

Q=mcΔT Worksheet

Specific Heat Capacities of Common Substances

MATERIAL	SPECIFIC HEAT J/kg°C		MATERIAL	SPECIFIC HEAT J/kg°C
alcohol	2450		ice	2060
aluminum	903		iron	450
brass	376		lead	130
carbon	710		silver	235
copper	385		steam	2020
glass	664		water	4180
gold	129		zinc	388

1. To raise the temperature of one kg of zinc, 1 °C, you must add _____ J of thermal energy.
2. Which metal will gain heat faster? brass or gold?
3. Which metal will cool off slower? copper or iron
4. Which substance on the chart has the highest specific heat capacity?
5. Why should you not wear gold or silver jewelry into the hot sauna?

$$Q = mc(T_2 - T_1) \quad \text{or} \quad Q = mc\Delta T$$

6. A block of brass is heated from 22°C to 78°C. The mass of the block is 15 kg.
How much thermal energy must be added to the block of brass?

list known values	formula	substitution	answer & units

7. **How much thermal energy** is needed to raise the temperature of 25 kg of gold from 45°C up to 80°C?

list known values	formula	substitution	answer & units

Name _____ Period _____ Date _____

Q=mcΔT Worksheet #2

1. A block of lead is heated from 25°C to 98°C. The mass of the block is 25 kg.
How much thermal energy must be added to the block of lead?

list known values	formula	substitution	answer & units

2. **How much thermal energy** is needed to raise the temperature of 20 kg of iron from 35°C up to 80°C?

list known values	formula	substitution	answer & units

3. A block of aluminum is heated from 28°C to 57°C. The mass of the block is 10 kg.
How much thermal energy must be added to the block of aluminum?

list known values	formula	substitution	answer & units

4. **How much thermal energy** is needed to raise the temperature of 8 kg of glass from 25°C up to 60°C?

list known values	formula	substitution	answer & units

5. A block of zinc is heated from 52°C to 79°C. The mass of the block is 13 kg.
How much thermal energy must be added to the block of zinc?

list known values	formula	substitution	answer & units