Name _____ Period _____ Date _____

Directions: Please show all work. Circle answers. Learn all formulas.

Work and Power

Formulas: W = F x D F = W/D D = W/F P = W/T

1. F = 16N

   D = 2.4 m

   T = 15 sec

   W = _____

   P = _____

2. T = 1.8 sec

   P = _____

   W = 14.4 J

   F = 18 N

   D = _____

3. P = 81 watts

   W = 0.9 J

   D = 1.2 m

   F = _____

4. F = 18.6 N

   W = 105.8 J

   D = _____

   T = 4.5 sec

   P = _____

5. W = 16.7 J

   D = 2.4 m

   F = _____

   T = 1.67 sec

   P = _____

6. W = 125 J

   F = _____

   D = 20 m

   T = 4.9 sec

   P = _____

Mechanical Advantage

MA = number of times a machine multiplies a force

Formula: MA = R/E

1. R = 2000 lbs E = 20 lbs MA = _____ 2. R = 360 lbs E = 12 lbs MA = _____	3. R = 42 lbs E = 84 lbs MA = _____ 4. MA = 3 E = 50 lbs R = _____	5. MA = 0.8 E = _____ R = 4.8 lbs

Formulas: Power = w/t = F•cosθ•d/t = F•cosθ•v = J/s = Nm/s = watts

Work (J)	Force (N)	Distance (m)	Time (sec)	Power (watts)
125		20	4.9	
	18	0.8	6.1	
36.8	12.4			3.4
65	5			9.2
	14.1	0.8		6.4
32.4		8.1		10
	18.2	2.1	73	
42.7		15.5	2.5	
64		8		2
	9	3.5	21	

1. How many Watts is a horsepower? How many foot-pounds is a hp?

2. A 200 hp engine is _____kW engine.

3. If a pump does 2000 J of work in 360 sec, what is the power of the pump in watts?

4. If a 20 kg mass is lifted 100 m in 2 sec, what power is required?

5. A 2 kW motor with 70% efficiency will lift a 10 kg mass _____ m.