speed
- Road Conditions
- Tire Conditions

- Weather conditions
- Driver's conditions
- Mass of the car

State two factors that affect the air resistance acting on a falling object

State two factors that affect the air resistance acting on a falling object

- Surface Area

- Speed

Describe how a falling object reaches to terminal velocity.

Describe how a falling object reaches to terminal velocity.

At first object falls under the effect of its weight accelerating with g. As it accelerates, air resistance opposing the motion increases therefore resultant force acting on the object decreases and since F=ma, acceleration decreases.

When air resistance becomes equal to weight, forces are balanced so resultant force=0 therefore a=0 and object reaches to terminal velocity.

State what is meant by obeying Hooke's Law

State what is meant by obeying Hooke's Law

Extension is directly proportional with the force applied.

Explain what is the difference between elastic and plastic behavior.

Explain what is the difference between elastic and plastic behavior.

In **elastic behaviour**, object recovers its original shape when the forces causing the extension is removed.

In plastic behavior, there is a permanent deformation to the shape of the object when forces are removed.