

Name: _____

POTENTIAL AND KINETIC ENERGY CALCULATIONS WORKSHEET

In Lesson 15.1, you learned that Potential Energy = mass x gravity x height. The formula can also be written to find mass or height. Use the below formulas to solve the following problems.

$$\begin{array}{ll} \text{Potential Energy} = \text{mass} \times \text{gravity} \times \text{height} & \text{Units: J} \\ \text{Mass} = \text{Potential Energy} / (\text{gravity} \times \text{height}) & \text{Units: kg} \\ \text{Height} = \text{Potential Energy} / (\text{mass} \times \text{gravity}) & \text{Units: m} \end{array}$$

$$\text{Gravitational Constant} = 9.8 \text{ m/s}^2$$

In Lesson 15.1, you learned that Kinetic Energy = $\frac{1}{2}$ x mass x velocity².

$$\text{Kinetic Energy} = \frac{1}{2} \times \text{mass} \times \text{velocity}^2 \quad \text{Units: J}$$

1. Calculate the potential energy of a rock with a mass of 5 kg while sitting on a cliff that is 30 m high.

2. Calculate the potential energy of an object with a mass of 15 kg while sitting on a shelf that is 20 m high.

3. Calculate the potential energy of a statue with a mass of 20 kg while sitting on a table that is 2 m high.

10. Calculate the kinetic energy of a rock that has a mass of 55 kg rolling down a hill with a velocity of 8 m/s.

11. Calculate the kinetic energy of a truck that has a mass of 2900 kg and is moving at 55 m/s.

12. Calculate the kinetic energy of a 71 kg man walking at 1 m/s.

13. Calculate the kinetic energy of a 71 kg man running at 5 m/s.

14. Calculate the kinetic energy of a 1816 kg car traveling at 26.8 m/s.

15. Calculate the kinetic energy of a 10 kg ball rolling at 10 m/s.