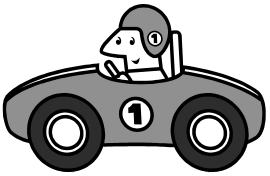
Name_____

Newton's Laws

Have you ever been riding in a car when the driver stopped suddenly? How did your body move as the car came to a stop? Did it feel like your body was moving forward? When you felt this happening you experienced Newton's first law of motion. Newton's first law of motion says that **an object in motion will stay in motion and an object at rest will stay at rest unless acted on by an unbalanced force.** In the car your body was in motion, traveling at the same speed as the car. When the car stopped, your body stayed in motion. If you were not wearing a seatbelt and you were traveling very fast, your body could continue to move forward through the windshield!



This idea is called ***inertia****.*

Explain why your body feels like it is being pushed back when the car starts back up again:

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If a ping pong ball and a basketball were both dropped at the same time from the roof of our school, which would hit the ground with a greater force? Common sense tells us that the basketball ball would. *The difference in forces would be caused by the different masses of the balls*. Newton stated this relationship in his second law, **the force of an object is equal to its mass times its acceleration.**

List two other situations where Newton's 2nd Law may apply.

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Imagine a rocket is being launched from the earth. Hot gases are pushed out from the bottom of the rocket as the rocket is pushed upward. The force of the gases pushing against the surface of the earth is equal and opposite to the force with which the rocket moves upward. The motion of the rocket can be explained by Newton's third law, **for every action there is an equal and opposite reaction.** In other words, *when one object exerts a force on another object, the second object exerts a force of equal strength in the opposite direction on the first object*.

Fill in the table:

Law	Description/Definition	Everyday Example
1st Law of Motion		
2nd Law of Motion		
3rd Law of Motion		