KS3 Unit Overview – Big Picture

Subject/Year group/Unit Title	**Big picture questions**	**Pupils will focus particularly on the following statements from the programme of study:**
Physics **Year 7** **Forces** 1. Introduction to forces 2. Force diagrams 3. Forces and motion 4. Friction 5. Water resistance 6. Air resistance 7. Upthrust 8. Forces and elasticity	What are forces and how do we represent and measure them? What are the effects of forces? What are the important forces and practical investigations for them?	*PMF1: forces as pushes or pulls, arising from the interaction between two objects* *PMF2: Using force arrows in diagrams, adding forces in one dimension, balanced and unbalanced forces* *PMF4: forces: associated with deforming objects; stretching and squashing – springs; with rubbing and friction between surfaces, with pushing things out of the way; resistance to motion of air and water* *PMF5: forces measured in Newtons, measurements of stretch or compression as force is changed* *PMF6: force-extension linear relation; Hooke's Law as a special case* *PMF7: work done and energy changes on deformation* *PMB1: opposing forces and equilibrium: weight held by stretched spring or supported on a compressed surface* *PMF1: forces being needed to cause objects to stop or start moving, or to change their speed or direction of motion (qualitative only)*

		PMF2: change depending on direction of force and its size. *PMP2: pressure in liquids, increasing with depth; upthrust effects, floating and sinking*
Assessment tasks	**As FCJ educators, we will focus on the FCJ values by:**	**We will ensure students skills in reading, writing, communication and mathematics are enhanced by:**
End of unit forces test Forces Badger assessment Assessment opportunities during class lessons with AFL Essential homework 1 – balanced and unbalanced forces Essential homework 2 – working scientifically forces Essential practicals – measuring forces, investigating friction, investigating streamlining, investigating parachutes and forces & elasticity	Excellence – set highest possible standards for all learners Companionship – teamwork when completing practical investigations, respect during class discussions Dignity – class discussions and Q&A, ensuring everyone is listened to and their views heard Justice - Hope – highlight progress in science and innovation to inspire learners Gentleness – classroom management in a firm but fair and gentle manner	Mathematics – graph skills, calculating mean, reading scales on newton meter, calculating extension Reading – within lessons themselves Writing – planning practical work, written class work. Communication – discussions within lessons
We are supporting progression from KS2 in this unit by:	**We are supporting progression to KS4 in this unit by:**	**Misconceptions and how they will be addressed**
Learners know from KS2 about the role of gravity and how friction and air resistance slow objects down. They know about opposite forces and how to measure forces.	Learners will use free-body force diagram knowledge to quantitatively calculate resultant force at KS4. They will also resolve resultant forces and find resultants using the parallelogram of forces.	Weight is a force in newtons and mass is the amount of matter in kilograms. Free body force diagrams and representation. Upthrust only acts in water.

	Learners will extend understanding of work done and energy by calculating these.	