MOTION AND FORCES

GRAVITY: a force that makes any object pull toward another object
FRICTION: a force that acts to slow down moving objects
FORCE: push, pull, or twist that makes something move

Stretching springs
PUSH

Bulldozers
Twisting
MASS: amount of matter in an object

WEIGHT: this measure describes the amount of gravitational force of an object
### Measuring Speed

<table>
<thead>
<tr>
<th>Car</th>
<th>Distance</th>
<th>Speed</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>3000 m</td>
<td>20 m/s</td>
<td>150</td>
</tr>
<tr>
<td>B</td>
<td>3000 m</td>
<td>60 m/s</td>
<td>50</td>
</tr>
<tr>
<td>C</td>
<td>3000 m</td>
<td>40 m/s</td>
<td>75</td>
</tr>
</tbody>
</table>

\[
\text{Time} = \frac{\text{Distance}}{\text{Speed}}
\]
First Law of Motion states that:

an object at rest tends to stay at rest and an object in motion tends to stay in motion

Inertia: the tendency of an object to remain at rest if at rest or to continue moving if in motion.
Second Law of Motion states that: acceleration is produced when a force acts on a mass.

ACCELERATION: rate at which an object changes its velocity

SPEED: distance covered within a certain unit of time

VELOCITY: rate at which an object is traveling in a certain direction
Third Law of Motion states that:

for every action, there is a separate but equal reaction.

That is to say that whenever an object pushes another object it gets pushed back in the opposite direction equally hard.

Let's study how a rocket works to understand Newton's Third Law.

The rocket's action is to push down on the ground with the force of its powerful engines, and the reaction is that the ground pushes the rocket upwards with an equal force.
MOMENTUM: product of an object's mass and its velocity
NEWTON: This English scientist first described mathematically the force of gravity

Einstein: German born scientist who formulated a more accurate theory involving the force of gravity
STATE OF MOTION: describe an object's velocity or speed with a direction

EQUILIBRIUM: all forces acting upon an object balancing each other, the object will be in this state
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