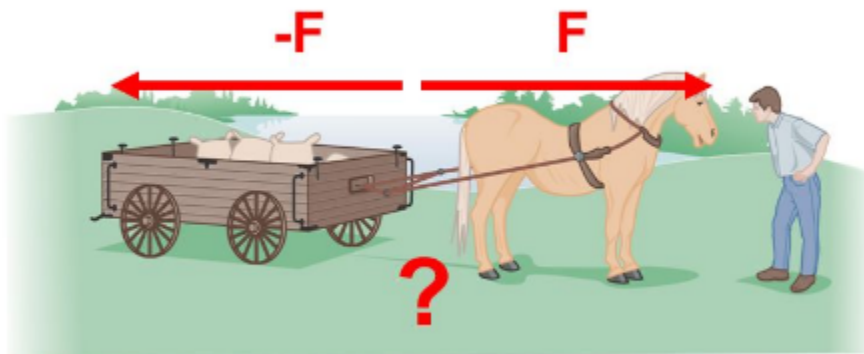


3.1 Pre-demo questionnaire

- 1) Have you previously learned Newton's 3rd law states "For every action, there is an equal and opposite reaction"?
- 2) If the above statement is true (Newton's 3rd LAW), help solve the following paradoxical situations:
 - a) If a horse pulls a cart and the cart pulls the horse (with an equal and opposite force), how can either of them move forward? Explain in your own words, drawing free body diagrams to support your ideas and conclusions.



- b) When you push down on the ground extra hard, the ground pushes up on you with an equal but opposite force. If the forces cancel, why do you jump? Explain in your own words, drawing free body diagrams to support your ideas and conclusions.

- c) If you are sitting on a flat cart and throw something heavy, what, if anything, will happen and why or why not?

- d) Predict what would happen in this situation:



- e) Who would win in a match of Tug of War, Mr. Skapetis or the strongest person in this class? Explain in your own words, drawing free body diagrams to support your ideas and conclusions.