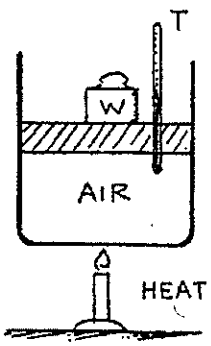
Name _____ Date _____

CONCEPTUAL Physics PRACTICE PAGE

Chapter 18 Thermodynamics

Absolute Zero

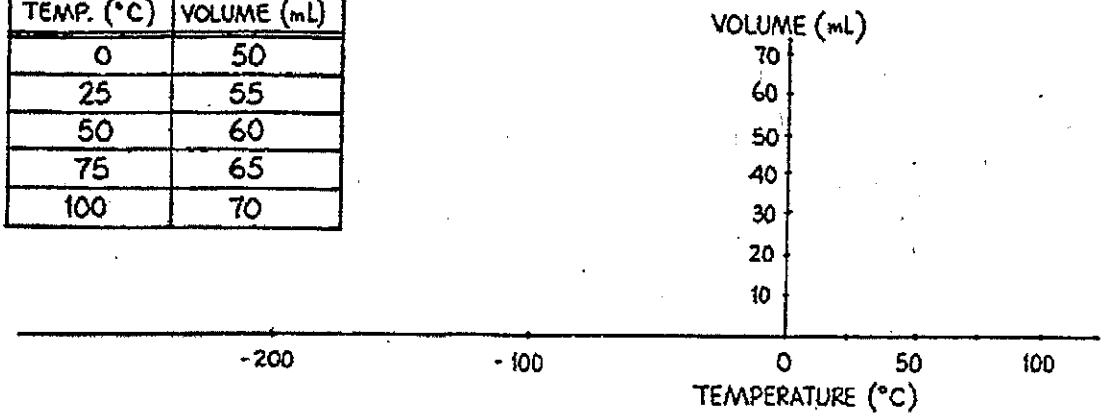


A mass of air is contained so that the volume can change while the pressure remains constant. Table I shows air volumes at various temperatures when the air is warmed slowly.

1. Plot the data in Table I on the graph and connect the points.

TABLE I

TEMP. (°C)	VOLUME (mL)
0	50
25	55
50	60
75	65
100	70



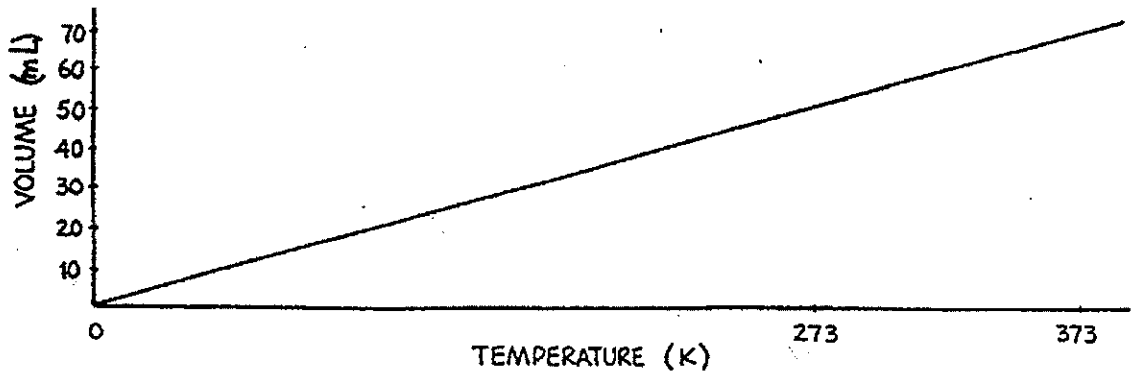
2. The graph shows how the volume of air varies with temperature at constant pressure. The straightness of the line means that the air expands uniformly with temperature. From your graph you can predict what will happen to the volume of air when it is cooled.

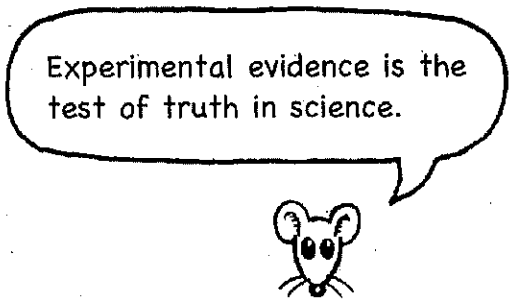
   Extrapolate (extend) the straight line of your graph to find the temperature at which the volume of the air would become zero. Mark this point on your graph. Estimate this temperature: _____

3. Although air would liquefy before cooling to this temperature, the procedure suggests that there is a lower limit to how cold something can be. This is the absolute zero of temperature. Careful experiments show that absolute zero is _____ °C.

4. Scientists measure temperature in *kelvins* instead of degrees Celsius, where the absolute zero of temperature is 0 kelvins. If you relabeled the temperature axis on the graph in Question 1 so that it shows temperature in kelvins, would your graph look like the one below?

_____




Experimental evidence is the test of truth in science.