Name: ____ **Date:** ___________________ **Class:** ________________

Cost Efficiency Worksheet

The power output of your pump (P_O) can be given by $P_o = \gamma Q H_P$, where γ is the specific weight of water (γ =62.4 lbs/ft^3), Q is the flow of the pump, and H_P is the head the pump must overcome.

To begin, get everything in matching units. To find flow, measure how many gallons of water your pump can move in a given time. Covert the time to seconds, and gallons to ft^3 (Hint: 7.48 gallons = 1 ft^3). Also convert to feet the height difference between the two buckets.

Volume: _______ [ft^3]

Time: _______ [s]

H_P= [ft]

Flow is a volume per time. In order to get the flow, divide the volume by the time:

Flow, Q=_______ [ft^3/s]

Calculate the power output of your pump using the equation:

$P_o = \gamma Q H_P$ * (1.356 [watts]/ [ft lb/s])

P_o=_______ [watts]

Finally, we want to know how cost effective your pump is. Divide total cost by your power output. ($\$/P_o$)

e=_______ [$/watts]

Discussion Questions

What factors made your pump a good design?

What was the most expensive aspect of your design? How could you reduce cost in this area?

What would you change in future designs?