# Calculations Involving Specific Heat Practice

For the problems below use our heat equation to calculate the missing variable.

$$q = mC\Delta T$$

Where:

| | |
|---|---|
| q | = heat (joules, J) |
| M | = mass (grams, g) |
| C | = specific heat (joules per gram oC, J/g$^o$C) |
| ΔT | = change in temperature (degrees celsius, $^o$C) |
| | = $T_f - T_i$ (final minus initial temperature) |

When specific heat values are needed, reference this table to look the values up. Make sure to use the specific with the correct unit!

1. What is the specific heat of aluminum if the temperature of a 28.4 g sample of aluminum is increased by 8.1 $^o$C when 207 J of heat is added?

2. What is the specific heat of silicon if the temperature of a 4.11 g sample of silicon is increased by 3.8 $^o$C when 11.1 J of heat is added?

3. How much heat must be added to a 8.21 g sample of gold to increase its temperature by 6.2 $^o$C?

4. If 40.5 J of heat is added to a 15.4 g sample of silver, how much will the temperature increase by?

5. A 500.0 g sample of water is heated from 20.2 $^o$C to 45.7$^o$C. How much heat was needed to get this sample of water to this final temperature? ($C_{water}$ = 4.183 J/g$^o$C)

6. What is the final temperature of a 50.0 g sample of sodium that absorbed 450.0 J of heat energy after starting at an initial temperature of 22.7 $^o$C.

7. Find the metals on our table with the **highest** and **lowest** specific heat values. Calculate the final temperature of 100.0 g of each metal that absorbed 1000.0 J of heat energy from a starting temperature of 25.0 $^o$C.