

Unit 2, Topic 1 & 2: Energy Conversion and Transmission

1. Within Microsoft Word, save a new document as: **unit2topic1.html** (remember to use the appropriate "Save As Type" (*.htm; *.html).
2. Use the same heading as above. Be sure to have a subheading: **Webpage created by [YOUR NAME]**
3. Type 2.01 and briefly explain how the "equal arm balance" works. In another paragraph, type 2.02 and explain how the "spring scale" works.

Watch the video: <http://youtu.be/4hPCilyHrns>

For the following calculations, remember that Weight (in Newton's) = mass (in kg) x 9.8

4. Create the following table by measuring the weight of several objects and recording the results:

DESCRIPTION OF OBJECT	WEIGHT (in Newton's) – equal arm balance	WEIGHT (in Newton's) – spring scale
OBJECT #1		
OBJECT #2		
OBJECT #3		

Work = force x distance OR Joules = Newton's x meters

5. Type 2.03 and explain the mathematical calculation for work (joules). Then:
 - a. Choose an object
 - b. Record its weight (Newton's)
 - c. Record the amount of work required to lift it (vertically) ONE(1) meter
 - d. Record the amount of work required to move it (horizontally) ONE(1) meter
6. Type 2.04 and calculate the energy used by a small motor for 1 hour. You will need to use the multimeter to determine the potential energy (voltage) and current (watts) for 60 minutes. Remember that **energy = voltage x current x time**.

7. Type 2.05 and explain why most systems are not 100% efficient. What are TWO(2) factors which cause inefficiencies? What is the formula for a system's efficiency?

<i>Power = work / time</i>	<i>OR</i>	<i>watts = joules / seconds</i>
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8. Type 2.06 and calculate the power of a motor when it is used to lift a weight a certain distance in a measured time.
9. Type 2.07 and list mechanical ways that energy can be transferred such as through pure energy transfer (list TWO) or potential energy transfer (list TWO).
10. Type 2.08 and describe the energy conversion occurring in each:

ACTIVITY	DESCRIPTION OF ENERGY CONVERSION
Solar cell attached to a rechargeable battery pack	
Wind-up LED flashlight	
Pulling back on a bowstring	