

**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.



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.
- What force must be applied to start the block moving?
  
  
  
  
  
  
  
  
  
  
  - 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.
- What is the magnitude of the force acting to slow the motion? ( $F_{fric} = \mu F_N$ )
  
  
  
  
  
  
  
  
  
  
  - What is the acceleration of the block? ( $F_{net} = ma$ )
  
  
  
  
  
  
  
  
  
  
  - How long will it take until the block comes to a stop? ( $v_f = v_0 + at$ )
  
  
  
  
  
  
  
  
  
  
  - How far will the block travel before it stops? ( $v_f^2 = v_0^2 + 2ad$ )



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.
- Determine the acceleration of the block.
  - Determine the net force acting on the block.
  - 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?

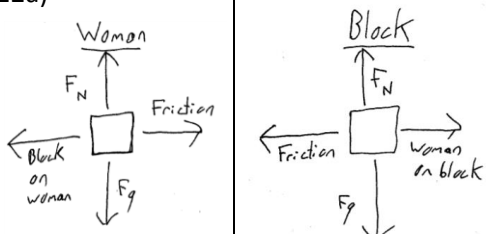
10. A 1425 kg rocket car exerts 13 900 N of force pushing forward and accelerates from 0 to 100.0 **km/h** in 3.25 s. What is the force of friction acting to slow the motion?

11. I decide to push a 35 kg chair while in an elevator accelerating upwards at  $2.5 \text{ m/s}^2$ . 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.
- Draw FBDs showing the forces acting on the woman and the forces acting on the block.
  - 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?
  - 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) $-2.3 \text{ m/s}^2$	5c) 5.3 sec	5d) 32 m	6) 0.43
7a) 92 N	7b) 3.3 N in direction it is being pushed	7c) $0.13 \text{ m/s}^2$	7d) 15 sec	8a) $-8.0 \text{ m/s}^2$
8b) 16 N in direction opposite motion	8c) 0.81	9) 17 kg	10) 1720 N	11) $2.0 \times 10^2 \text{ N}$
12a) 	12b) No she will slip, her $F_{fric}$ is less than the 191.1 N force she would need to apply	13c) 17 kg		