

Answer on Question #76570 – Chemistry – Other

Task:

A sample of water with a mass of 23.0 grams at a temperature of -46.0c increases to 40c how much heat is needed?

Solution:

We use this is the equation:

$$Q = m * c * \Delta T;$$

(Q is usually used to symbolize that heat required in a case like this.)

For water, the value of c (specific heat *capacity* of the material) is 4.186 J/ (g*°C).

So,

$$Q = 23.0g * 4.186 \frac{J}{g * ^\circ C} * (40 ^\circ C - (-46 ^\circ C));$$

$$Q = 23.0g * 4.186 \frac{J}{g * ^\circ C} * 86 ^\circ C = 8279.9 J = 8.28 kJ$$

Answer: Q=8.28 kJ.