

S3 Science: how well is your learning progressing?

Key area 4: Take off	I can do this.	I need to go over this.	I don't know this.	Level
I can state that a force can change the speed, shape and direction of travel of an object.				3
I know that a Newton Balance is used to measure the size of a force. Force is measured in units called Newtons (N).				3
I can state that speed is defined as the distance travelled per second.				3
I know that when an object has two forces of the same size but acting in opposite directions we say there are balanced forces. Balanced forces have the same effect as no forces acting on the object.				3
I know that an object with balanced forces acting on it will stay at rest or move with a constant speed while an object with an unbalanced force will accelerate.				4

I can use an equation to solve problems involving unbalanced force (F), mass (m) and acceleration (a) $F = m \times a$				4
I know that as the force increases the acceleration increases if the mass is kept constant.				4
I know that as the mass increases the acceleration decreases if the force is kept constant.				4
I can state that friction is a force which always acts in the opposite direction to the motion of an object. If friction is the only force acting on an object that is in motion, the object will decelerate.				3
I know that friction always produces heat energy. The greater the speed the object is moving at, the more heat energy will be produced by friction.				4
I know that air friction can be reduced by making the shape more aerodynamic. This is called streamlining.				3
I know that weight is a downward force measured in Newtons (N).				3

I know that mass is how much matter an object has and is measured in kilograms (Kg).				3
I can state that gravity on Earth is 10 Nkg^{-1} . This means that on Earth the value of the weight will always be 10 times greater than the mass for any object.				3
I can use an equation to solve problems involving weight (W), mass (m) and gravity (g) $W = m \times g$				4
I know that Newton's third law states that if object A pushes object B then object B pushes object A with an equal and opposite force.				3
I know that for a rocket to take off (accelerate) the total upward force (thrust) must be greater than the total downward force (weight).				4