1. In your own words, define the following terms. Include their equations and units:
   1. Work
   2. Power
2. In your own words, what is the relationship between work and energy? What is this relationship called? What equation represents this relationship?
3. A force sets an object in motion. When the force is multiplied by the time of its application, we call the quantity *impulse*, which changes the *momentum* of the object. What do we call the quantity *force \* displacement*, and what quantity does this change?
4. Work is required for Willie to lift a barbell. How many times as much work is required for Willie to lift the same barbell three times as high?
5. Which requires more work: Kay lifting a 10. kg sack a vertical distance of 2.0 m or Jessica lifting a 5.0 kg sack a vertical distance of 10. m?
6. How many joules of work are done on a cart when Jase exerts a force of 10.0 N and pushes it a distance of 10.0 meters?
7. Missy is pushing her bicycle:
   1. How much power is required to do 100. J of work on the bike in a time of 0.50 s?
   2. How much power is required to do the same amount of work in a time of 1.0 s?
8. Phil elevates a bucket of water and he does 100. J of work to do so:
   1. What is its gravitational potential energy relative to its starting position?
   2. What would its potential energy be if Phil lifted it twice as high?
9. The engine is Jep’s car is capable of bringing the car from 0 to 100. in 10.0 seconds. If the engine had twice the power output (and all other characteristics of the engine remain the same), how many seconds would be required to accelerate to the same speed?
10. If Si’s car travels 40. mph and skids 20. m when its brakes are locked, how far will it skid if it was traveling at 80. mph when its brakes are locked?
11. In your own words, define the following terms. Include their equations and units:
    1. Work
    2. Power
12. In your own words, what is the relationship between work and energy? What is this relationship called? What equation represents this relationship?
13. A force sets an object in motion. When the force is multiplied by the time of its application, we call the quantity *impulse*, which changes the *momentum* of the object. What do we call the quantity *force \* displacement*, and what quantity does this change?
14. Work is required for Willie to lift a barbell. How many times as much work is required for Willie to lift the same barbell three times as high?
15. Which requires more work: Kay lifting a 10. kg sack a vertical distance of 2.0 m or Jessica lifting a 5.0 kg sack a vertical distance of 10. m?
16. How many joules of work are done on a cart when Jase exerts a force of 10.0 N and pushes it a distance of 10.0 meters?
17. Missy is pushing her bicycle:
    1. How much power is required to do 100. J of work on the bike in a time of 0.50 s?
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18. Phil elevates a bucket of water and he does 100. J of work to do so:
    1. What is its gravitational potential energy relative to its starting position?
    2. What would its potential energy be if Phil lifted it twice as high?
19. The engine is Jep’s car is capable of bringing the car from 0 to 100. in 10.0 seconds. If the engine had twice the power output (and all other characteristics of the engine remain the same), how many seconds would be required to accelerate to the same speed?
20. If Si’s car travels 40. mph and skids 20. m when its brakes are locked, how far will it skid if it was traveling at 80. mph when its brakes are locked?