1. D
2. C
3. E
4. C
5. E
6. (a) \(| \vec{F}_{s-2} | = \frac{1}{2} | \vec{F}_{s-1} | \)
   (b) equal
   (c) \(| \vec{g}_2 | = \frac{1}{2} | \vec{g}_1 | \)
   (d) \(| \vec{v}_2 | = \frac{1}{\sqrt{2}} | \vec{v}_1 | \)
   (e) \(T_2 = 2\sqrt{2}T_1 \)
7. (a) kinetic friction (between tire and road surfaces)
   (b) \(| \vec{a} | = | \vec{v}_i |^2 / 2\Delta s \)
   (c) \(\Delta s_{alt} = \frac{1}{2}\Delta s \)
   (d) \(\mu_k = | \vec{a} | / | \vec{g} | = | \vec{v}_i |^2 / 2 | \vec{g} | \Delta s \)
   (e) smaller
8. (a) \(| \Delta \vec{p} | = 2m | \vec{v} | \) in the negative direction.
   (b) \(| \vec{I} | = | \Delta \vec{p} | = 2m | \vec{v} | \) in the negative direction.
   (c) \(\Delta K = 0 \)
   (d) \(W = 0 \)
   (e) The cart’s kinetic energy transformed into potential energy in the spring as the spring compressed and reversed the cart’s motion. As the spring extended, the potential energy transformed into the kinetic energy of the cart, the same as before the collision.