



# PiXL Science

## KS3 Application Forces

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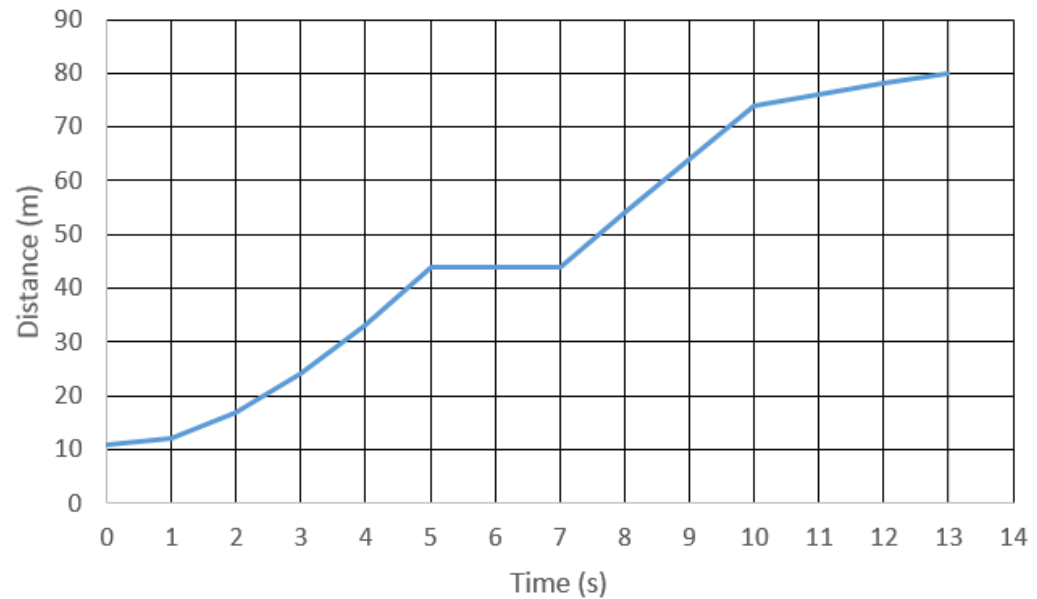
# Distance-time graphs

The following distance-time graph shows a car journey on a motorway.

**When is the car stationary?**

**When is the car travelling the slowest?**

**What is happening to the speed of the car between 0 seconds and 5 seconds?**



**Calculate the speed of the car between 7 and 10 seconds.**

# Distance-time graphs - answers

The following distance-time graph shows a car journey on a motorway.

**When is the car stationary?**

**Between 5 and 7 seconds.**

**When is the car travelling the slowest?**

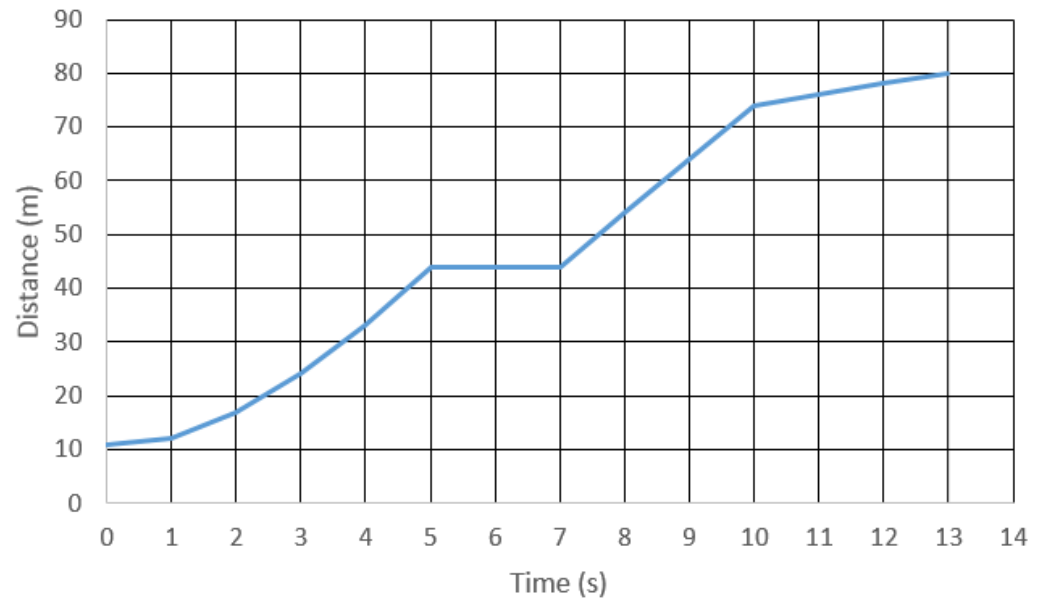
**Between 10 and 13 seconds.**

**What is happening to the speed of the car between 0 seconds and 5 seconds?**

**Accelerating.**

**Calculate the speed of the car between 7 and 10 seconds.**

**Speed = distance ÷ time = 30m ÷ 3 seconds = 10m/s**



# Resultant forces

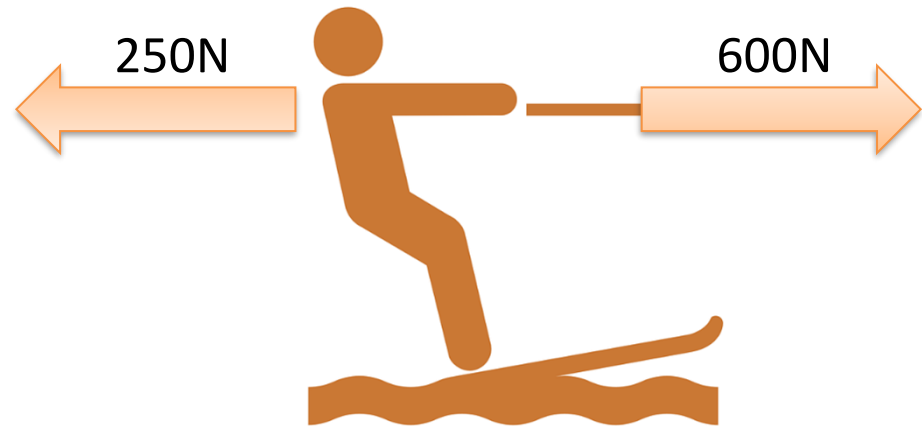
The diagram shows two of the forces acting on a water skier.

**The water skier is accelerating. How can you tell?**

**Suggest what is causing the 250N force.**

**Calculate the resultant force.**

**Which direction is the resultant force acting?**



## Resultant forces - answers

The water skier is accelerating.

How can you tell?

Forces are unbalanced, force pulling forward is larger.

Suggest what is causing the 250N force.

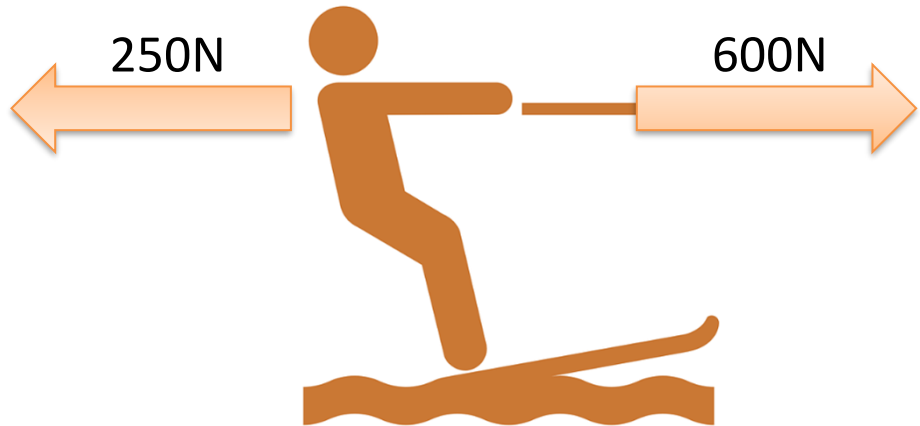
Drag/ air resistance/ force of water on the ski

Calculate the resultant force.

$$600 - 250 = 350\text{N}$$

Which direction is the resultant force acting?

To the right/ forwards

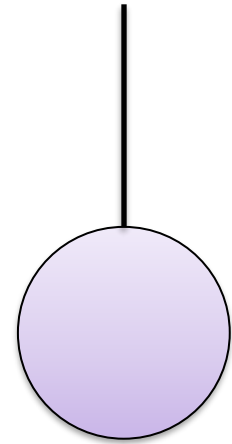


## Force arrows

The following diagram shows a ball on a string.

**What forces are acting on the ball?**

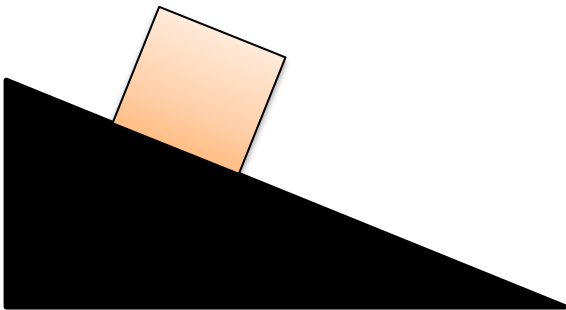
**What can you say about the size of these forces?**



The second diagram shows a block on a ramp.

**Draw and label a force arrow to show the force of friction on the block.**

**Draw and label a force arrow to show the gravitational force on the block (weight).**



## Force arrows - answers

**What forces are acting on the ball?**

Upward pull of string on ball (tension); downward pull of gravity/weight.

**What can you say about the size of these forces?**

Balanced.

**Draw a force arrow to show the force of friction on the block.**

**Draw a force arrow to show the gravitational force on the block (weight).**

