Name: Key

Simple Machines

1. [illegible]
   a. [illegible]

      $F_{out} = m \cdot g = (150 kg)(10 m/s^2) = 1500 N$

   b. [illegible]

      $F_{in} = \frac{F_{out} D_{out}}{D_{in}} = \frac{(1500 N)(1.3 m)}{5.3 m} = 368 N$

   c. [illegible]

      $W = F_{out} D_{out}$ or $F_{in} D_{in} = 1950 J$

   d. [illegible]

      $MA = \frac{F_{out}}{F_{in}} = \frac{1500 N}{368 N} = 4.08$

   e. [illegible]

      $P = W/t = 1950 J / 7.8 s = 250 W$

2. [illegible]
   a. [illegible]

      $F_{out} = mg = (75 kg)(10 m/s^2) = 750 N$

   b. [illegible]

      $F_{in} = \frac{F_{out} D_{out}}{D_{in}} = \frac{(750 N)(.25)}{1.15 m} = 163 N$

   c. [illegible]

      $W = F_{out} D_{out}$ or $F_{in} D_{in} = 188 N$

   d. [illegible]

      $MA = \frac{F_{out}}{F_{in}} = \frac{750 N}{163 N} = 4$

   e. [illegible]

      $P = W/t = 188 / .5 s = 376 W$

3. [illegible]
   a. [illegible]

      $F_{out} = M \cdot g = 1600 N$

   b. [illegible]

      $F_{in} = \frac{F_{out} D_{out}}{D_{in}} = \frac{(1600 N)(3.7 m)}{[illegible]} = 60.5$

   c. [illegible]

      $W = F_{out} D_{out}$ or $F_{in} D_{in} = 6660 J$