## Heat

The quantity of heat (q) that flows varies directly with the quantity of substance (mass or volume), the specific or volumetric heat capacity (C) and the temperature change ( $\Delta T$ ).

FORMULA:  $q = mC\Delta T$  or  $q = vC\Delta T$ 

In calculating q, the heat capacity constant (C) must correspond to the state of matter of the substance.

See Table (back cover)

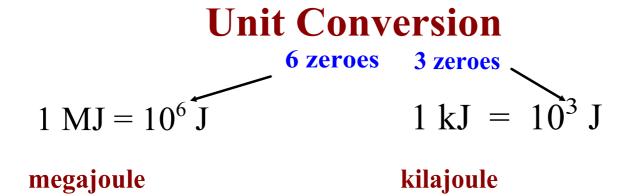
## Sample Problem

By how much would the temperature of a 100. gice cube increase if 1250 J of heat is added to the system?

$$M = 100.g$$
 $Q = MC\Delta T$ 
 $Q = 1250J$ 
 $C = 2.01 \frac{J}{g.c}$ 
 $\Delta T = \frac{1250J}{(100.g)(2.01 \frac{J}{g.c})}$ 
 $\Delta T = \frac{1250J}{(100.g)(2.01 \frac{J}{g.c})}$ 
 $\Delta T = 6.22 °C$ 

Determine the amount of heat required to increase the temperature of a 150.0 g block of aluminum from 12.0°C to 17.5°C.

$$Q = mC\Delta T$$
 $Q = (150.0g)(0.900 = 0)(5.50)$ 
 $Q = 743 T$ 



Ex. Convert 13000J to kJ and MJ.

Ex. Convert 41MJ to J and kJ.

## **Today's Assignment**

**Heat Worksheet** 

1) 31 200 J

7) 0.0456 J/g °C

2) -31 700 J

8) 424 g

3) 120°C

9) 2.60 J/g °C

4) 28°C

10) 6.21 J

5) 1100 J

11) 42.6 L

6) 14 900 J