Knowledge Rich Curriculum Plan

Course/Unit

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
To learn how to draw force diagrams.	• Students will know that newton's first law of motion states that an object at rest will stay at rest and that an object moving with constant velocity will continue to move with constant velocity unless an unbalanced force acts on the objects. • Students will know that a resultant force acting on an object will cause the object to accelerate in the same direction as the resultant force. • Students will know how to draw a force diagram.		Students will need to know how to draw models. Students will know basic forces.	
To learn how to write forces as vectors.	• Students will know that you can find the resultant of two or more forces given as vectors by adding the vectors. • Students will know how to find the magnitude of a force. • Students will know how to find the angle between forces. • Students will know how to describe the motion of a particle • Students will need to know how to find the resultant force of a vector.		Students will need to know how to find the magnitude of a vector. Students will need to know to find the angle between vectors.	
To learn how to how to use forces involving acceleration.	• Students will know that Newton's second law of motion states that the force needed to accelerate a particle us equal to the product of the mass of the particle and the acceleration produced. F=ma • Students will need to that Gravity is the force between any object and the earth. The force due to Gravity is called the weight of an object. • Students will know that you can write W=mg where W is the weight and g is gravity (g=9.8) • Students will need to know how to use the equation F=ma to find force, mass and acceleration. • Students will need to know how to find the magnitude of a body accelerating. • Students will need to know how to use the Suvat equations coupled with f=ma.		Students will need to know how to rearrange formula. Students will need to know the equations of motion. Students will need to know how to draw forces.	
To learn how to solve problems involving vertical motion under gravity.	• Students will know that the downward acceleration of an object can be modelled as $g = 9.8$ • Students will know that the upward acceleration of an object can be modelled as $g = -9.8$ • Students will be able to apply the above to the equations of motion. • Students will be able to draw models based on gravity. • Students will be able to solve problems involving upwards and downwards motion.		Students will need to know the equations of motion.	

To learn how to solve problems involving vector forces acting on particles.	• Students will know that you can use f=ma to solve problems involving vector forces acting on particles. • Students will know how to find the acceleration of a particle in vector form. • Students will know how to find the magnitude and bearing of the acceleration of a force.		• *Students will know how to find the magnitude of a force.* • *Students will know how to find the angle between forces.* • *Students will know how to describe the motion of a particle* *Students will need to know how to find the resultant force of a vector.*	
To learn how to solve problems involving connected particles.	• Students will know that you can solve problems involving connected particles by considering the particles separately or, if they are moving in the same straight line, as a single particle. • Students will know how to find the acceleration of connected particles. • Students will know how to consider a system as a single particle you eliminate the need to find the tension in the string. • Students will know that when required to find the tension of a string, to consider the particles separately. • Students will need to know that Newton's third law states that for every action there is an equal and opposite reaction. • Students will be able to find missing forces in connected particles using vertical motion.		• *Students will need to know the f=ma formula.* • *Students will need to know how to resolve forces* • *Students will need to know the suvat equations.*	
To learn how to solve problems involving pulleys.	• Students will know how to model systems involving pulleys. • Students will know how that when particles are connect by a light inextensible string, which passes over a smooth pully, the tension in the string will be the same on both sides. • Students will know how to write an equation of motion for each particle. • Students will know how to find acceleration of each connected particle to the pully. • Students will know how to find the tension in a string. • Students will know how to find the force exerted by the pully on the string. • Students will know how to use suvat formulas with pulleys. • Students will know how to use pullyes with connected particles to find acceleration. • Students will know how to use pullyes with connected particles, to solve suvat formulas.		• *Students will need to know the f=ma formula.* • *Students will need to know how to resolve forces* • *Students will need to know the suvat equations.* • *Students will need to know how to solve problems involving connected particles.*	