

Motion Worksheet #8 Key

1. Yes; yes; two.
2. Same; both are part of one interaction.
3. The floor.
4. Water pushing you forward.
5. Arrow acting on the bowstring.
6. The acceleration is too small to be observed because of Earth's large mass.
7. Same; acceleration is large for the cannonball, but small for the cannon.
8. 200 N
9. Your body pulling on Earth.
10. Yes, they are the only forces acting on a non-accelerating person; No, they are not part of an action-reaction pair because they act on the same object.
11. The backward force on the log moves it backward.
12. One can exert a greater horizontal force on a carpet than on a polished floor because of the greater friction. This in turn provides a greater reaction force to provide traction for walking.
13. Yes, but the accelerations produced by these equal forces are quite unequal because of the great difference in mass between you and Earth.
14. When you push down on the sink, the sink pushes you up. This tends to lift you off the scale and decrease the reading on the scale. If you pull up on the sink, it will push down on you and increase the scale reading.
15. 1000 N
16. Because Earth's mass is too large.
17. The impact force is the same on both. Because of the bicycle's smaller mass, the change in motion is greater for the bicycle.
18. Both forces have the same magnitude. The bug undergoes a much greater deceleration than the bus because it has much less mass.

19. You can't do it. It is impossible for one end of the rope to be under greater tension than the other end.