

Name: _____

Block: _____

Temperature & Conservation Laws

Convert each of the following temperatures:

1. $27^{\circ}\text{C} = \underline{\hspace{2cm}} \text{K}$
2. $77 \text{K} = \underline{\hspace{2cm}} ^{\circ}\text{C}$
3. $85^{\circ}\text{C} = \underline{\hspace{2cm}} \text{K}$
4. $1020. \text{K} = \underline{\hspace{2cm}} ^{\circ}\text{C}$

For each of the following situations, answer the question and state which conservation law applies to the situation.

5. Suppose your breakfast contained 500. Calories of energy. Suppose you missed your bus (or your ride) and you had to walk 2.0 miles to school, which burned 200. Calories. How many Calories of energy from your breakfast are left for you to get through your morning classes?

6. In your car's gas tank, the following chemical reaction occurs:



The gasoline (C_8H_{18}) in a typical car's 15.0-gallon tank weighs about 85.0 lb. Burning a tank of gas uses about 300. lb. of oxygen from the Earth's atmosphere, and it produces 121 lb. of H_2O . How many lb. of CO_2 did that tank of gas produce?

7. An atomic bomb blast consumes 10,000,000,000 atoms (1.0×10^{10} atoms) of uranium, weighing 3.9×10^{-18} kg. How much energy is produced? (Energy has units of $\frac{\text{kg}\cdot\text{m}^2}{\text{s}^2}$.)