WORK and POWER

Name _____

Part B: Three Formulas For Power

1. $P = \frac{W}{\Delta t}$

2. $P = IV$

3. Energy Use = Power*time

Symbol	Quantity	SI Unit	
P	Power	Watts (W)	Equation 1 is for items being *pushed* or *picked up*.
W	Work	Joules (J)	Equation 2 is for electric circuits.
Δt	Time interval	Seconds (s)	Equation 3 is for determining the energy used by appliances. It is actually another version of equation 1.
I	Current	Amps (A)	
V	Voltage	Volts (V)	
Energy Use	Energy used	Joules (J)	

B.1 I do 1000 J of work in 200 s. What is my power?

Looking For	Formula
Already Know	
Answer as equation *with unit*:	

B.2 I had a power of 40 Watts for a time of 4 seconds. How much work did I do?

Looking For	Formula
Already Know	
Answer as equation *with unit*:	

WORK and POWER Name _____

B.3a I push a box with a force of 50 N for a distance of 5 m in a time of 100 s. What is my work?

Looking For	Formula
Already Know	
Answer as equation *with unit*:	

B.3b I did that work in a time of 100 s. What is my power?

Looking For	Formula
Already Know	
Answer as equation *with unit*:	

B.4 You use a 20 watt light bulb for 30 seconds. How much energy did you use?

Looking For	Formula
Already Know	
Answer as equation *with unit*:	

B.5a You hook up a 12 Volt battery to a 2 Ohm resistor. How much *current* does your circuit have?

Looking For	Formula V=IR
Already Know	
Answer as equation *with unit*:	

B.5b How much *power* does your resistor have?

WORK and POWER

Name _____

Looking For	Formula
Already Know	
Answer as equation *with unit*:	

B.5c If you leave it on for 60 seconds, how much energy will the circuit use?

Looking For	Formula
Already Know	
Answer as equation *with unit*:	

B.6.I push a rock for 30 seconds with a force of 20 Newtons, but it does not move. How much work and power do I have?

WORK and POWER

Name _____

B.9 This table concerns how much power each device uses:
i. Fill out the following table

Appliance	**Power (W)**	**Time used (s)**	**Energy Used (J)**
Light #1	80	43,000	
Light #2	140	43,000	
Refrigerator	2000	86,400	
Stereo system	4000	2000	

ii. Which device has the most power?

iii. Which device uses the most energy?

iv. Why does the most *powerful* device not use the most energy?

B.9a 1 horsepower = 746 Watts

A Ferrari 458 Speciale engine has a power of 597 horsepower.

Using conversion factors, convert this number to SI units (Watts).

Convert from:	To:	Conversion Factor:
Answer in a complete sentence *with unit:*		

If you drive your Ferrari for an hour (3600 seconds), how much energy would you use?

Looking For	Work
Already Know	
Formula	