## Regents Chemistry - Calorimetry Practice

	1. If the temperature of 34.4 g ethanol increases from 25.0 $^{\circ}$ C to 78.8 $^{\circ}$ C, how much heat was absorbed the ethanol? (C <sub>p</sub> ethanol = 2.44 J/g $^{\circ}$ C)
1	2. A 155 g sample of an unknown substance was heated from 25.0 °C to 40.0 °C by absorbing 5696 J of energy. What is the specific heat of the substance?
3	. A piece of aluminum absorbs 345 J when heated from 298 K to 368 K. What is the mass of the aluminum? (Cp aluminum = $0.9025 \text{ J/gK}$ )
4.	A piece of aluminum is heated to 87.5 °C and placed into a Styrofoam cup calorimeter containing 350. g of water at an initial temperature of 23.0 °C. The final temperature of the aluminum and water is 24.8 °C. How much heat was released by the aluminum?
5.	A piece of gold is heated to 65.4°C and placed in a calorimeter containing 160. g of water at 25.5°C. The final temperature of the metal and water is 27.8°C. How much energy was released by the gold?

## Key

## Regents Chemistry - Calorimetry Practice

1. If the temperature of 34.4 g ethanol increases from 25.0 °C to 78.8 °C, how much heat was absorbed the ethanol? ( $C_p$  ethanol = 2.44 J/g°C)

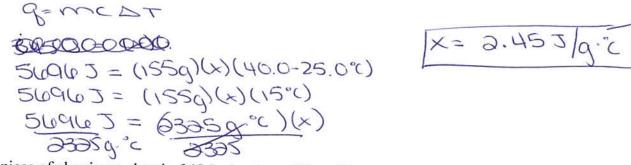
$$Q = C \Delta T$$

$$X = (34.49)(2.445|q^{\circ}c)(78.8-25.0^{\circ}c)$$

$$X = (34.49)(2.445|q^{\circ}c)(53.8^{\circ}c)$$

$$X = (4515.75685) \rightarrow (45205)$$

2. A 155 g sample of an unknown substance was heated from 25.0 °C to 40.0 °C by absorbing 5696 J of energy. What is the specific heat of the substance?



3. A piece of aluminum absorbs 345 J when heated from 298 K to 368 K. What is the mass of the aluminum? ( $C_p$  aluminum = 0.9025 J/gK)

$$Q = MCDT$$
 $345J = (x)(.9025J/q^{\circ}c)(368-298K)$ 
 $X = 5.4610209$ 
 $345J = (x)(.9025J/q^{\circ}c)(70K)$ 
 $X = 5.46g$ 
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4. A piece of aluminum is heated to 87.5 °C and placed into a Styrofoam cup calorimeter containing 350. g of water at an initial temperature of 23.0 °C. The final temperature of the aluminum and water is 24.8 °C. How much heat was released by the aluminum?

$$g = mc \triangle T$$

$$X = (350.9)(4.185/0°C)(24.8-23.0°C)$$

$$(350.9)(4.185/0°C)(1.8°C)$$

$$X = 2633.45$$

5. A piece of gold is heated to 65.4°C and placed in a calorimeter containing 160. g of water at 25.5°C. The final temperature of the metal and water is 27.8°C. How much energy was released by the gold?

