

Forces & Motion

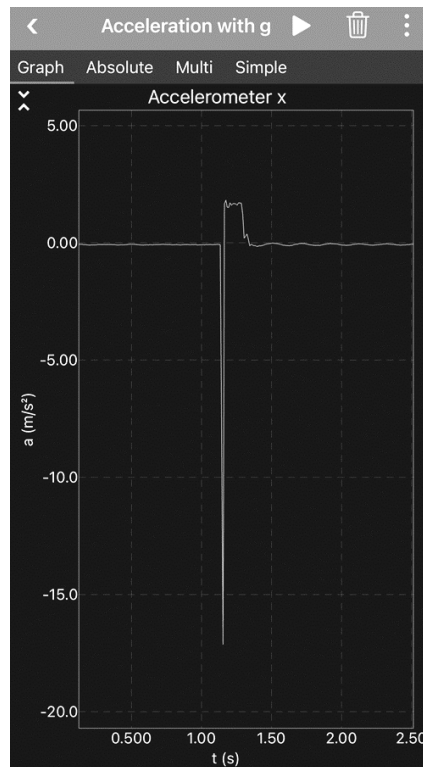
Student quiz — *Answer Key*

Word Bank

(when appropriate, use these words in your short answers)

- | | | |
|----------------|----------|--------------------------|
| • Acceleration | • Motion | • Velocity |
| • Force | • Weight | • Newton's law of motion |
| • Mass | | |

1. The graph below shows data recorded with the phyphox app while pushing a box (with the phone inside) along a flat table (in the negative X direction). What is the maximum acceleration magnitude (reported as an absolute value) of the box after the push?



- a. Approximately 16 m/s^2
- b. Approximately 2.5 m/s^2
- c. 0 m/s^2
- d. Approximately -16 m/s^2

Forces & Motion—Page 2

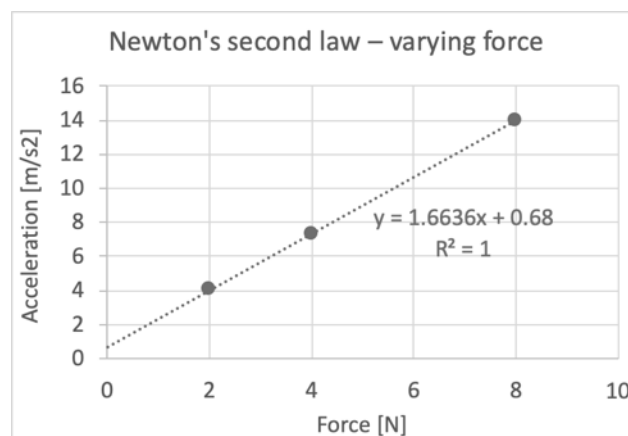
Answer Key

Student quiz

Directions: Complete the questions below, as described.

2. Assuming an object's mass does not change, draw a graph below that shows the relationship between force and acceleration.

The graph should show a linear relationship between force and acceleration as shown at right.



3. When pushing an object, you can increase its acceleration by... (Select all that apply)
- ☒ a. Increasing the applied force on the object.
 - ☐ b. Increasing the mass of the object.
 - ☐ c. Decreasing the applied force on the object.
 - ☒ d. Decreasing the mass of the object.
4. Imagine that you are pushing an empty shopping cart. Someone puts several gallons of milk in the shopping cart. You then push the cart with the same force that you used to push the empty cart. The cart's acceleration will be:
- ☐ a. Higher
 - ☒ b. Lower
 - ☐ c. The same
 - ☐ d. Zero
5. You are pushing a 500-gram box and a 1000-gram box across a table with a constant velocity. Which of the following statements are true? (Select all that apply)
- ☐ a. The acceleration of the 1000-gram box is higher.
 - ☒ b. The acceleration of both boxes is 0.
 - ☐ c. The acceleration of the 500-gram box is higher.
 - ☐ d. None of the above.