AQA GCSE Physics
Student Checklist

P8 Forces in balance

Name ..... Class ..... Date .....

Lesson	Aiming for 4		Aiming for 6		Aiming for 8	
P8.1 Vectors and Scalars	I can state that scalars have size (magnitude) without direction.	☐	I can draw a scale diagram to represent a single vector.	☐	I can interpret a scale diagram to determine the magnitude and direction of a vector.	☐
	I can state that vectors have both size (magnitude) and direction.		I can categorise a wide range of quantities as either a vector or a scalar.	☐	I can translate between vector descriptions and vector diagrams and vice versa using a range of appropriate scales.	☐
	I can list some common scalars and vectors.		I can compare a scalar and a similar vector and explain how these quantities are different.	☐	I can use a scale diagram to add two or more vectors.	☐
P8.2 Forces between objects	I can use arrows to represent the directions of forces.	☐	I can use scale diagrams to represent the sizes of forces acting on an object.	☐	I can use appropriate SI prefixes and standard form to describe a wide range of forces.	☐
	I can give examples of contact and non-contact forces.		I can describe the action of pairs of forces in a limited range of scenarios.		I can explain the pairs of forces acting in a wide range of unfamiliar scenarios, including the nature (contact or non-contact), direction, and magnitude of the forces.	
	I can compare the sizes of forces using the unit newton (N).		I can investigate the effect of different lubricants on the size of frictional forces.		I can evaluate force measurement techniques in terms of precision and accuracy.	
P8.3 Resultant forces	I can label a diagram showing several forces acting on an object.	☐	I can draw a scaled diagram of the forces acting in a range of situations using arrows to represent the forces.	☐	I can draw a scaled free-body force diagram showing forces as vectors and find the resultant force vector.	☐
	I can calculate a resultant force from two parallel forces acting in opposite directions.		I can calculate resultant force produced by several forces acting on an object in coplanar directions.	☐	I can calculate resultant forces from several forces acting in coplanar directions using a range of SI prefixes.	☐
	I can state that a non-zero resultant force will cause a change in motion and a zero resultant force will not.		I can describe the effect of zero and non-zero resultant forces on the motion of moving and stationary objects.	☐	I can create a detailed plan to investigate the factors that affect the acceleration of objects acted on by non-zero resultant force.	☐

AQA GCSE Physics
Student Checklist

P8 Forces in balance

Name ..... Class ..... Date .....

Lesson	Aiming for 4		Aiming for 6		Aiming for 8	
P8.4 Moments at work (Triple only)	I can state the factors that affect the size of a moment.	☐	I can describe the uses of a force multiplier lever.	☐	I can explain why a force multiplier requires the effort force to move through a larger distance than the load.	☐
	I can calculate the moment of a force using the appropriate equation and base unit.		I can perform calculations involving moments, including rearrangement of the equation.		I can apply the equation for a moment in a range of novel contexts including rearrangement and changes to and from base units.	
	I can record experimental data clearly.		I can design a system for recording data and associated calculations clearly.		I can evaluate in detail the accuracy and precision of a set of data based on comparison of measurements and a 'true value'.	
P8.5 More about levers and gears (Triple only)	I can identify levers being used as force multipliers.	☐	I can describe the action of levers being used as force multipliers.	☐	I can describe the action of gears relating changes in the size of forces to the speed of rotation and the number of teeth in the gear.	☐
	I can calculate the forces produced by force multipliers.		I can describe the action of a pair of gears in terms of increasing or decreasing the size of forces.	☐	I can analyse systems of gears of different ratios.	☐
	I can state that gears can be used to increase or decrease the size of forces.		I can investigate the action of a set of two gears.	☐	I can evaluate the results of a gear experiment, explaining any discrepancies in terms of the uncontrolled forces acting on the system.	☐

AQA GCSE Physics
Student Checklist

P8 Forces in balance

Name ..... Class ..... Date .....

Lesson	Aiming for 4		Aiming for 6		Aiming for 8	
P8.6 Centre of mass	I can identify the approximate centre of mass of a range of simple shapes.	☐	I can describe an experimental technique to determine the centre of mass of an object.	☐	I can evaluate an experimental technique to determine the centre of mass of an object, identifying the likely	☐
	I can state that a suspended object will come to rest so that the centre of mass lies below the point of suspension.		I can explain why a suspended object comes to rest with the centre of mass directly below the point of suspension in terms of balanced forces.		I can apply understanding of the particle model and moments to explain why objects have a point at which the mass seems to act.	
	I can use lines of symmetry to identify the location of the centre of mass.		I can compare the stability of objects to the position of their centre of mass of an object, identifying the likely sources of error leading to inaccuracy.		I can plan a detailed investigation into the stability of three-dimensional objects.	
P8.7 Moments and equilibrium (Triple only)	I can calculate moments using the appropriate equation.	☐	I can use calculation of moments to determine if a seesaw is in equilibrium.	☐	I can use calculations to determine if an object with three or more moments is in equilibrium.	☐
	I can state the principle of moments.		I can apply the principle of moments to determine if an object is in equilibrium.	☐	I can describe the application of moments in balance (equilibrium) in a range of contexts.	☐
	I can find the weight of an object using a balanced beam.		I can establish the possible range of a weight using repeat values.	☐	I can evaluate an experiment to determine the weight of objects in terms of accuracy and precision.	☐
P8.8 The parallelogram of forces			I can find the resultant of two forces at an acute angle by drawing a scale diagram.	☐	I can find the resultant of two forces at an obtuse angle by drawing a scale diagram.	☐
			I can describe a system in equilibrium in which non-parallel forces are acting.		I can investigate non-parallel forces acting on a system in equilibrium to verify the parallelogram of forces.	
			I can calculate the component of a force using scale diagrams and ratios.		I can analyse a wide range of systems of non-parallel forces using a parallelogram technique.	

AQA GCSE Physics
Student Checklist

P8 Forces in balance

Name ..... Class ..... Date .....

Lesson	Aiming for 4	Aiming for 6		Aiming for 8	
P8.9 Resolution of forces		I can resolve a single force into wo perpendicular components.	☐	I can resolve a pair of forces into the overall perpendicular components.	☐
		I can determine if an object is in equilibrium by considering the horizontal and vertical forces.	☐	I can determine if an object is in equilibrium by considering the horizontal and vertical components of	☐
		I can investigate the effect of increasing the weight of an object on a slope on the component of the weight acting along	☐	I can plan a detailed investigation into the effect of increasing the gradient of a slope on the component of the	☐