

Each of the following scenarios involves a person riding on an elevator.

- Determine if acceleration is +, - or 0
- Draw the force diagram
- Solve for all forces acting on the individuals while riding the elevator

1. While traveling upward in an elevator to the 33rd floor, a 60-kg woman finds herself riding with a constant velocity of 5 m/s. What is the force exerted on her by the floor of the elevator. $F_N = F_g = 588\text{ N}$
2. On the Tower of Terror, a ride at Disney's MGM Studios, the passengers start the ride by dropping down 10 stories. If the elevator initially speeds up in the downward direction with a constant acceleration of 8.0 m/s^2 , does a 42-kg rider feel lighter or heavier? $F_N = 76\text{ N}$ $F_g = 412\text{ N}$
3. After work on Friday, a man gets onto the elevator to head out to his car. As the elevator approaches the ground floor it slows at a constant acceleration of 3.0 m/s^2 . If the mass of the man is 80 kg, what is the magnitude of the force that is exerted by the floor on the man? $F_N = 1,024\text{ N}$
 $F_g = 412\text{ N}$
4. Susan is upset about her Physics grade. In protest, she drags her 15.0 kg school bag across the floor with a constant horizontal force of 50.0 N and at a constant velocity.
 - a. Draw a FBD to diagram this situation and find the magnitude and direction of the friction force. $F_k = 50\text{ N}$ direction, of F_k is opposite motion

Each of the following scenarios involve friction

- Determine if static or kinetic friction is involved
- Draw the force diagram
- Use Newton's 2nd law in the x-direction and/or y-direction
- Use the formulas for friction

- ~~5. Angelina is upset with Brad. In anger, she kicks his 4.00 kg Oscar across the floor. If the coefficient of kinetic friction is .43 between the gold Oscar and the ground, what friction force was being applied to the Oscar if it went from a velocity of 5.00 m/s to rest in 3.0 m? (Draw FBD for help, we are assuming that her foot is not in contact with the Oscar when it slows)~~
6. A 50.0 kg box is resting on a surface that has a coefficient of friction equal to 0.35. What is the maximum magnitude of force that can be exerted on the box before it moves? \rightarrow static
7. A 1.50 kg book is sitting on a desk with a coefficient of friction that equals 0.67. If a 4.00 N force is exerted on the book:
 - a. Draw a FBD showing the forces acting on the book.
 - b. What is the maximum static friction force the book can withstand? $F_{S\text{MAX}} = 172\text{ N}$
 - c. Will the book move?