**GPE-KE-ME Calculations** Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period \_\_\_\_

1. What is the potential energy of a 2-kilogram potted plant that is on a 1.5 m plant stand?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Given | Unknown | Equation | Substitute | Solve |

2. What is the kinetic energy of a 3-kilogram ball that is rolling at 2 meters per second? 3.2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Given | Unknown | Equation | Substitute | Solve |

3. The gravitational potential energy of an apple is 6.00 joules. The apple is 3.00-meters high. What is the mass of the apple?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Given | Unknown | Equation | Substitute | Solve |

4. Determine the amount of gravitational potential energy of a 5-newton book that is moved to a 1.5 meter shelf on a bookcase. (HINT: Use weight to find mass.)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Given | Unknown | Equation | Substitute | Solve |

5. What is the velocity of an 500-kilogram elevator that has 4,000 joules of energy?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Given | Unknown | Equation | Substitute | Solve |

6. What is the gravitational potential energy of a 3 kilogram-ball that is on the ground?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Given | Unknown | Equation | Substitute | Solve |

7. You are on roller blades on top of a small hill. Your gravitational potential energy is equal to 1,000 joules. The last time you checked your mass was 60 kilograms.

 a. What is your weight in newtons?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Given | Unknown | Equation | Substitute | Solve |

 b. What is the height of the hill?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Given | Unknown | Equation | Substitute | Solve |

c. If you start skating down this hill, your potential energy will be converted to kinetic energy. At the bottom of the hill, your kinetic energy will be equal to your potential energy at the top. What will be your speed at the bottom of the hill?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Given | Unknown | Equation | Substitute | Solve |

8. What is the mass of an object that creates 33,750 joules of energy by traveling at 30 m/sec?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Given | Unknown | Equation | Substitute | Solve |