**Vocabulary:** **Roller Coaster Physics**



**Vocabulary**

* Friction – a force that opposes motion.
	+ Friction arises because of contact between a moving object and the materials it is moving over or through.
	+ The friction between two objects is given by the *coefficient of friction*.
* Gravitational potential energy – energy of position.
	+ The higher the object is, the greater its gravitational potential energy.
	+ The more massive the object, the greater its gravitational potential energy.
	+ Gravitational potential energy is represented by the symbol *U*.
	+ Gravitational potential energy is calculated using the formula *U* = *mgh*, where *m* is mass, *g* is gravitational acceleration, and *h* is height.
	+ If mass is measured in kilograms, height in meters, and acceleration in m/s2, then the units of gravitational potential energy are joules (J).
		- 1 Joule is equal to one newton-meter, or 1 kg•m2/s2.
* Kinetic energy – energy of motion.
	+ The faster an object is moving, the greater its kinetic energy.
	+ The more massive a moving object is, the greater its kinetic energy.
	+ Kinetic energy is represented by the symbol *KE*, or simply *K*.
	+ Kinetic energy is calculated using the formula *K* = *mv*2, where *m* is mass and *v* is speed.
	+ If mass is measured in kilograms and speed in m/s, then the units of kinetic energy are joules (J).
* Momentum – a measure of how difficult it is to stop a moving object.
	+ Momentum is the product of an object’s mass and velocity and has a magnitude and direction.
		- The magnitude of momentum (*p*) can be found by multiplying the object’s mass and speed: *p* = *m • v*.
	+ If mass is measured in kilograms (kg) and speed is measured in meters per second (m/s), the units of momentum are kilograms-meters per second (kg•m/s).
	+ For example, the momentum of a 5-kg object moving at 4 m/s is 20 kg•m/s.