Reflection and Self-Assessment

Part 1: Circle the statement that best describes how you completed the practice:

- I answered all questions without using the online solutions. I checked my answers against the key at the back of the practice and was able to determine my mistakes and correct them without referring to the online solutions.
- I answered most questions correctly without using the online solutions. I used the online solutions to help me with some questions and was able, with help from the online solutions, to understand every question and answer them correctly.
- I used the online solutions to help me with most of the questions. I was able, with help from the online solutions, to understand each question and answer them correctly.
- Even using the online solutions, I was not able to fully understand the solution to some problems. The questions I had trouble with were:
- I did not attempt all the questions on the practice.

Part 2: Circle the statement that best describes your confidence in answering questions of this type in the future.

- I am confident I can answer nearly any question of this type correctly without using notes or other assistance.
- I am confident I can answer **MOST** questions of this type correctly without using notes or other assistance.
- I am **NOT** confident I can answer most questions of this type correctly without using notes or other assistance.

1. What is the force of friction if $F_N = 67 N$ and $\mu = 0.44$?

2. What is the coefficient of friction if an object experiences 75 N of friction and $F_N = 96$ N

- 3. An 25 kg object is pushed across a floor with $\mu = 0.23$
 - a. What is the force of gravity acting on the object?
 - b. What is the normal force acting on the object?
 - c. What is the force of friction acting on the object?
 - d. What force must the object be pushed with to have it move with constant velocity?
 - e. What will happen if the object is pushed with more force than in d?
 - f. What will happen if the object is pushed with less force than in d?

- 4. A 45 kg block has a coefficient of static friction with of the floor of 0.56 and a coefficient of kinetic friction of 0.35.
 - a. What force must be applied to start the block moving?

b. What force must be applied once it is moving to keep it moving at a constant velocity?

- 5. A 2.5 kg block is traveling at 12 m/s over a surface with coefficient of kinetic friction of 0.23. a. What is the magnitude of the force acting to slow the motion? ($F_{fric} = \mu F_N$)
 - b. What is the acceleration of the block? ($F_{net} = ma$)
 - c. How long will it take until the block comes to a stop? ($v_f = v_0 + at$)

d. How far will the block travel before it stops? ($v_f^2 = v_0^2 + 2ad$)

6. What is the coefficient of static friction between a 54 kg desk and the floor if it takes 225 N of force to start moving the desk?

- 7. A 26 kg block has coefficient of kinetic friction of 0.36 with the floor. It is being pushed with a force of 95 N.
 - a. What is the force of friction slowing the motion?
 - b. What is the net force acting on the block?

c. What is the acceleration of the block?

d. If it started at rest, how long will it take to push it 15m?

- 8. A 2.0 kg block is pushed so it has a starting velocity of 14 m/s. It travels 12.3 m before coming to a stop.
 - a. Determine the acceleration of the block.
 - b. Determine the net force acting on the block.

c. Determine the coefficient of friction between the block and the floor. (Note that since friction is the only unbalanced force acting on the block, $F_{net} = F_{fric}$)

9. A block is pulled at a constant velocity along a floor, the coefficient of friction between the block and the floor is 0.34. If it is pulled with a force of 56 N what is the mass of the block?

10. A 1425 kg rocket car exerts 13 900 N of force pushing forward and accelerates from 0 to 100.0 km/h in 3.25 s. What is the force of friction acting to slow the motion?

11. I deicide to push a 35 kg chair while in an elevator accelerating upwards at 2.5 m/s². The coefficient of static friction between the chair and the floor is 0.46. With what force must I push the chair so that it starts to move?

- 12. A 76 kg woman attempts to push a 150 kg block across the ice which has coefficient of static friction of 0.13 with the block.
 - a. Draw FBDs showing the forces acting on the woman and the forces acting on the block.

b. If the woman's shoes have a coefficient of static friction with the ice of 0.21 will she be able to get the block moving?

c. The woman puts on a backpack and now she can push the block. What was the minimum mass of the backpack?

ANSWERS

1) 29 N	2) 0.78	3a) 250 N	3b) 250 N	3c) 56 N
3d) 56 N	3e) It will accelerate in the direction it is pushed	3f) It will slow	4a)250 N	4b) 150 N
5a) 5.6 N	5b) -2.3 m/s²	5c) 5.3 sec	5d) 32 m	6) 0.43
7a) 92 N	7b) 3.3 N in direction it is being pushed	7c) 0.13 m/s ²	7d) 15 sec	8a) -8.0 m/s ²
8b) 16 N in direction opposite motion	8c) 0.81	9) 17 kg	10) 1720 N	11) 2.0×10^2 N
12a) F _N F _N Fridien Fridien Fridien Fridien Fridien Fg	Block FN Fridien Fg Fg Fg	12b) No she will slip, her F_{fric} is less than the 191.1 N force she would need to apply	13c) 17 kg	