

Push Harder— Newton's Second Law

Student quiz—*Answer key*

Directions: Circle the best answer for the multiple-choice questions below. Write your answer for the other question.

1. Imagine that you are sliding a heavy box of books across the floor. You ask a friend for help and she pushes the box with you in the same direction. The box's acceleration will:
 - a. increase
 - b. decrease
 - c. stay the same
 - d. become zero
2. 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
3. Imagine that you are already pushing your car as hard as you can. Write at least one change you could make to the car to make it go farther.

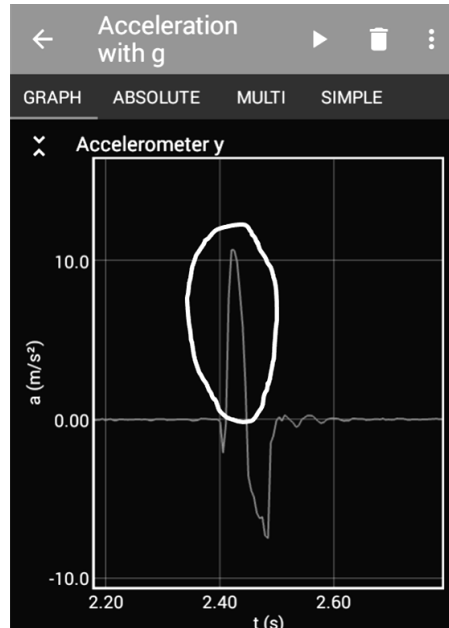
Possible answers include reducing the car's mass, reducing friction in the car's wheels/axles, or making the car more streamlined/aerodynamic (less air resistance).

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Answer Key

Directions: Respond to each question below, as directed.

4. The graph below shows data recorded with the phyphox app while pushing the phone along a flat table (in the positive Y direction, towards the top of the phone). Circle the part of the graph where the phone sped up (its velocity increased).



5. Assuming an object's mass does not change, draw a line on this graph that shows the relationship between force and acceleration.

