



Ramp and Review Worksheet

1. Measure and record the mass of the golf ball. $m_{\text{ball}} = \underline{\hspace{2cm}}$ kg
2. Measure and record the height, **h**, of the yardstick. $h = \underline{\hspace{2cm}}$ m
3. Run several trials of the ball rolling down the track and into the cup. Record the average value of how far the cup slides. $d = \underline{\hspace{2cm}}$ m
4. What was the potential energy of the ball at height **h**? $PE = \underline{\hspace{2cm}}$ J
5. What was the kinetic energy of the ball right before it hit the cup? $KE = \underline{\hspace{2cm}}$ J
6. What was the velocity of the ball right before it hit the cup? $V = \underline{\hspace{2cm}}$ m/s
7. What was the ball's momentum right before it hit the cup? Momentum = $\underline{\hspace{2cm}}$ kg m/s
8. How much work did friction do to stop the cup? Work from friction = $\underline{\hspace{2cm}}$ J
Hint: The kinetic energy of the ball + the work done by friction should equal zero.
9. Using the distance the cup slid, **d**, and the work done by friction, what was the frictional force on the cup? Force = $\underline{\hspace{2cm}}$ N

Energy of Motion Equations

<p>Potential Energy</p> $PE = m \times g \times h$
<p>Kinetic Energy</p> $KE = \frac{1}{2} \times m \times V^2$ $V = \sqrt{\frac{2 \times KE}{m}}$

<p>Momentum = $m \times V$</p>
<p>Work and Force</p> $W = F \times d$ $F = W \div d$

<p>Where:</p> <p>m = mass</p> <p>g = gravity (9.81 meters/sec²)</p> <p>h = height</p> <p>V = velocity</p> <p>F = force</p> <p>d = distance</p>
