Name: ________________________

Reading Quiz #1, Chapter 1, S16

Multiple Choice
Identify the choice that best completes the statement or answers the question.

1. Your center of mass (COM) is approximately at your belly button. When you lift a barbell over your head, what happens to the center of mass of your body+barbell?
   a. the COM remains at your belly button
   b. the COM moves higher than your belly button but below the barbell
   c. the COM moves to a point lower than your belly button
   d. the COM moves to the center of the barbell

2. Consider these body parts. What type of lever are they (in order from left to right)?
   a. 1,3,2
   b. 3,2,1
   c. 1,2,3
   d. 2,3,1

3. The deltoid muscle must exert a very large force to lift the arm. Which of these is the best explanation for this?
   a. the torque of the deltoid is very small
   b. the deltoid is a very small muscle
   c. the lever arm for the muscle force is quite small
   d. the arm is very heavy

4. Newton’s ______ law is called the law of ________.
   a. second, inertia
   b. first, inertia
   c. second, reaction
   d. first, acceleration
   e. third, acceleration

5. The force due to the muscles ($F_m$) in this figure produce ________________.
   a. a clockwise torque
   b. a counterclockwise torque
   c. no torque at all

6. The normal force on an object is always ________ to the surface on which it sits.
   a. equal
   b. diagonal
   c. perpendicular
   d. parallel

7. The measure of inertia is
   a. torque
   b. mass
   c. momentum
   d. force
8. To lift a 10 N object, your bicep must exert with a total force of 100 N. What is the force of the muscle at the insertion point (i.e., the end of the muscle attached to a moving bone)?
   a. 50 N  
   b. 100 N  
   c. 10 N  
   d. 200 N

9. You push to the left on an object with a force of 10 newtons. Your friend pulls on the same object in the opposite direction (to the right) with a force of 3 newtons. What is the net force on the object?
   a. 10 N  
   b. 3 N  
   c. 7 N  
   d. 13 N

10. What happens to the normal force on the block (with mass m) as the angle of the inclined plane (θ) is increased?
   a. the normal force increases  
   b. the normal force decreases  
   c. the normal force stays the same  
   d. the normal force is only dependent on the mass of the block
MULTIPLE CHOICE

1. ANS: B  PTS: 1  REF: S16-RQ
2. ANS: A  PTS: 1
3. ANS: C  PTS: 1
4. ANS: B  PTS: 1  REF: S16-RQ
5. ANS: A  PTS: 1
6. ANS: C  PTS: 1  DIF: S16-RQ
7. ANS: B  PTS: 1  DIF: S16-RQ
8. ANS: B  PTS: 1  REF: S16-RQ
9. ANS: C  PTS: 1  REF: S16-RQ
10. ANS: B  PTS: 1