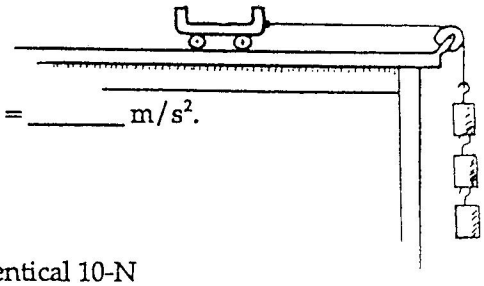
Chapter 2: Newton's Laws of Motion

Dropping Masses and Accelerating Cart—continued

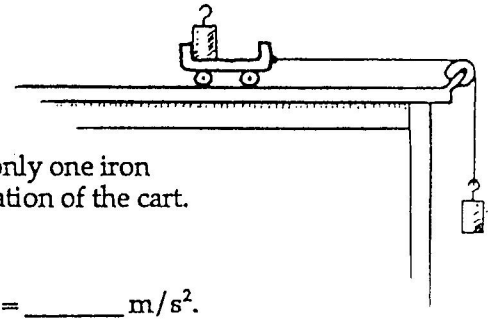
(b) Find the acceleration of the 1-kg cart when three identical 10-N weights are attached to the string.



$$a = \frac{F}{m} = \frac{\text{unbalanced force}}{\text{total mass}} = \frac{\qquad}{\qquad} = \_\_\_\_\_ \text{ m/s}^2.$$

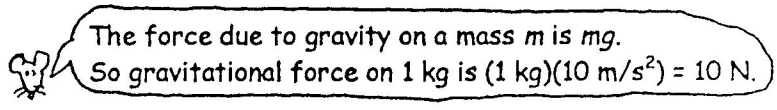
(c) Find the acceleration of the 1-kg cart when four identical 10-N weights (not shown) are attached to the string.

$$a = \frac{F}{m} = \frac{\text{unbalanced force}}{\text{total mass}} = \frac{\qquad}{\qquad} = \_\_\_\_\_ \text{ m/s}^2.$$



(d) This time 1 kg of iron is added to the cart, and only one iron piece dangles from the pulley. Find the acceleration of the cart.

$$a = \frac{F}{m} = \frac{\text{unbalanced force}}{\text{total mass}} = \frac{\qquad}{\qquad} = \_\_\_\_\_ \text{ m/s}^2.$$



(e) Find the acceleration of the cart when it carries 2 pieces of iron and only one iron piece dangles from the pulley.

$$a = \frac{F}{m} = \frac{\text{unbalanced force}}{\text{total mass}} = \frac{\qquad}{\qquad} = \_\_\_\_\_ \text{ m/s}^2.$$