

## FORCES Practice Problems

(Scroll down for answers)

### Mid-term Review from class

1. An orange has a mass of 2.5kg. What is its weight?
2. Two crates are stacked and sitting on the floor. The first crate has a mass of 12kg and the second one has a mass of 15kg. What is the Normal Force on the crates?
3. A flower pot has a weight of 160N. What is its mass?
4. Santa and his sleigh are on a rooftop. He has a mass of 90kg and the sleigh has a weight of 230N. What is the Normal Force exerted on them?
5. A 10kg block of wood is pulled across a floor with **CONSTANT SPEED** by a force of 25N
  - a. What is the NET FORCE on the block?
  - b. Is the block of wood in EQUILIBRIUM?
  - c. What is the frictional force?
  - d. If the pulling force was increased to 40N, would the block accelerate?
  - e. Why
  - f. What would be the acceleration value? Remember:  
 $F = m \cdot a$

6. A 70kg man is standing on a square platform with sides of 2m. How much pressure does he exert on the platform?
7. A person is sitting in a car going 50m/s but gets in a head-on accident and comes to a sudden and complete stop. If the person is NOT wearing his seatbelt, how fast does she fly through the front windshield?
- a. Which of Newton's Laws describes this?
  - b. The person flies through the windshield because of :  
i \_\_\_\_\_.
8. A crane suspends a steel girder with a mass of 1200kg by a single cable. How much tension is in the cable?
9. A flower pot with a mass of 25kg is suspended by three strings. What is the tension in each string?

## ANSWERS:

- #1: 25N
- #2: 270N
- #3: 16kg
- #4: 1130N
- #5: 0, yes, 25N, yes, net>0, 1.5m/s<sup>2</sup>
- #6: 175N
- #7: 1<sup>st</sup> Law of Motion, inertia
- #8: 12,000N
- #9: 83.3N