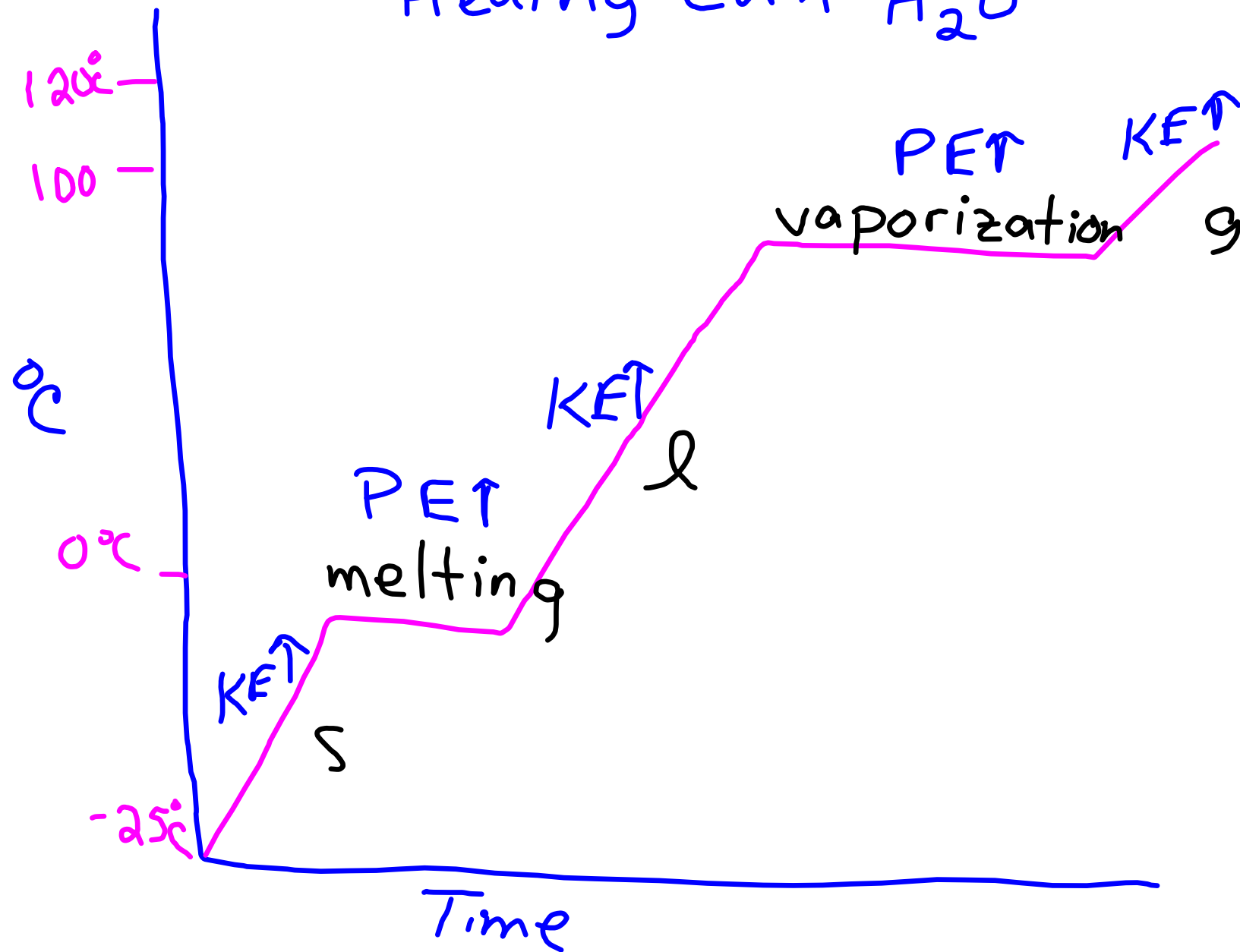


Heating Curve H_2O



Vaporization includes
evaporation and boiling

212°F

PE potential energy

energy stored

no change in temp. H_f or H_v

KE - Kinetic energy
the energy of motion

changes in temperature

ΔT

H_f = heat of fusion

0°C melting and freezing

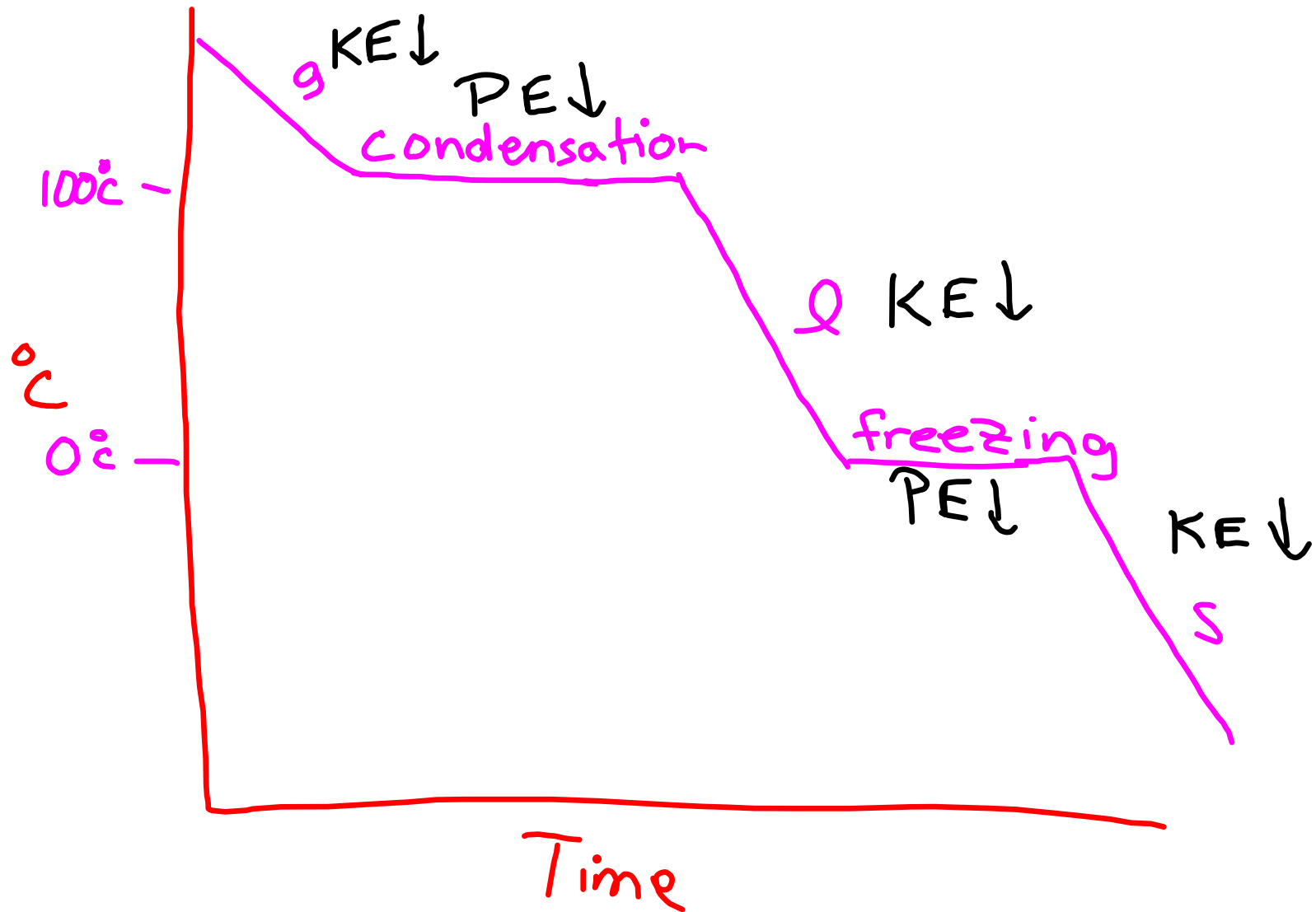
H_v = heat of vaporization

100°C boiling condensation

No sig. figs. for 0°C and 100°C

The mass has sig. figs.

Cooling Curve of H_2O



① KE $q = m C \Delta T$

(cal) heat energy $\swarrow$ change in temp
 $\uparrow$
 mass(g)

cal = g () $^{\circ}\text{C}$

$\frac{\text{cal}}{\text{g} \cdot ^{\circ}\text{C}}$

② PE 0°C $q = m H_f$

heat energy $\uparrow$ mass(g)
 in (cal)

cal = g $\left(\frac{\text{cal}}{\text{g}} \right)$

③ PE 100°C $q = m H_v$

$\frac{\text{cal}}{\text{g}}$

$$2. \quad q = m H_f$$

$$q = 250\cancel{\text{g}} \left(80.0 \frac{\text{cal}}{\cancel{\text{g}}} \right)$$

$$q = 20000 \text{ cal}$$

$$q = 2.0 \times 10^4 \text{ cal}$$

$$3. \quad q = m H_v$$

$$q = (4.5 \times 10^5 \text{ g}) \left(540 \frac{\text{cal}}{\text{g}} \right)$$

$$q = 243000000 \text{ cal}$$

$$q = 2.4 \times 10^8 \text{ cal}$$

1. $q = m C \Delta T$
 $= (25.0)(0.1566)(63.3)$

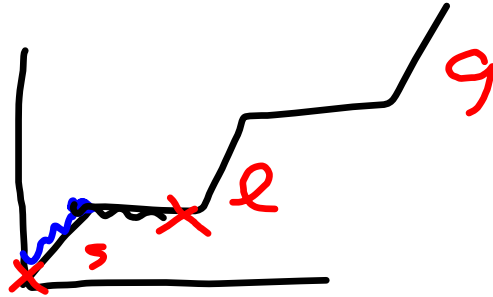
$$\begin{array}{r} 88.3 \\ 25.0 \\ \hline 63.3 \end{array}$$

$$q = 247.8195 \text{ cal}$$

$$q = 248 \text{ cal}$$

1

6.



$$/ = q = m C \Delta T$$

$$\text{--- } 0^{\circ}\text{C} = q = m H_f$$

$$\text{--- } 100^{\circ}\text{C} = q = m H_v$$

$$Q = m C \Delta T$$

$$= (45.00)(0.50)(24.5)$$

551.25

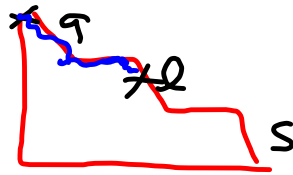
$$\begin{array}{r} 24.5 \\ 00.0 \\ \hline 24.5 \end{array}$$

$$\begin{array}{r} 551.25 \text{ cal} \\ 3600 \text{ cal} \\ \hline 4151.25 \end{array}$$

4200 cal

4150 cal

9.



$$\begin{array}{r} 139 \\ 100 \\ \hline 39 \end{array}$$

$$q = m C \Delta T$$

$$(250)(0.48)(39) =$$

$$q = m H_v$$

$$(250)(540.0) = 135000$$

$$q = m C \Delta T$$

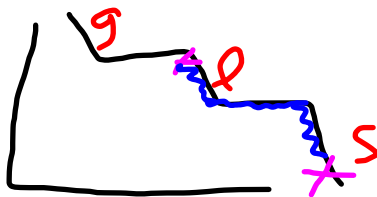
$$(250)(1)(25) = 6250$$

$$\begin{array}{r} 100 \\ 75 \\ \hline \end{array}$$

$$\begin{array}{r} 6250 \\ \hline 145930 \text{ cal} \\ 150000 \text{ cal} \end{array}$$

$$\begin{array}{r} 139 \\ \cancel{100} \\ \hline 39 \end{array}$$

10.



$$q = m C \Delta T$$

$$(800)(1)(98) =$$

$$78400$$

$$q = m H_f$$

$$(800)(80.0) =$$

$$64000$$

$$q = m C \Delta T$$

$$\textcircled{1} (800) \textcircled{2} (.5) (24) = 9600$$

$$2 \times 10^5 \text{ cal}$$

$$\begin{array}{r} 152000 \text{ cal} \\ 200000 \text{ cal} \end{array}$$