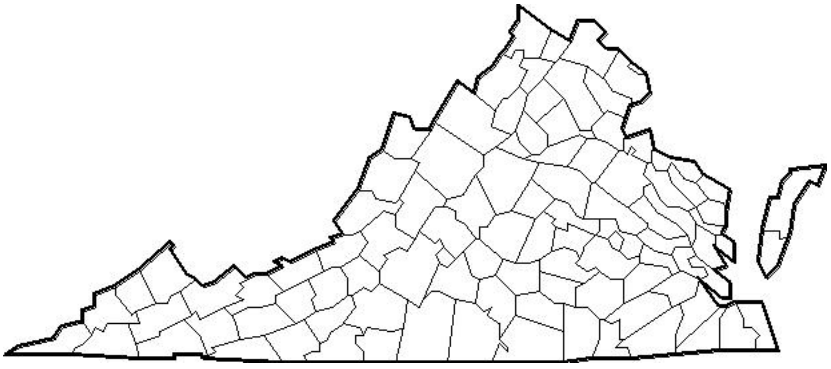
TESTS FOR HIGHER STANDARDS

Science



Chemistry

For the 2003 Virginia Standards of Learning

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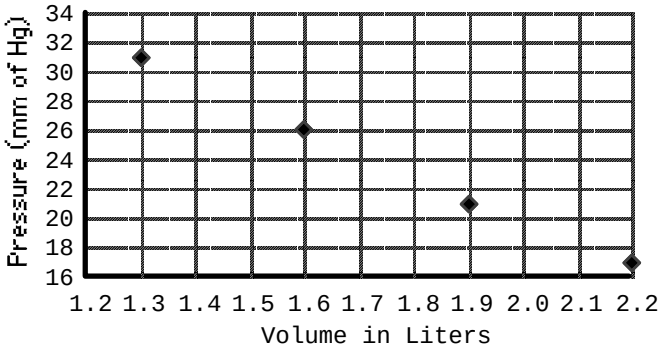
CH.1g

14. This graph shows the relationship between the volume of a gas and pressure at a constant temperature. What describes the relationship shown by the graph?



A Over this pressure range, there is an approximately linear, inverse relationship with a slope of about −2.
B Over this pressure range, there is an approximately linear, direct relationship with a slope of about $+1/2$.
C There is a parabolic relationship that is concave downward.
D There is a high positive correlation between the volume and pressure.

CH.1h

15. Listed below are different modules or probes which gather data when attached to graphing calculators. Which might be useful in studying the progress of a chemical reaction?

I **voltage**
II **acceleration**
III **pH**
IV **temperature**
V **light intensity**
VI **dissolved O_2**
VII **rotational velocity**

A I, III, & V
B II, IV, & VII
C I, III, IV, & V
D V, VI, & VII

CH.3b

38. Which chemical equation is NOT correct?

A $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$

B $2\,H_2O + O_2 \rightarrow 2\,H_2O_2$

C $3\,FeCl_2 + 2\,Na_2PO_4 \rightarrow 6\,NaCl + Fe_3(PO_4)$

D $Cl_2 + 2\,LiBr \rightarrow 2\,LiCl + Br_2$

CH.3c

39. The molecular formula for the sugar glucose is $C_6H_{12}O_6$. What would be its *empirical* formula?

A CHO

B CH_2O

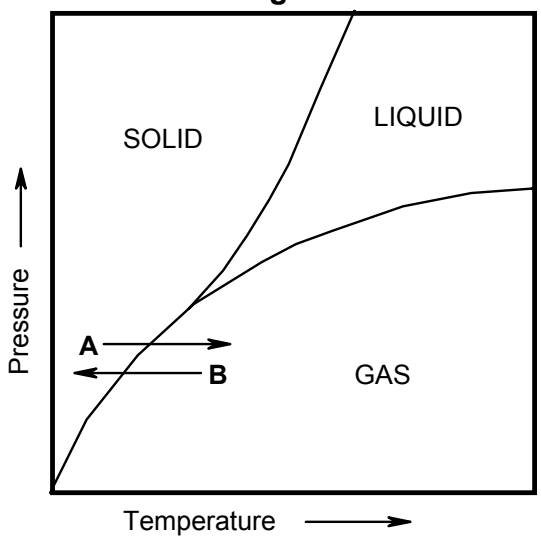
C $6\,CHO$

D $C_2H_{12}O_2$

CH.5d

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

Phase Diagram



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

CH.5e

75. 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

CH.5e

76. The specific heat of aluminum is 0.89 J/(g • °C) or 0.21 cal/(g • °C). How many joules of heat energy are required to raise 1 g of water 1° C?

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

