

Lab Worksheet: Newton's 2nd Law

Name: _____

Purpose:

Material: Board with pulley, cart, masses (1 – 100g & 2 – 200g), stopwatch, meter stick and string.

Procedure:

1. Mass the cart. Record.
2. Setup the board with the pulley attached to the end on the lab table so that the pulley is past the end of the table.
3. Get a piece of string long enough so that when the cart is at the end of the board away from the pulley the string hangs over the pulley. Attach the string to cart.
4. Record the total mass of the system. (Cart mass plus 500g)
5. For the first trial, you will use the weight of the 100g mass for the applied force to accelerate the system. The remaining 400g will be put in the cart.
6. Attach the 100g mass to the end of the string hanging over the pulley. Measure the distance from the 100g mass to the floor. Record this distance.
7. Release the mass and measure the time it takes for the 100g mass to hit the floor. Repeat this trial 5 times and find the average time for the trials. (Be sure to release the mass from the same height in each trial)
8. For the second trial, use 200g as the mass on the end of the string and 300g in the cart. Measure the distance from the 200g mass to the floor. Record this distance.

What is the acceleration on this object?

- (a) 3a
(b) 4a
(c) 6a

A hockey puck is 10 N, the puck accelerates at a rate of 50 m/s^2 .

- (a) 5 kg
(b) 10 kg
(c) 50 kg

The figure shows a velocity versus time curve for a car traveling along a straight line. Which of the following statements is false?

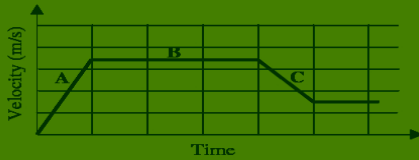
(a) No net force acts on the car during interval B.

(b) Net forces act on the car during intervals A and C.

(c) Opposing forces may be acting on the car during interval B.

(d) Opposing forces may be acting on the car during interval A.

(e) The magnitude of the net force acting during interval A is less than that during C.



6. When the net force that acts on a hockey puck is 10 N, the puck accelerates at a rate of 50 m/s^2 . Determine the mass of the puck.
- (a) 0.2 kg
(b) 1.0 kg

7. The figure shows the velocity versus time curve for a car traveling along a straight line. Which of the following statements is false?
- (a) No net force acts on the car during interval B.
(b) Net forces act on the car during intervals A and C.
(c) Opposing forces may be acting on the car during interval B.
(d) Opposing forces may be acting on the car during interval A.
(e) The magnitude of the net force acting during interval A is less than that during C.