# Chemistry 236 -- Practice Quiz 1
September 3, 2003 — T and P Calibration

1. A quantity is known to follow a linear relationship, $y = a + bx$. If $y = -1.5$ when $x = 0.2$ and $y = 111.7$ when $x = 8.9$, what are the values of a and b?

   a. $a = -2.5$; $b = 5.0$ b. $a = -3.5$; $b = 10.0$ c. $a = -4.0$; $b = 12.7$
   d. $a = -4.1$; $b = 13.0$ e. none of these

2. According to the accompanying calibration graph, if the true temperature is 20.0°C, what value does the thermistor read?

   a. -0.2°C   b. 0.2°C
   c. 20.0°C   d. 19.8°C
   e. 20.2°C
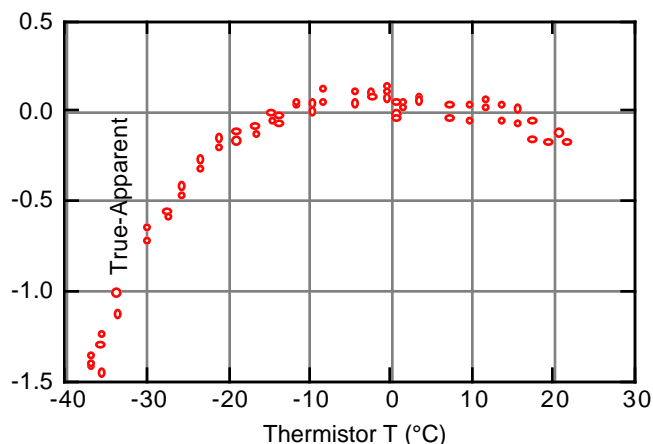
3. Refer to the accompanying figure of three connected Hg manometers. If atmospheric pressure is 754 torr, $h_1 = 111$ mm, $h_2 = 83$ mm, $h_3 = 192$ mm, and $h_4 = 289$ mm, what are the pressures P_1 and P_2 (in Torr)?

   a. 865 & 948   b. 948 & 659
   c. 948 & 851   d. 560 & 849
   e. $P_1 = 948$ Torr; P_2 cannot be determined.
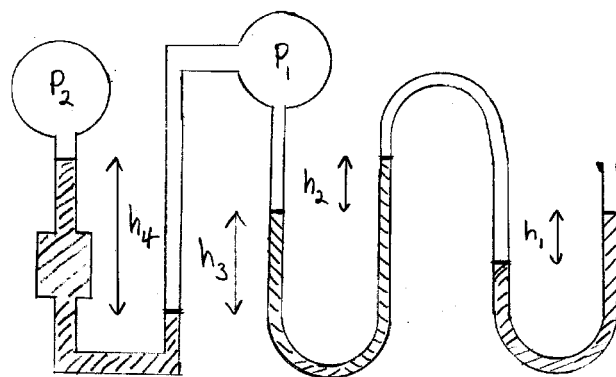
4. A particular thermistor has a resistance of 5.0 k at 0°C. Therefore, its resistance at 200 K must be

   a. higher   b. lower
   c. This depends on whether E is positive or negative.

5. If barometers used water as the operating fluid, a weather barometer would need to be about how tall? [1.00 m = 39.37 in.]

   a. 5 ft   b. 15 ft   c. 40 ft   d. 100 ft   e. none of these

6. Besides the size problem, can you think of any other reason why water might be an unwise choice for a barometer?

   a. It is transparent.   b. It has significant vapor pressure.
   c. Mosquitoes can breed in H_2O but not in Hg.   d. All of the above
   e. None of the above