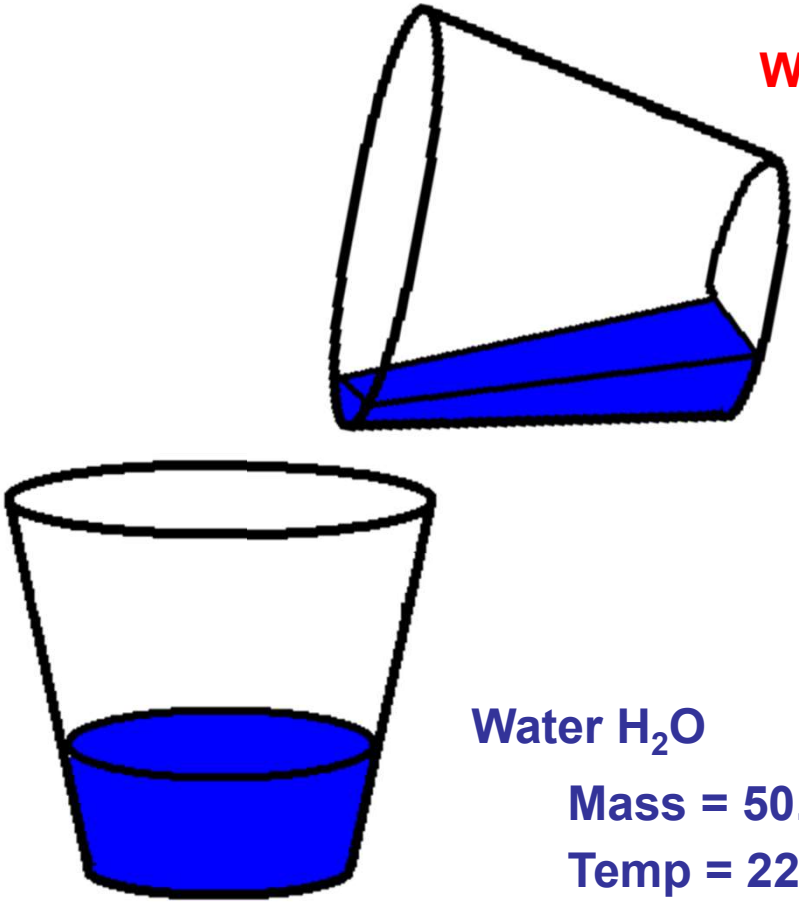
More Calorimetry: Mixing Liquids



Water H_2O

Mass = 120.0 g

Temp = 85.8°C

What is the final temperature of the water mixture?

Water H_2O

Mass = 50.0 g

Temp = 22.0°C

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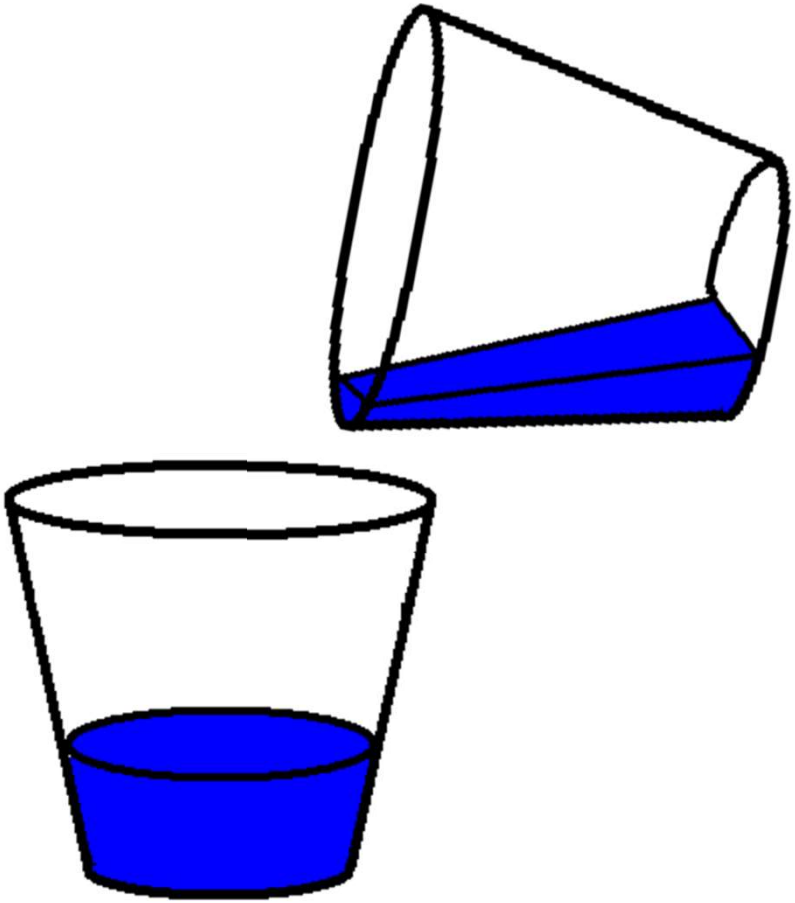

Water H_2O

Mass = 120.0 g

Temp = 85.8°C

Water H_2O

Mass = 50.0 g

Temp = 22.0°C

Heat lost by the hot water:

$$q = m \times c \times \Delta T$$

$$q = 120.0g \times 4.184 \times (T_f - 85.8)$$

Heat gained by the cold water:

$$q = m \times c \times \Delta T$$

$$q = 50.0g \times 4.184 \times (T_f - 22.0)$$

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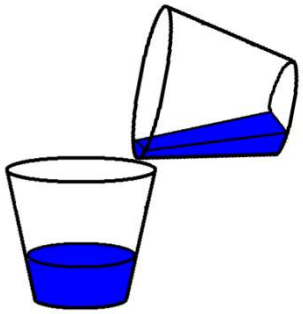

$$q_{lost} + q_{gained} = 0$$

$$120.0g \times 4.184 \times (T_f - 85.8) + 50.0g \times 4.184 \times (T_f - 22.0) = 0$$

$$502.08 \times (T_f - 85.8) + 209.2 \times (T_f - 22.0) = 0$$

$$502.08\,T_f - 43078.464 + 209.2T_f - 4602.4 = 0$$

$$711.28\,T_f - 47680.864 = 0$$

$$T_f = 67.0°C$$