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Name <u>Answer Key</u> Honors Physics Period \_\_\_\_\_

Forces WS #1 Mrs. Nadworny

## Introduction to Forces & Newton's 1st Law

**Directions** – Read online textbook pages 123 - 125 & 130 - 135 then answer the following questions.

- The SI unit of force is the <u>Newton</u> which is derived from the fundamental units of <u>kg m/s<sup>2</sup></u>.
- 2. Identify all of the forces present in the following scenarios.
  - a. A bucket is suspended from the ceiling by a rope.

Tension and gravitational

b. Two electrons repel one another.

Electromagnetic

c. A box is pushed across a carpeted floor.

Applied, friction, gravitational, normal



3. A lab cart is loaded with different masses and moved at various velocities. Which diagram shows the cart-mass system with the greatest inertia?



4. Phil Down is being chased through the woods by a large moose which he was attempting to photograph. The enormous mass of the moose is extremely intimidating. Yet, if Phil makes a zigzag pattern through the woods, he will be able to use the large mass of the moose to his own advantage. Explain this in terms of inertia and Newton's first law of motion.

Because the moose is very massive it contains a lot of inertia, meanwhile Phil does not (less massive). Therefore it is easier for Phil to change his direction than it is for the moose. So as Phil quickly zigzags and changes his direction, the moose will still be traveling in the other direction.

5. Two bricks are resting on the edge of a lab table. Anne Sodafone stands on her toes and spots the two bricks. She acquires an intense desire to know which of the two bricks is more massive. Since Anne is vertically challenged, she is unable to reach high enough and lift the bricks; she can, however, reach high enough to give each brick a push. Discuss how the process of pushing the bricks will allow Anne to determine which of the two bricks is more massive. What difference will Anne observe and how can this observation lead to the necessary conclusion?

## Anne can determine which brick is more massive simply by pushing both of them. The brick that contains more mass has more inertia, therefore making it harder to push.