

NAME _____ per _____ date _____ mailbox _____

CALCULATING FORCE WORKSHEET

Calculate the force in the following problems by using the equation:

$$\text{Force} = \text{mass} \times \text{acceleration} \quad \mathbf{F = m \times a}$$

Be sure to **(1) ALWAYS** write the equation, **(2)** plug in the numbers and units, and **(3)** give the answer with the correct units. (Disregard friction)

Conversion factor - (1000 grams equals 1kilogram) or (1 gram = .001 kilograms)

1. A man hits a golf ball (0.042kg) which accelerates at a rate of 20 m/s^2 . What amount of force acted on the ball?
2. You give a shopping cart a shove down the aisle. The cart is full of groceries and has a mass of 18 kg. The cart accelerates at a rate of 3 m/s^2 . How much force did you exert on the cart?
3. The wind pushes a paper cup along the sand at a beach. The cup has a mass of 0.25 kg and accelerates at a rate of 5 m/s^2 . How much force is the wind exerting on the cup?
4. You push a friend sitting on a swing. She has a mass of 50 kg and accelerates at a rate of 4 m/s^2 . Find the force you exerted.
5. How much force would it take to push another, larger friend who has a mass of 70 kg to accelerate at the same rate of 4 m/s^2 ?

6. A worker drops his hammer off the roof of a house. The hammer has a mass of 2500g. Gravity accelerates objects on earth at 9.8 m/s^2 . How much force does the earth apply to the hammer?
7. A boy skips a stone (2.5grams) across the surface of a pond. He throws the stone with 5 newton of force. What was the stone's acceleration?
8. A woman hits a golf ball with a mass of (45g) with a force of 5 newton. What is the acceleration rate of the ball?
9. You give a shopping cart a shove down the second isle. The cart is full of groceries and has a mass of 18 kg. You apply 55N of force. What is the acceleration for the cart full of groceries?
10. You push your friend again sitting on a swing with 200N of force. She accelerates at a rate of 5 m/s^2 . What is the friend's mass?
11. A boy drops his toy off the bunk bed. The distance to the floor is 2.5m. It takes one second to reach the floor. Gravity accelerates objects on earth at 9.8 m/s^2 . The earth's gravity applies 50 newton of force to the toy? What is the toy's mass?
12. Children playing race match box cars across the floor. One car has a final velocity of 5 m/s . From start to finish the race is only a second. The mass of the car 4grams. How hard did the child push the car?