

REVIEW QUESTIONS

Chapter 3

1. Convert the following temperatures:

a) 10 °C to °F

b) 200 K to °C

c) 425 °F to °C

2. Classify the following properties of sodium metal as *physical* or *chemical*:

a) silver metallic color \_\_\_\_\_

b) turns grey in air \_\_\_\_\_

c) melts at 98°C \_\_\_\_\_

d) reacts explosively with chlorine \_\_\_\_\_

e) dissolves in water to produce a gas \_\_\_\_\_

f) malleable (can be shaped) \_\_\_\_\_

3. Classify the following changes as *physical* or *chemical* :

a) steam condenses to a liquid on a cool surface \_\_\_\_\_

b) baking soda dissolves in vinegar, producing bubbles \_\_\_\_\_

c) moth balls gradually disappear at room temperature \_\_\_\_\_

d) when a can of soda is opened bubbles form \_\_\_\_\_



7. How many kWh of energy are needed to heat 60.0 gal of water from 22.0°C to 110.0°C?  
(1 gal of water=3.77 kg; specific heat of water= 4.184 J/g°C)
8. When ice melts, it absorbs 0.33 kJ of heat per gram. How many grams of ice are required to cool a 12-oz drink from 75°C to 35°C, if the specific heat capacity of the drink is 4.18 J/g°C?  
(1 oz = 28.3 g)
9. Three blocks of metal (silver, copper and aluminum) with equal masses are heated in an oven for the same time.

a) Which metal will attain the highest temperature?  
Explain.

b) Which metal will attain the lowest temperature?  
Explain.

**TABLE 3.4 Specific Heat Capacities of Some Common Substances**

Substance	Specific Heat Capacity (J/g °C)
Lead	0.128
Gold	0.128
Silver	0.235
Copper	0.385
Iron	0.449
Aluminum	0.903
Ethanol	2.42
Water	4.184

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