

Science 9-Chemistry

Worksheet 4-1

Heat Calculations



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Name _____
Due Date _____
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Correct and Hand In Again By _____

Given the following data from a lab in which a peanut is burned, answer the questions after it:

1. **Observations:** **Data Table**

1	Volume of Water	100 mL
2	Mass of Water	g
3	Final Temperature of Water	32 °C
4	Initial Temperature of Water	21 °C
5	Change in Temperature (Δt)	°C
6	Mass of Peanut Before Burning	0.7 g
7	Mass of Peanut Remaining	0.1 g
8	Mass of Peanut that Burned	g

1. Calculate the mass of the water in the beaker.....g

1 mL of water has a mass of 1 gram

2. Calculate the temperature change of the water (Δt)°C

3. Calculate the mass of the peanut that burnedg

4. Given the formula:

$$\text{Heat Energy Given Off (J)} = \text{Mass of H}_2\text{O Heated (g)} \times 4.2 \text{ J/g} \cdot ^\circ\text{C} \times \Delta t (^{\circ}\text{C})$$

Calculate the total heat given off by the burning peanut in this experiment.

Answer _____ J

5. Calculate the heat given off per gram of peanut burned.

The formula is:

$$\text{Energy Given Off Per Gram of Peanut} = \frac{\text{Energy Given Off by Burning Peanut (J)}}{\text{Mass of Peanut that Burned (g)}}$$

Answer _____ J/g

6. a) How much total energy is stored in an 800 gram bag of peanuts? Use your answer from question 5 to help you with this.

Answer _____ J

- b) Convert this answer to kilojoules (kJ)

Answer _____ kJ

7. a) Given that your body uses about 21 kJ per minute when walking, how long could you walk using the energy from an 800 gram bag of peanuts?

Answer _____ minutes

- b) Your body uses about 84 kJ/min when running. How long could you run using the energy from an 800 gram bag of peanuts?

Answer _____ minutes