

GCSE Physics: what you need to know

Forces and motion - 1

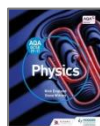
Describing motion along a line	I can do this already	Covered in class	Strength	Weakness	I have revised this	Book references
I can explain the difference between distance and displacement .						H: O: 114
I can explain what is meant by a scalar quantity and gives examples.						H: 148 O: 114
I can explain what is meant by a vector quantity and gives examples.						H: 148 O: 114
I can explain what is meant by the speed of an object.						H: 148
I can give typical speeds for a person who is walking, running or cycling.						H: 147
I can describe factors that affect the speed of someone who is walking, running or cycling.						
I can <u>recall</u> the equation for the average speed of a moving object.						H: 148 O: 134
I can explain what is meant by velocity .						H: 149 O: 136
I can describe a situation where the speed of an object stays the same but its velocity changes.						H: 149 O: 136
I can draw distance – time graphs to show an object that is a) travelling at a constant speed, b) stationary, c) speeding up and d) slowing down.						H: 149 & 150 O: 135
I can explain what information is given by the gradient of a distance – time graph.						H: 150 O: 134
I can explain how to find the gradient a distance – time graph that is curved.						H: 150 O: 140
I can <u>recall</u> the equation to calculate the acceleration of an object.						H: 152 O: 137
I can estimate typical values for 'everyday accelerations' (such as a car decelerating during an accident).						
I can draw velocity – time graphs to show an object that is a) travelling at a constant speed, b) stationary, c) speeding up and d) slowing down.						H: 152 O: 136 & 139
I can use a velocity – time graph to find the acceleration of an object.						H: 152 O: 138
I can use a velocity – time graph to find the distance travelled by an object.						H: 153 O: 139
Triple Science PHYSICS only: I can <ul style="list-style-type: none"> draw a velocity – time graph for a falling object (such as a skydiver); interpret the graph to describe the motion of the object; explain what is meant by the terminal velocity of the object; explain the shape of the graph using forces ideas. 						H: 156 & 157 O: 146 & 147

Forces and their interactions						
I understand that a force is a push or a pull.						H: 118
I understand that forces can be divided into contact and non-contact forces.						H: 119 O: 116
I can give examples of contact forces.						H: 119
I can give examples of non-contact forces.						H: 119
I can explain why force is a vector quantity.						H: 117
I can explain what is meant by the weight of an object.						H: 120 O: 146
I can name the factors that affect the weight of an object.						H: 120 O: 146

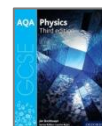
Forces and their interactions continued	I can do this already	Covered in class	Strength	Weakness	I have revised this	Book references
I can <u>recall</u> the equation to calculate the weight of an object.						H: 120 O: 146
I can explain what is meant by the centre of mass of an object.						H: 120 O: 124 & 125
I understand that the total force acting on an object is called the resultant force .						H: 120 O: 118
I can draw diagrams to show the forces acting on an object and calculate the resultant force .						H: 121 & 122 O: 119
I can name the forces on a falling object (such as a skydiver).						
I can describe how the forces on a falling object change as the object's speed increases.						
I understand that two or more forces on an object may cause it to stretch or compress .						H: 125 & 126 O: 158
I can explain what is meant when an object is described as elastic .						H: 126 O: 158
I can sketch a graph to show how the extension of a spring is affected by the size of the stretching force. <ul style="list-style-type: none"> I understand what is meant by the description 'extension is directly proportional to force'; I can explain what is meant by the limit of proportionality. 						H: 127 & 128 O: 158 & 159
I can explain what is meant by the spring constant of a particular spring.						H: 126 O: 158
I can <u>recall</u> the equation that links the extension (or compression) of a spring to the stretching force .						H: 126 O: 159
I can calculate the spring constant of a particular spring.						H: 126
I can interpret graphs that show extension against stretching force.						
I can calculate the elastic potential energy stored by a stretched (or compressed) spring (Note: you will be given this equation).						H: 126 O: 13

Book references:

H = *Physics* by England and Whitney
(published by Hodder)



O = *Physics* by Breithaupt
(published by Oxford)



Equations you must learn

Average speed	
Acceleration	
Weight	
Equation that links force , extension and the spring constant	