# Force & Motion Lesson 1: “The Solve”

## Student Handout

**I. Watch the Mosa Mack Mystery.**
Either on your own, in a small group or as a class (your teacher will let you know), watch Mosa Mack’s episode on Newton’s Laws. Then, fill out the questions below. Include a time code in your answer as evidence of where you found your answer.

**Name: _____** **Date: _____**

**Episode Questions**

1. Why is Mosa called to Mrs. Newton’s Supermarket?

2. Why did the pickle jar “leap” off the shelf? What did this teach Mosa about what makes things move?

3. What do you have to apply in order to start or stop an object in motion?

4. When Mosa looks closer at the floor, what does she notice may be acting as the force that stops the shopping cart?

5. Why did all the oranges collapse onto the floor when only one was removed?

6. What has Mosa learned so far about forces and motion based on her supermarket experiments? (fill in the missing information for each statement):

a. Objects that are still stay still unless:
_____

b. Objects moving keep moving until:
_____

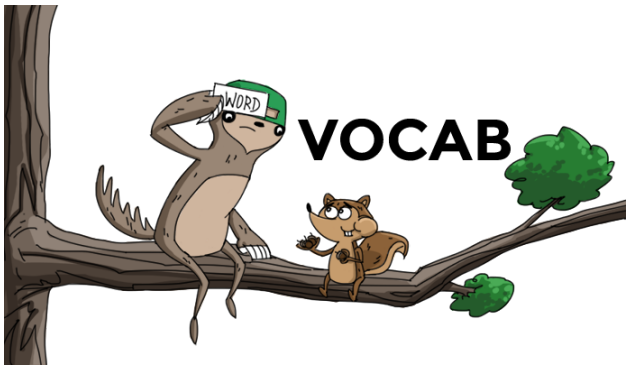
c. Forces that can impact the motion of an object include _____ and _____.

7. What did Mosa figure out? Why did the ketchup boxes fall to the floor?

## II. Vocabulary Activity

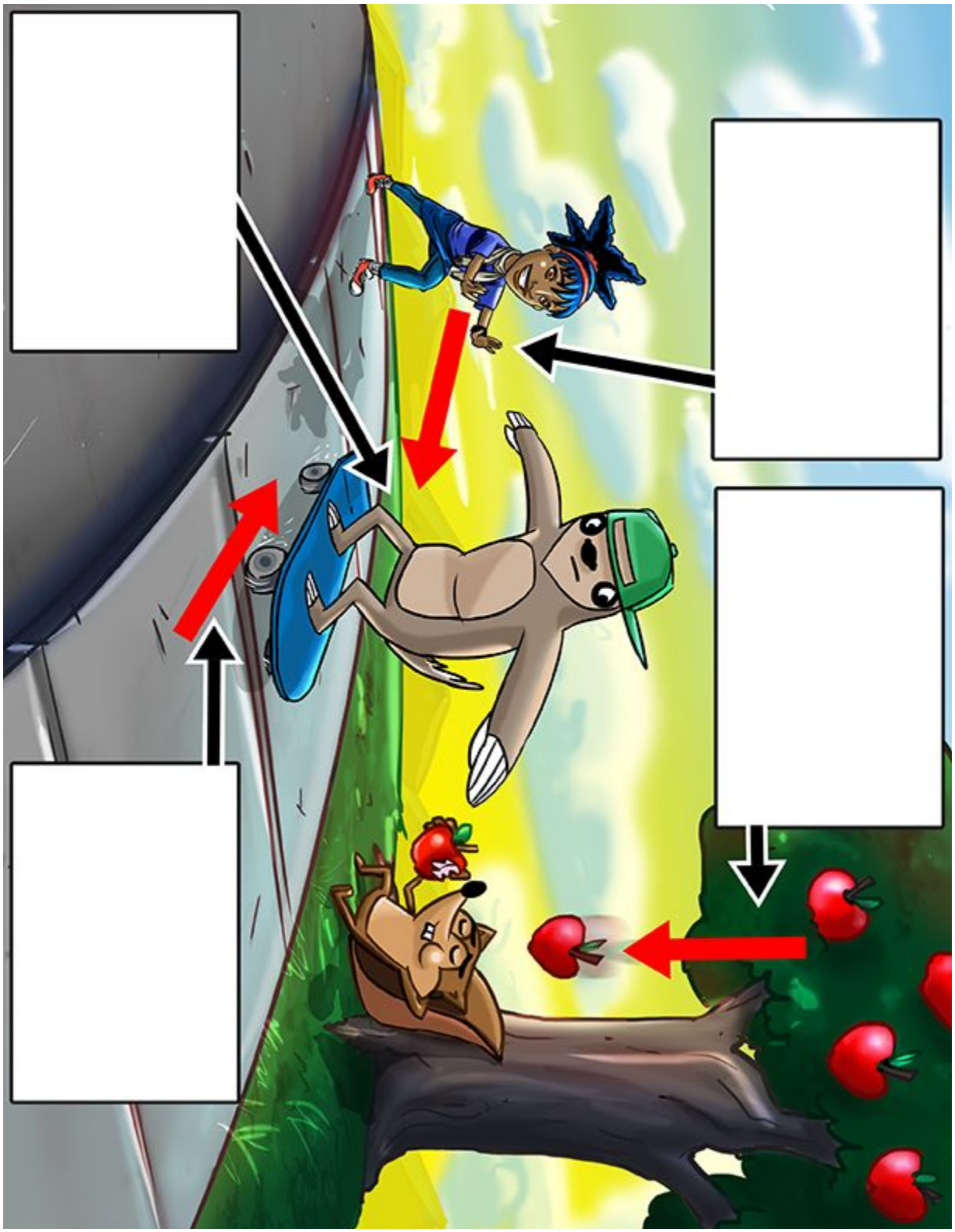
Note: Your teacher will tell you whether you will complete this activity online here, or offline by following the instructions below.

1. Using the materials at your table, cut out your vocabulary cards along the **solid blank lines**.
2. Using the definitions on the back of the cards, match the vocabulary word with the correct picture on the "Newton's Laws Mind Map." When you're ready to glue, raise your hand so you can check your Mind Map with your teacher.




3. Fold along the dotted line on each vocabulary card to create a flap. Put glue **ONLY** on the hinge of your vocabulary cards ( the word should be on top). **You should be able to open the flap to see the definition and the picture underneath.**
4. Discuss with your group:
    a. Brainstorm different examples of forces in the world around you
    b. According to the definition of a force, would you consider gravity and friction as forces? Why or why not?

**Force & Motion Mind Map**



**Force & Motion Vocabulary Cards:**

| | | |
|---|---|---|
| Applied Force | Gravity | Motion |
| Friction | | |

**Vocabulary Definitions**

- Motion: change in the position of an object over time
- Applied Force: a force applied to an object by a person or another object
- Gravity: the force by which a planet or other body draws objects toward its center. (On Earth, gravity pulls all things to its center, which is what keeps us on Earth's surface.)
- Friction: a force in the opposite direction of the motion

## III. Quiz: Check for Understanding

Complete the exit ticket below *or* you can take the quiz online!

**Name: _____** **Date: _____**

1. Fingers and hands pulling, pushing, pressing, or lifting are all examples of applying a _____.
    a. Friction
    b. Gravity
    c. Motion
    d. Force
2. A ball is at rest at the top of a hill until a boy kicks it with his foot. What is the force that causes motion in this scenario?
    a. The resting ball
    b. The hill
    c. The boy's foot
    d. The moving ball
3. As the ball rolls down the hill, it begins to move faster. What other force besides the initial force is causing the ball to roll faster down the hill?
    a. Gravity
    b. Friction
    c. The hill
    d. The ball
4. As the ball reaches flat ground, it begins to slow down and then stop. What force causes the ball to appear like it stops on its own?
    a. Gravity
    b. The boy's foot
    c. The hill
    d. Friction
5. In the video, Mosa reviews what she has learned. Things that are still stay still and things that are moving stay moving unless a _____ acts upon it. What word works best in the blank?
    a. Friction
    b. Force
    c. Gravity
    d. Motion