

1. **Define** each of the following terms, and write the equation for each.

a. work

b. power

c. mechanical advantage

2. **Explain** the relationship between work and power.

3. **Explain** how machines make work easier if they still require that the same amount of work be done.

4. **Calculate** the amount of work done when a grocery store stocker uses 120 N of force to lift a sack of flour 1.5 m onto a shelf.

5. **Calculate** the average power in watts required to pull a car up a ramp if the amount of work is 250 kJ over a period of 45 s.

6. **Calculate** the mechanical advantage of a group of pulleys used to raise an engine from a car. The engine is raised 1.2 m with the pulleys when 4.8 m of rope is pulled through the pulleys.

7. **Define** potential energy

8. **Define** gravitational potential energy and give its equation.

9. **Calculate** the potential energy of a 4000 N car at the top of a 30 m hill.