

# **Momentum/Friction**

## **Module: Momentum vs. Friction**

### **Lesson I: Momentum vs. Friction**

#### **Objectives:**

- Students will be able to identify that momentum and friction are always-present forces throughout nature.
- Students will define momentum as moving with velocity in one specific direction.
- Students will gauge whether they are moving with velocity in the same direction as where Jesus is moving.

#### **Materials Needed:**

- ☐ Football blocker or jumbo pillow
- ☐ Bible per student
- ☐ 1 marker and chart paper per group of 3-4 students
- ☐ 1 KJV Bible

## Minds On

Have a leader (or very mature student) hold the football blocker (or jumbo pillow). Advise the leader not to push back, but simply remain stationary (maybe slightly leaning into the volunteer). Have volunteers come and try to push the leader backwards in 10 sec. or less.

## Action

If appropriate, ask, “What law of motion did this demonstrate?” (Newton’s third law which states that “whenever a first body exerts a force  $\mathbf{F}$  on a second body, the second body exerts a force  $-\mathbf{F}$  on the first body.  $\mathbf{F}$  and  $-\mathbf{F}$  are equal in magnitude and opposite in direction.”<sup>1</sup>) (Leader’s note: If your students haven’t learned this in school, you can explain it directly.)

Say something like: *This happens not just in physics, but in life. Things are changing and, even at the very smallest level, are moving (i.e. electrons, etc.). Even in our lives, there’s no such thing as really being stagnant: you’re being swayed in one direction or another at all times during your life.*

Gather students in groups of 3-4. Have students read John 7:1-14, 25-44. Without getting too buried in the details, have them do the following:

- Find out what the Feast of Tabernacles is (hint: Lev. 23:33-43).
- On the chart paper, draw a line down the middle. On the left side, write the heading “For Jesus” and on the right side “Against Jesus”. Take all the characters in the passage and list them in either column according to where the character fits best.
- When complete, have a representative post their answers on the wall.

Compare the groups’ answers. If there are discrepancies, have the groups engage in a discussion focussed on why each person was chosen for each side of the table.

---

<sup>1</sup> [http://en.wikipedia.org/wiki/Newton%27s\\_laws\\_of\\_motion](http://en.wikipedia.org/wiki/Newton%27s_laws_of_motion)

Say something like: *Notice that with Jesus, he challenges people to either go with him (i.e. be for him) or go against him. There is no middle ground with him. Let's look at Jesus for a moment.*

Ask the large group and solicit answers:

1. What was Jesus' behaviour or attitude like in the beginning of the chapter? (answer: He seemed timid and not wanting to cause a stir.)
2. What was Jesus' behaviour near the end? (answer: He was bold and not afraid.)
3. Why do you think Jesus chose to make such a "loud statement" (v.37)? (answer: He wanted as many people to hear that he was the one God sent.)

Say something like: *It's interesting that Jesus makes the statement that if you believe in him, these "streams of living water" i.e. the Holy Spirit wouldn't just be in you, but would flow out of you. (If possible, have someone read John 7:37-39 from the KJV.) The King James version says, "out of his belly shall flow rivers of living water." That is, from your very being, God's spirit would work right out of you and overflow to others around you.*

Say something like: *This year's theme is "Momentum/Friction". Momentum is defined as a "product of the mass of a particle and its velocity; it is a vector quantity; i.e., it has both magnitude and direction." Jesus challenges us to not just believe in him, but to go with him, sometimes way beyond our comfort zone. To walk with him as he ministers to people and journeys with them. "Momentum" in a spiritual context suggests that a person can move their faith and "accelerate" it in the direction that Christ is moving.*

## **Consolidate/Debrief**

Say something like: *The theme poster this year is actually a tool for us to use. Right-side-up, the dominant picture is a wave, sort of like the "living water" Jesus speaks of. Upside-down, you'll see a dry land that seems dead and almost lifeless. We're going to gauge ourselves this year as a group according whether we are moving in momentum with Jesus, or are we allowing opposing forces to slow us down like friction. If we're moving with Jesus, we'll leave the poster*

*right-side-up. If we're sensing that we're allowing ourselves to be pushed back, we'll hang it upside-down. But let's make it our goal to ensure that we're doing whatever we can to consistently move in the direction Jesus is moving.*

## **BONUS ACTIVITY**

Ask the students to brainstorm what kinds of ideas, themes, songs, Scripture passages, Bible characters or illustrations that they think connect with Momentum/Friction or they would like to learn more about. Record these ideas on a piece of chart paper. Leader's note: You can use some of these ideas to see if they connect directly with any other modules or could help supplement those lessons.

Close in prayer.