

## Activity #2

Compare the acceleration of a ping pong ball to the acceleration of a golf ball when a constant force is applied. Show the connection between force (F), mass (m), and acceleration (a).

There are two sets of directions to experience Newton's 2nd Law:

- 1) Constant Force, and 2) Constant Acceleration.

<u>Constant Force</u>	<u>Constant Acceleration</u>
1) Place a ping-pong ball in front of the wooden ruler.	1) Place a ping-pong ball in front of the wooden ruler.
2) Carefully bend the ruler back and release it.	2) Carefully bend the ruler back and release it.
3) Record your observations.	3) Record your observations.
4) Place a golf ball in front of the wooden ruler.	4) Place a golf ball in front of the wooden ruler.
5) Carefully bend the ruler back and release it. <b><u>Be sure to bend the ruler back to the same spot. The force needs to be constant.</u></b>	5) Carefully bend the ruler back and release it. <b><u>Be sure to bend the ruler back to achieve the same acceleration as the ping-pong ball. The acceleration needs to be constant.</u></b>
6) Record your observations.	6) Record your observations.

Things to think about:

Which was easier to test for – constant force or constant acceleration?

How did you achieve constant force?

How did you achieve constant acceleration?

What was the biggest difference in these 2 kinds of tests?

Why was there a difference in these 2 kinds of tests?

Activity #2 – Record your observations here.

<u>Constant Force</u>	<u>Constant Acceleration</u>
<p>Variable: Did you use a wooden ruler both times?</p> <p>Variable: Did you bend the ruler back to the same spot each time? How do you know for sure?</p> <p>What happened when testing the ping-pong ball?</p>	<p>Variable: Did you use a wooden ruler both times?</p> <p>Variable: Did you bend the ruler back to the same spot each time? How do you know for sure?</p> <p>What happened when testing the ping-pong ball?</p>
<p>What happened when testing the golf ball?</p>	<p>What happened when testing the golf ball?</p>
<p>Did you keep the force constant?</p>	<p>Did you keep the acceleration constant?</p>

Information credited to: <https://betterlesson.com/lesson/634249/newton-s-2nd-law-ping-pong-ball-activity-newton-s-laws-expo-5-of-9>