

## NEWTON'S LAWS OF MOTION

### OBJECTIVES:

1. Describe the notions proposed by Aristotle and Galileo about the natural state of objects.
2. State Newton's 1st Law of Motion, its concepts, types and examples.
3. State Newton's 2nd Law of Motion, its concepts and examples.
4. State Newton's 3rd Law of Motion, its concepts and examples.

### KNOW Me!

Fill in the chart using your initial knowledge of the topic.

Newton's 1st Law of Motion	Newton's 2nd Law of Motion	Newton's 3rd Law of Motion

### ACT Me!

Perform the following activities.

Materials:

- Small card board
- Coin
- Tumbler or cup
- A glass of milk
- Stirring rod
- Baseball bat
- Baseball
- Sand
- Rope
- Swimming attire
- Safety gear for climbing

#### A. Newton's 1st Law of Motion

1. Rapidly flicking a card with a finger containing a coin on top of it and a tumbler below
2. Stirring of milk in a circular motion

#### B. Newton's 2nd Law of Motion

1. Catching a fast moving and a slow-moving baseball
2. Landing on a sand and a bare floor when you jump

#### C. Newton's 3rd Law of Motion

1. Swimming against the water
2. Climbing a vertical rope

### ENGAGE Me!

List down your specific observations while doing activity.

## ENQUIRE Me!

Answer briefly.

### A. Newton's 1st Law of Motion

1. Is there a force acting on the coin when you suddenly flicked the card with your finger?
2. What kind of force is it?
3. Is that force enough to move the coin from its original position?
4. What type of inertia is acting on the coin?
5. What happens to the swirling of milk when you suddenly stop stirring?
6. What type of force are you applying when you swirl the milk in circular motion?
7. What type of inertia is responsible for the swirling motion of milk even if you already stopped stirring?

### B. Newton's 2nd Law of Motion

1. Which of the two different baseball speeds did you apply a large force? A small force?
2. Which one do you think has small time before contact? Which one has a long time?
3. Which of the two different floors you notice requires more time before landing? Which one requires lesser time?
4. Which one do you think has a large amount of force applied onto your feet? Which one has a small amount of force?

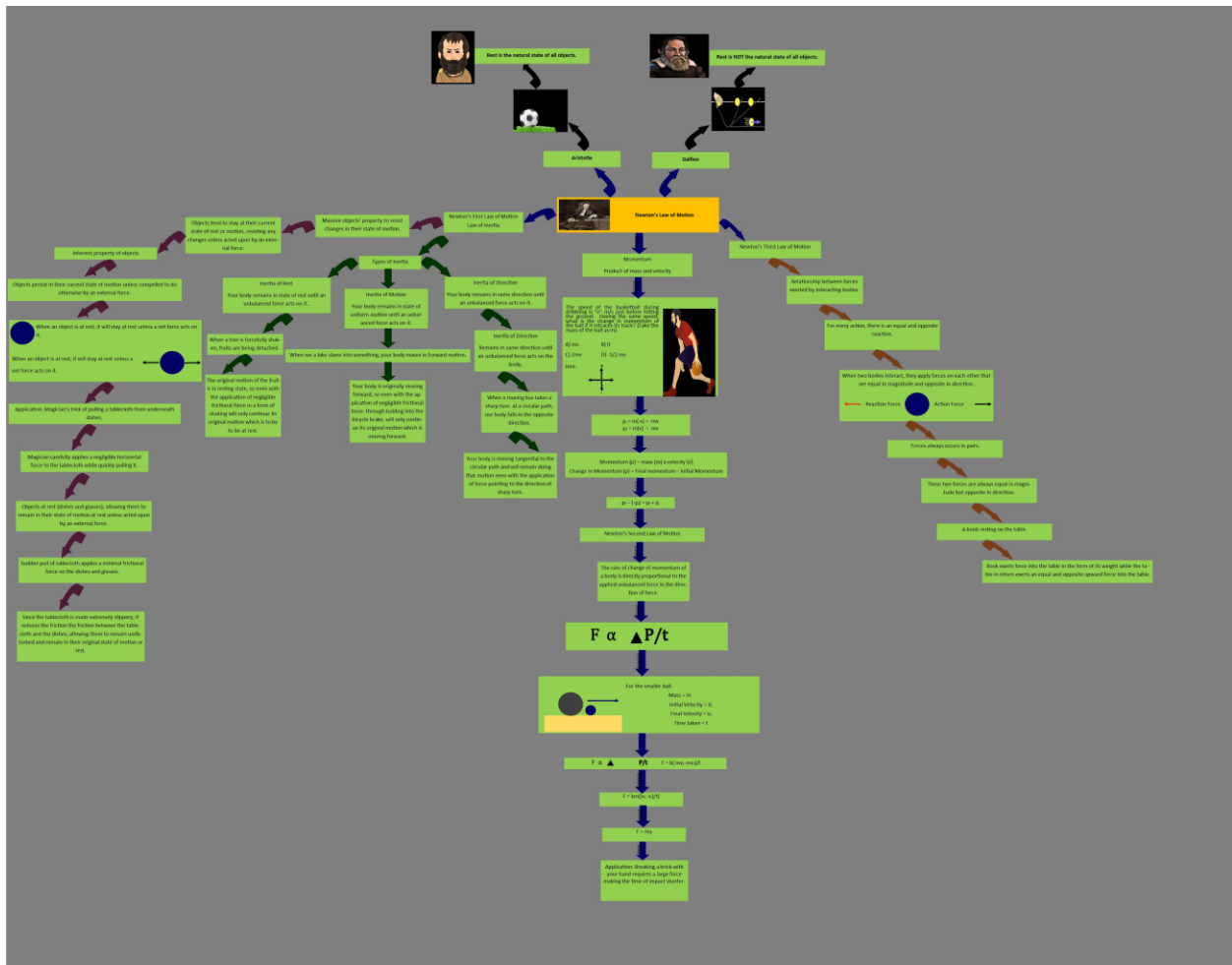
### C. Newton's 3rd Law of Motion

1. What type of force of force did you apply to water in order for you to move forward? What type of force did the water applied to you in return?
2. What type of force of force did you apply to the rope in order for you to move upward? What type of force did the rope applied to you in return?

## ENLIGHTEN Me!

This section must emphasize the conceptual mastery of the topic. Main topic must be brief and concise, depicting only the concepts that you want to learn. Secondly, main topic must be "chunked" into its constituent significant subtopics. If the subtopics are more than two, the rest should be placed in succeeding pages. Exclusionary rule applies if the subtopics pertain to a certain classification where the learners must see the over-all difference. Subtopics are further divided and extracted into its component group topics. Related concepts are arranged in close proximity to easily identify patterns and interrelationships among them. Same-colored arrows denote relevant concepts or the same group of concepts while each diverse concept will be denoted by an arrow of different color. As much as possible, each concept must be explicitly explained using keywords only for easy retention.

## Sample mind map for lecture



## UNRAVEL Me!

Answer briefly.

1. In Newton's First Law of motion, why do you think it is difficult to resist original motion of objects?
2. In Newton's Second Law of Motion, how would you derive the relationship between unbalanced force and change in momentum?
3. Newton's third Law of motion must be between \_\_\_\_ different bodies and \_\_\_\_-directional.

## ASSESS Me!

Answer briefly.

1. Do all bodies have the same inertia?
2. In boxing, how do you decrease the force?
3. Can birds fly in a vacuum space?