

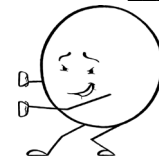
Name: \_\_\_\_\_

Class: \_\_\_\_\_ Date: \_\_\_\_\_

# NEWTON'S LAWS OF MOTION

**ESSENTIAL QUESTION:** What are the laws that govern \_\_\_\_\_ in the \_\_\_\_\_?

VO  
C  
A  
B



A \_\_\_\_\_ or pull that causes an object to \_\_\_\_\_ its motion or shape.



The \_\_\_\_\_ of change of velocity ( \_\_\_\_\_ with a direction).

TOPIC QUESTIONS:

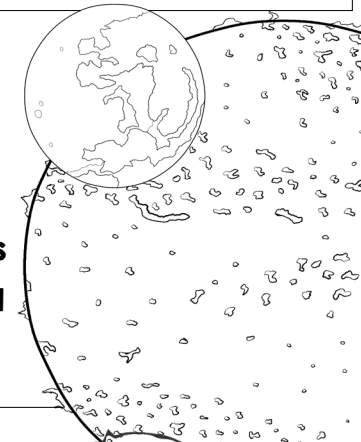
1

Who was Sir Isaac \_\_\_\_\_?



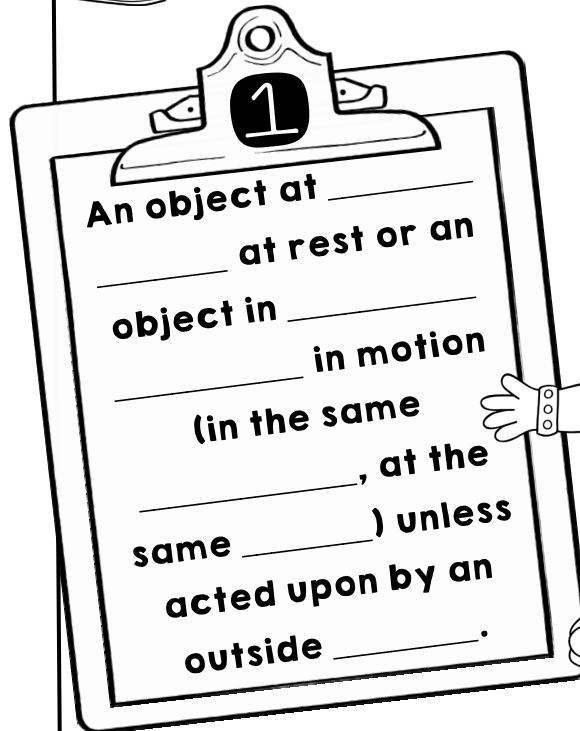
Sir Isaac Newton lived from \_\_\_\_\_ to 1726. He was one of the most \_\_\_\_\_ scientists of all time. His ideas about \_\_\_\_\_ and \_\_\_\_\_ became the basis for modern \_\_\_\_\_.

Newton's \_\_\_\_\_ Laws of Motion are still being widely used to this day to describe the ways that objects \_\_\_\_\_ in everyday life and the ways that \_\_\_\_\_ and moons move in the \_\_\_\_\_.

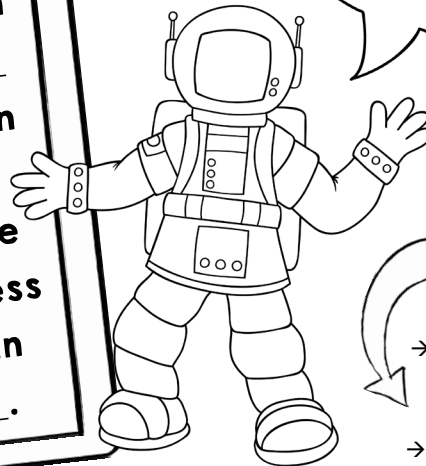


2

What is the \_\_\_\_\_ Law of Motion?



Objects in the universe are \_\_\_\_\_! If they're just \_\_\_\_\_ there, they want to keep sitting there. If they're \_\_\_\_\_, they want to keep that \_\_\_\_\_ motion.



This phenomenon is also known as the \_\_\_\_\_ of \_\_\_\_\_

*inertia*

- The greater the \_\_\_\_\_, the greater the \_\_\_\_\_
- The greater the \_\_\_\_\_, the greater the \_\_\_\_\_

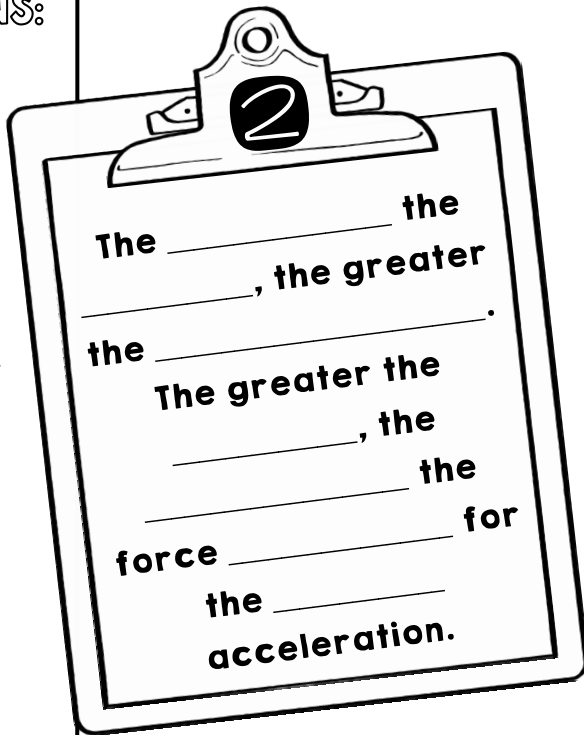


Example: When the car you're riding in suddenly \_\_\_\_\_ and your body \_\_\_\_\_ to move forward. The reason for \_\_\_\_\_!

3

What is the

Law of  
Motion?



$$F = m \times a$$

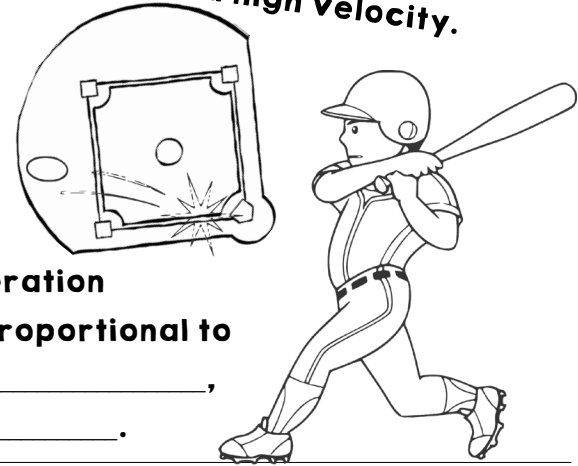
The mathematical \_\_\_\_\_ for this law is force \_\_\_\_\_ mass \_\_\_\_\_ acceleration.

$$F = m \times a$$

$$F = m \times a$$

Mass and acceleration are \_\_\_\_\_ proportional to one another. As one \_\_\_\_\_, the other \_\_\_\_\_.

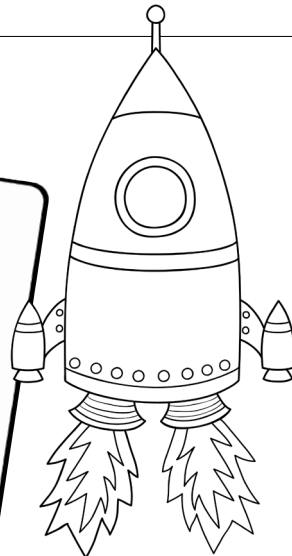
Example: The \_\_\_\_\_ the player \_\_\_\_\_ the ball, the \_\_\_\_\_ the ball goes. If the ball had more \_\_\_\_\_, that \_\_\_\_\_ force would \_\_\_\_\_ accelerate the ball to such a high velocity.



4

What is the

Law of  
Motion?



Action: engine pushes gas down

Reaction: gas pushes rocket up

Example: A rocket \_\_\_\_\_ burning fuel \_\_\_\_\_ at a high velocity. That \_\_\_\_\_ force has an equal and opposite \_\_\_\_\_ force of the ground pushing back up on the rocket, moving the rocket \_\_\_\_\_.

Action-reaction pairs are sometimes \_\_\_\_\_ to identify if one object is much more \_\_\_\_\_ than the other.



When you walk, you \_\_\_\_\_ a force \_\_\_\_\_. The Earth applies a \_\_\_\_\_ force, pushing your foot \_\_\_\_\_. But the mass of the Earth is so \_\_\_\_\_, it does \_\_\_\_\_ move in response.

# NEWTON'S LAWS OF MOTION: SUM IT UP!

1. Match each phrase below with the associated Law of Motion. Write 1<sup>st</sup>, 2<sup>nd</sup>, or 3<sup>rd</sup> on the line.

\_\_\_\_\_ forces are always paired

\_\_\_\_\_ an object at rest stays at rest

\_\_\_\_\_ the law of inertia

\_\_\_\_\_ the greater the force, the greater the acceleration

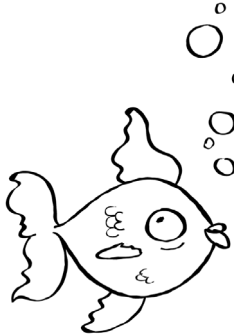
\_\_\_\_\_ for every action there is an equal and opposite reaction

\_\_\_\_\_ the law of 'lazy'

\_\_\_\_\_ force equals mass times acceleration

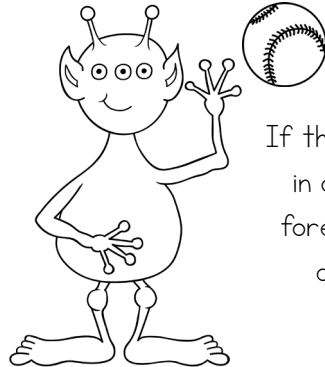
\_\_\_\_\_ bigger, heavier things don't move as fast or as far as smaller, lighter things

2. Write 1<sup>st</sup>, 2<sup>nd</sup>, or 3<sup>rd</sup> next to each example below to indicate which Law of Motion is being depicted.



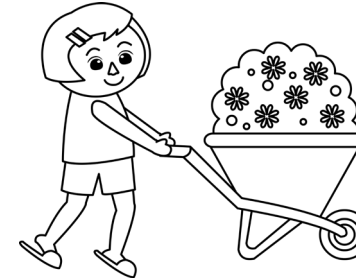
As the fish pushes water behind her, she is propelled forward.

\_\_\_\_\_ Law



If the alien throws the baseball in outer space, it will travel forever in the same direction and at the same speed.

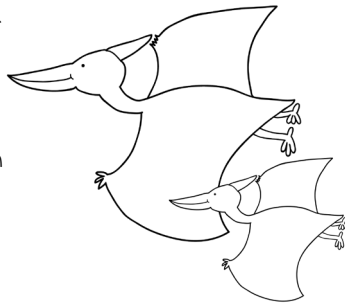
\_\_\_\_\_ Law



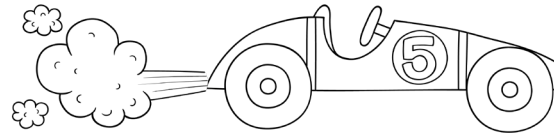
As the girl pushes the wheelbarrow forward, she feels a pressure of the handles pushing back on her hands.

\_\_\_\_\_ Law

To fly together, the larger pterodactyl will need to apply more force because she has a larger mass than the baby pterodactyl.

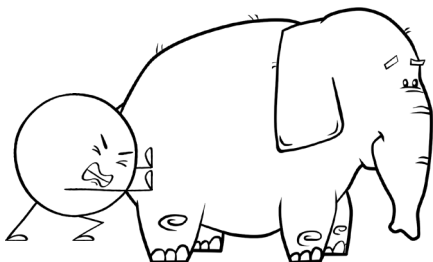


\_\_\_\_\_ Law



The force needed by the brakes to slow down a moving racecar must be greater as the mass of the car increases. This is why racecars are made of lightweight materials.

\_\_\_\_\_ Law

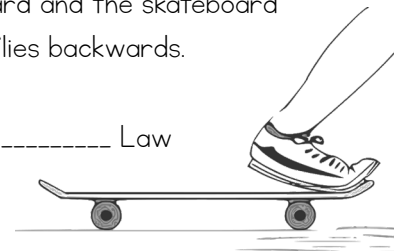


The boy is not able to push the standing elephant forward because the elephant is so massive.

\_\_\_\_\_ Law and \_\_\_\_\_ Law

The kid jumps forward off the skateboard and the skateboard flies backwards.

\_\_\_\_\_ Law



How are you feeling about the basics of Newton's Laws of Motion? Circle one:

