

Quiz #1 Review Practice Problems

1. What are the 6 steps of the engineering design process?
2. Give an example of how the design process is iterative?
3. What is energy and how is it measured?
4. How would I calculate the work done by my car when I drive it to school?
5. How does a crow bar demonstrate the purpose of a simple machine?
6. Please list the 6 types of simple machines and an example for each.
7. What type of lever is a pair of pliers?
8. Explain what it means if the pair of pliers are described as having a mechanical advantage of 4.
9. Draw an example of a pulley that would give an MA of 6.
10. How big does a steering wheel for a car need to be if it needs to generate 40 lbs of force on a 2in diameter axle when the driver applies 8 lbs of force?
11. A hospital needs to build a wheel chair ramp that leads to the front entrance. Ideally 200lb patient should be able to go up the ramp in a wheel chair with only 20lbs of pushing force. If the entrance is 6 ft above the sidewalk, how far away from the entrance do contractors need to start building the ramp?
12. A toy catapult is used to launch a marble with a force of 10 Newtons. The rubber band above the crossbar provides a force of 15 Newtons. If the catapult arm has a total length of 25cm. Where should the rubber band be place to generate the necessary force?

