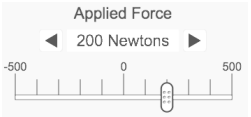
8th Science 2nd Law Practice Name

Forces and Motion: You will be using the PhET: ***Part B: Tap on "Motion"***

1 A. Check ✓ the boxes next to "force, values, masses, and speed".
B. Change the applied force to 200 N. The screen should look like this:
C. Look at the speedometer. What is the max speed it reaches? _____m/s
D. Click on the object to stop it.



2. Repeat step 1 using different objects or people and the same applied force.

What happens? (Look at the speedometer).
With more mass, it is harder for the speed to _____.

3. Click the orange reset. ✓your boxes again. Place just the trash can on. What is the minimum amount of Newtons to make it move? Do by single Newtons. _____N

4.How much time does it take for different objects, with the same applied force, to get to maximum speed? Maximum speed is reached when the speedometer cannot go any further. (Record your answers in the table)

Tap PAUSE, then change the NEWTONS, then click PLAY and TIME IT. *WORK with your desk partner to time it.* Use a device as a stopwatch.

Object	Mass	Applied force	Time (Use stopwatch)
1 crate		300N	
2 crates		300N	
Refrigerator		300N	
Man		300N	
Girl		300N	
Mystery Obj	?	300N	

5.Does the object's **mass** affect the time it takes for the object to reach maximum speed?
Yes or no?: _____ Explain:_____

6.What do you think the mystery object's mass might be based on how long it took to reach maximum speed at 300N? **Between _____kg and _____kg**

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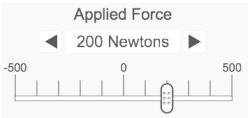

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Newton's Second Law (Force = mass X acceleration) F=ma Force is measured in Newtons(N)

1.You are pulling a wagon and your friend jumps in the wagon. You do not pull any harder (no change in force). Does the acceleration increase, decrease, or stay the same?	2.You are pushing a loaded cart at Costco. Your friend grabs on and helps you push the cart. What happens to the acceleration?
3.Two identical trucks are pulling trailers. The first truck's trailer is empty. The second truck's trailer is full of soil. Which truck can accelerate faster? _____Why?	4.You and your friend are pushing identical carts down the hall at the same acceleration. Your cart is empty and your friend's cart is full of textbooks. Who is pushing with more force? _____ Why?

5. The acceleration of the carts is 2 m/s^2 Mrs. Calahan's cart has a mass of 5 kg. Mrs. Crozier's cart has a mass of 30 kg. Calculate the force of each cart. **Mrs. Calahan's cart** **Mrs. Crozier's cart**	6. A wagon and a child together are 15 kg. Their acceleration is 3 m/s^2 . Calculate the force the parent is pushing with. A dog jumps in the wagon and has a mass of 5 kg. The cart's acceleration has now slowed down to 2 m/s^2. What is the force the parent is now pulling with?

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