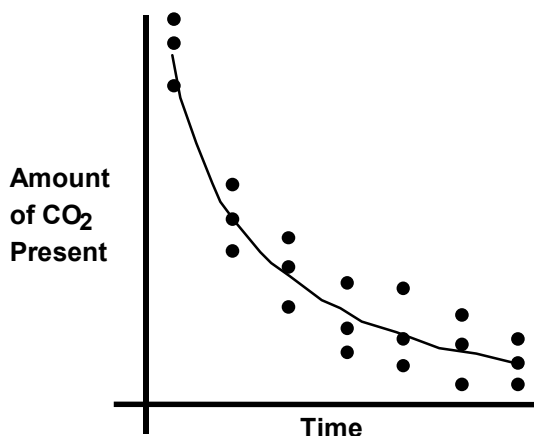


Use this graph in answering question 6.



CH.1d

6. How many repeated measurements were apparently made for each point of time?

- A one
- B three
- C seven
- D twenty-one

CH.1d

7. What is the purpose of a *control* in a scientific study?

- A to make experiments easier for students to perform
- B to ensure that results from a laboratory study are near the accepted values
- C to account for the effects of numerous variables, which we can neither measure nor manipulate easily
- D to keep dangerous conditions from happening during an experiment

CH.1f

8. If Agnes's measure of the density of a substance is 1.81 g/cm^3 and the accepted value is 2.06 g/cm^3 , what is the percent error of her measurement?

- A 1.14%
- B 12.1%
- C 87.8%
- D 114%

Students performed an experiment to demonstrate the conservation of mass. They caused 1.59 g of methane to combine with 8.41 g of oxygen to produce 5.35 g of carbon dioxide and 4.48 g of water, in a closed container. Use this information to answer questions 13 and 14.

CH.1f

9. What is the difference between the results obtained and the expected result for this experiment?

- A 0.17 g
- B 1.73 g
- C 0.98 g
- D 1.02 g

CH.1f

10. What could have caused this error?

- A The system was not completely closed.
- B There was error in the measurement of the reactant and product masses.
- C The container was not completely clean.
- D All of these could have contributed to the error.

CH.3a

34. The simplest hydrocarbon possible, CH_4 , is called what?

- A alkane
- B benzene
- C methane
- D fullerene

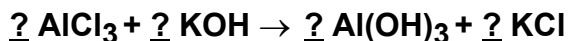
CH.3b

35. Which one of the following chemical equations is correctly balanced?

- A $\text{Na}_2\text{O}_2 + 2\text{H}_2\text{O} \rightarrow 2\text{NaOH} + \text{O}_2$
- B $2\text{Na}_2\text{O}_2 + 2\text{H}_2\text{O} \rightarrow 4\text{NaOH} + 2\text{O}_2$
- C $4\text{Na}_2\text{O}_2 + 3\text{H}_2\text{O} \rightarrow 4\text{NaOH} + 2\text{O}_2$
- D $2\text{Na}_2\text{O}_2 + 2\text{H}_2\text{O} \rightarrow 4\text{NaOH} + \text{O}_2$

CH.3b

36. The following is a "skeleton" chemical equation with missing coefficients.



What are the correct coefficients?

- A 1, 3, 1, 3
- B 3, 1, 3, 1
- C 1, 1, 1, 3
- D 1, 3, 3, 1

CH.3b

37. Which one of the following chemical equations is NOT correct?

- A $\text{CH}_4 + 2\text{O}_2 \rightarrow \text{CO}_2 + 2\text{H}_2\text{O}$
- B $2\text{H}_2\text{O} + \text{O}_2 \rightarrow 2\text{H}_2\text{O}_2$
- C $3\text{FeCl}_2 + 2\text{Na}_2\text{PO}_4 \rightarrow 6\text{NaCl} + \text{Fe}_3(\text{PO}_4)$
- D $\text{Cl}_2 + 2\text{LiBr} \rightarrow 2\text{LiCl} + \text{Br}_2$

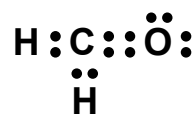
CH.3c

38. The molecular formula for the sugar glucose is $\text{C}_6\text{H}_{12}\text{O}_6$. What would be its *empirical* formula?

- A CHO
- B CH_2O
- C 6CHO
- D $\text{C}_2\text{H}_{12}\text{O}_2$

CH.3c

39. Formaldehyde (H_2CO) has the following Lewis dot formula:



What is the equivalent structural formula?

- A $\begin{array}{c} \text{H} \\ | \\ \text{C} = \ddot{\text{O}} : \\ | \\ \text{H} \end{array}$ B $\begin{array}{c} \text{H} \\ || \\ \text{C} - \ddot{\text{O}} : \\ || \\ \text{H} \end{array}$
- C $\begin{array}{c} \text{H} = \text{C} - \ddot{\text{O}} : \\ || \\ \text{H} \end{array}$ D $\begin{array}{c} \text{H} - \ddot{\text{O}} = \ddot{\text{C}} \\ | \\ \text{H} \end{array}$

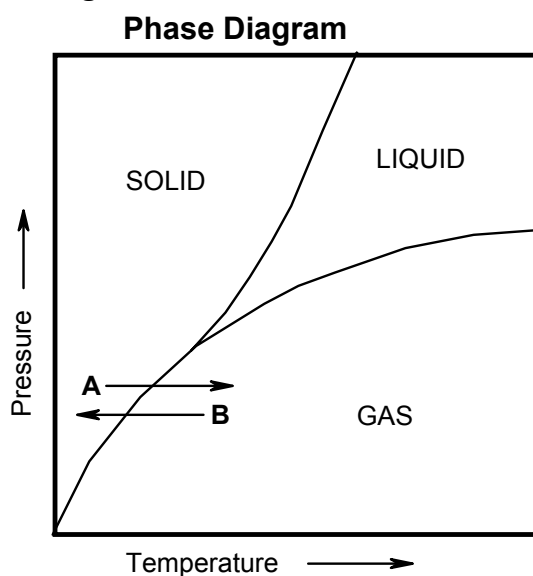
CH5d

71. Liquid water has its maximum density slightly above its freezing point. At what temperature is that maximum density?

- A 269 K
- B 273 K
- C 277 K
- D 451 K

CH5d

72. What are the proper labels for arrows *A* and *B* in the *Phase Diagram* below?



- A A = boiling; B = freezing
- B A = evaporation; B = precipitation
- C A = sublimation; B = deposition
- D A = gasification; B = solidification

CH5e

73. The heat of fusion of bromine (Br_2) is 10.8 kJ/mol. How much energy will it take to melt 2.00 kg of solid bromine at its melting point?

- A 10.8 kJ
- B 33.8 kJ
- C 67.5 kJ
- D 135.0 kJ

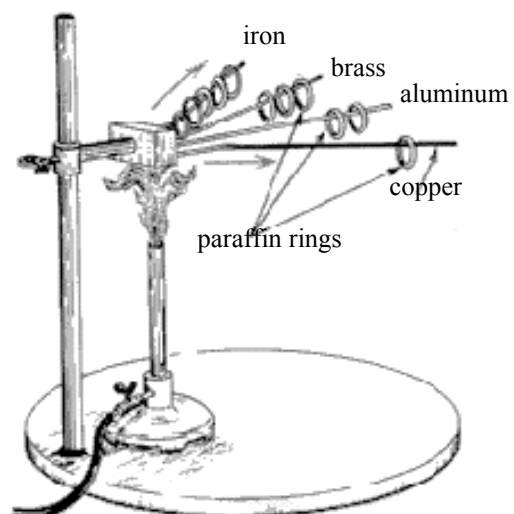
CH5e

74. The specific heat of aluminum is 0.89 J/(g \cdot $^{\circ}\text{C}$) or 0.21 cal/(g \cdot $^{\circ}\text{C}$). How many joules of heat energy are required to raise 1 g of water 1 $^{\circ}$ C?

- A 0.89 J
- B 1.0 J
- C 2.4 J
- D 4.2 J

CH5f

75. Study the diagram of a burner heating four metal rods that are holding paraffin rings. If each of the metal rods began with five paraffin rings, what can be deduced about the conductivities of the metals?



- A
- B Copper conducts heat better than iron.
- C Metals are poor conductors of heat.
- D Iron holds heat the longest.