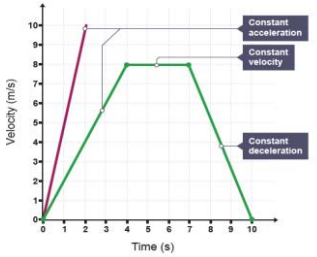
P9: Motion Knowledge Organiser (F) PT61.1

Speed, v	•The distance covered by an object per second. •Measured in m/s
Distance –Time graph 	•A graph that shows how the distance covered by an object changes with time. •A straight line sloping upwards shows an object is moving at a constant speed. •The gradient shows the speed of the object. •Steeper gradient = faster object •A horizontal line shows the distance isn't changing as time changes → the object is stationary
Velocity, v	•The speed in a given direction •Velocity is a vector quantity •Two objects can have the same speed but different velocities if they are travelling in opposite directions
Vector	•A quantity that has magnitude and direction • Examples: Velocity, force, acceleration, momentum, displacement
Scalar	•A quantity that only has magnitude •Examples: energy, time, temperature, speed, distance
Displacement , s	• The distance travelled in a given direction
Acceleration, a	•When an object speeds up. •The change in the velocity of an object per second •Measured in m/s2 •If an object's velocity changes, it accelerates.
Deceleration	•When an object slows down •Represented as negative acceleration
Final Velocity, v	•The velocity of an object
Initial Velocity, u	•The velocity of an object at the start of the journey •Usually 0 m/s!

Velocity –Time graph	•A graph that shows how the velocity of an object changes with time. •Be careful not to confuse with a distance-time graph- check the y-axis! •The gradient shows the acceleration •Steeper gradient = bigger acceleration •Straight line sloping upwards= positive acceleration •Straight line sloping downwards = negative acceleration (deceleration!) •Horizontal line = no acceleration → the object is moving at a constant speed •Curved line = changing acceleration 
Gradient	•The steepness of a line on a graph. •To find the gradient, turn the line into a triangle •Gradient = height of triangle, y÷ base of triangle, x

Key Equations To Learn	
Speed, v	Speed = distance ÷ time v = s ÷ t
Acceleration, a	Acceleration = (Final Velocity – Initial Velocity) ÷ Time a = (v – u) ÷ t