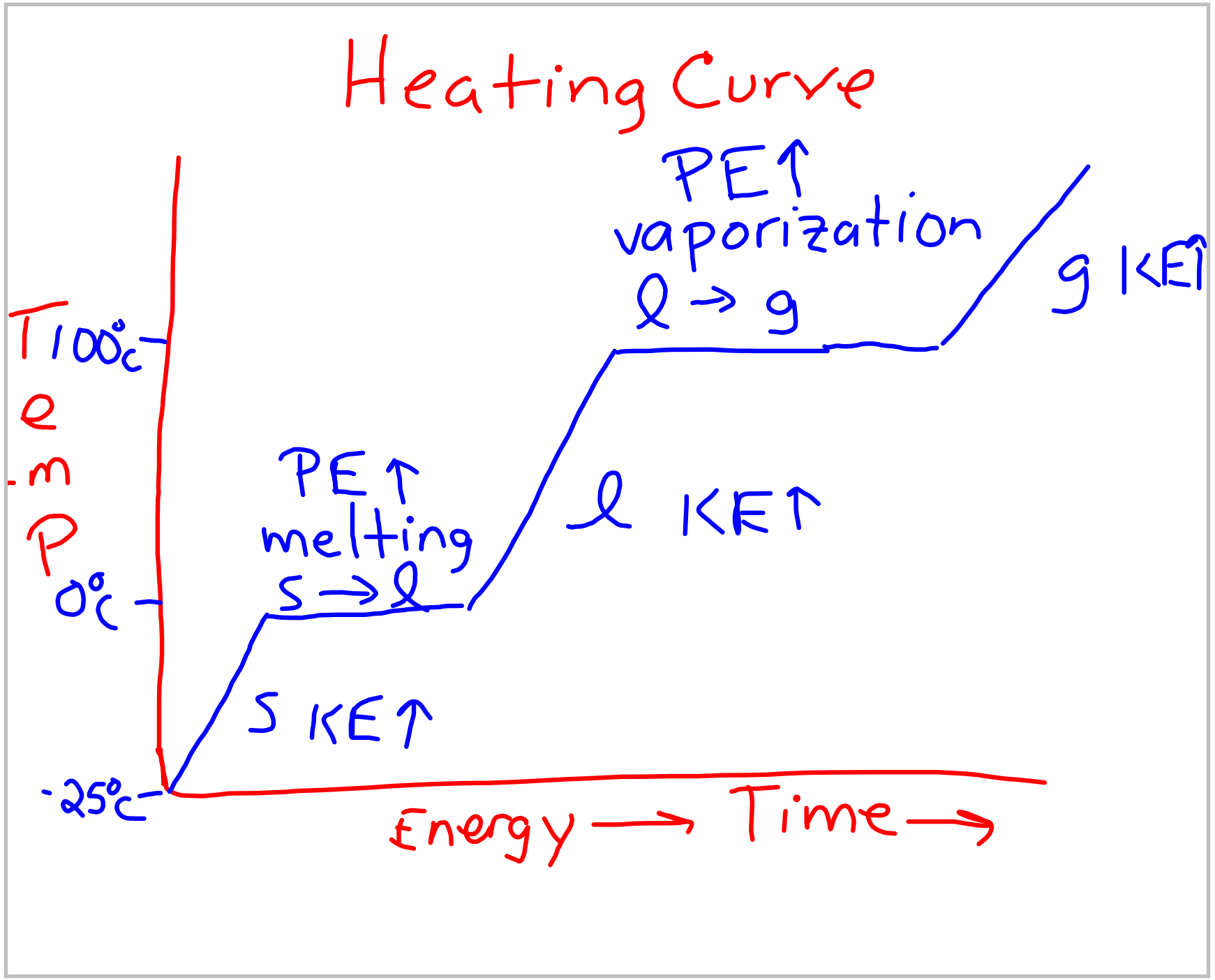
Hot → Cold

Cold is the absence of heat


Heating Curve
PE↑
vaporization
ℓ → g
g KE↑
T
e
m
P
100°C
0°C
-25°C
PE↑
melting
s → ℓ
ℓ KE↑
s KE↑
Energy →
Time →

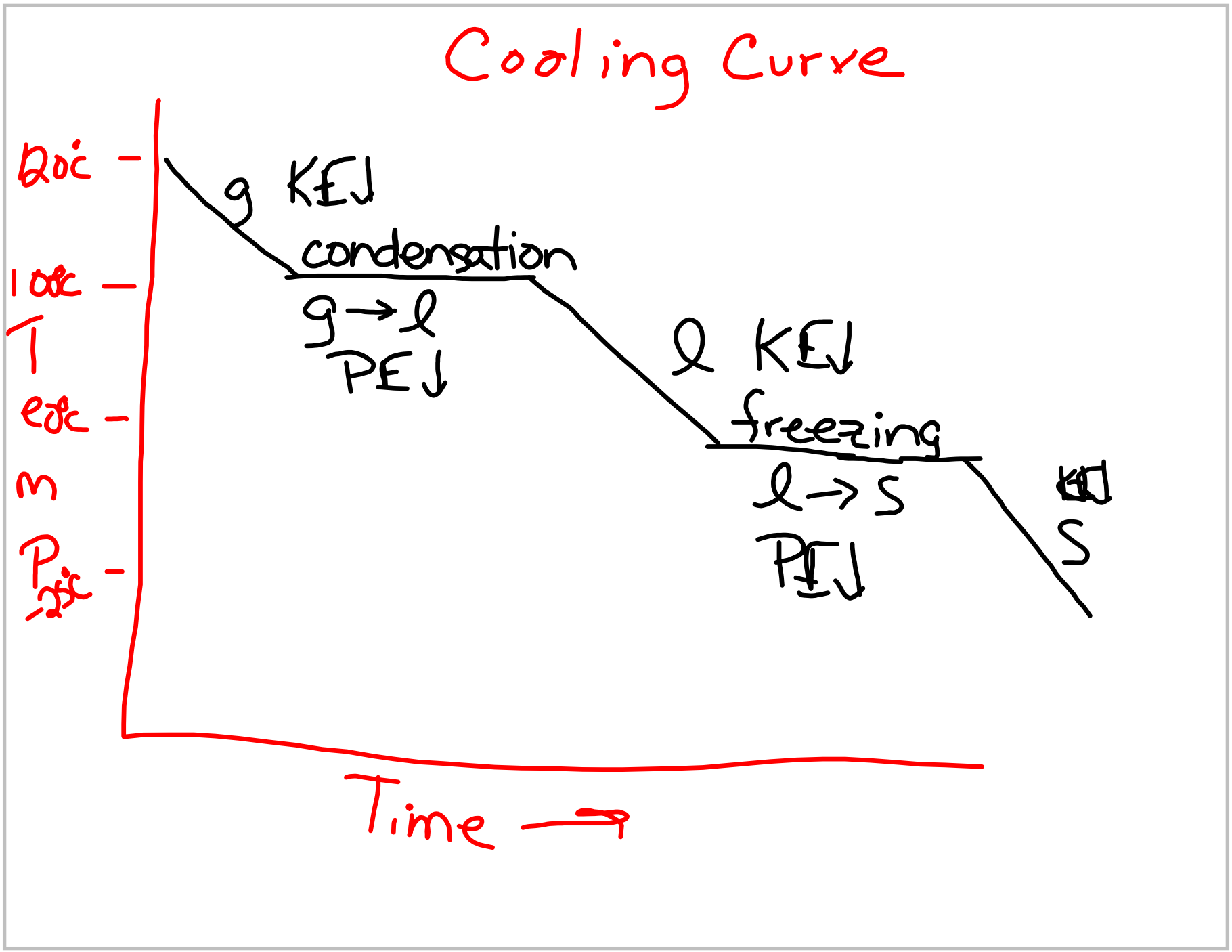
Kinetic energy- the energy of motion
Only changes w/ temp.

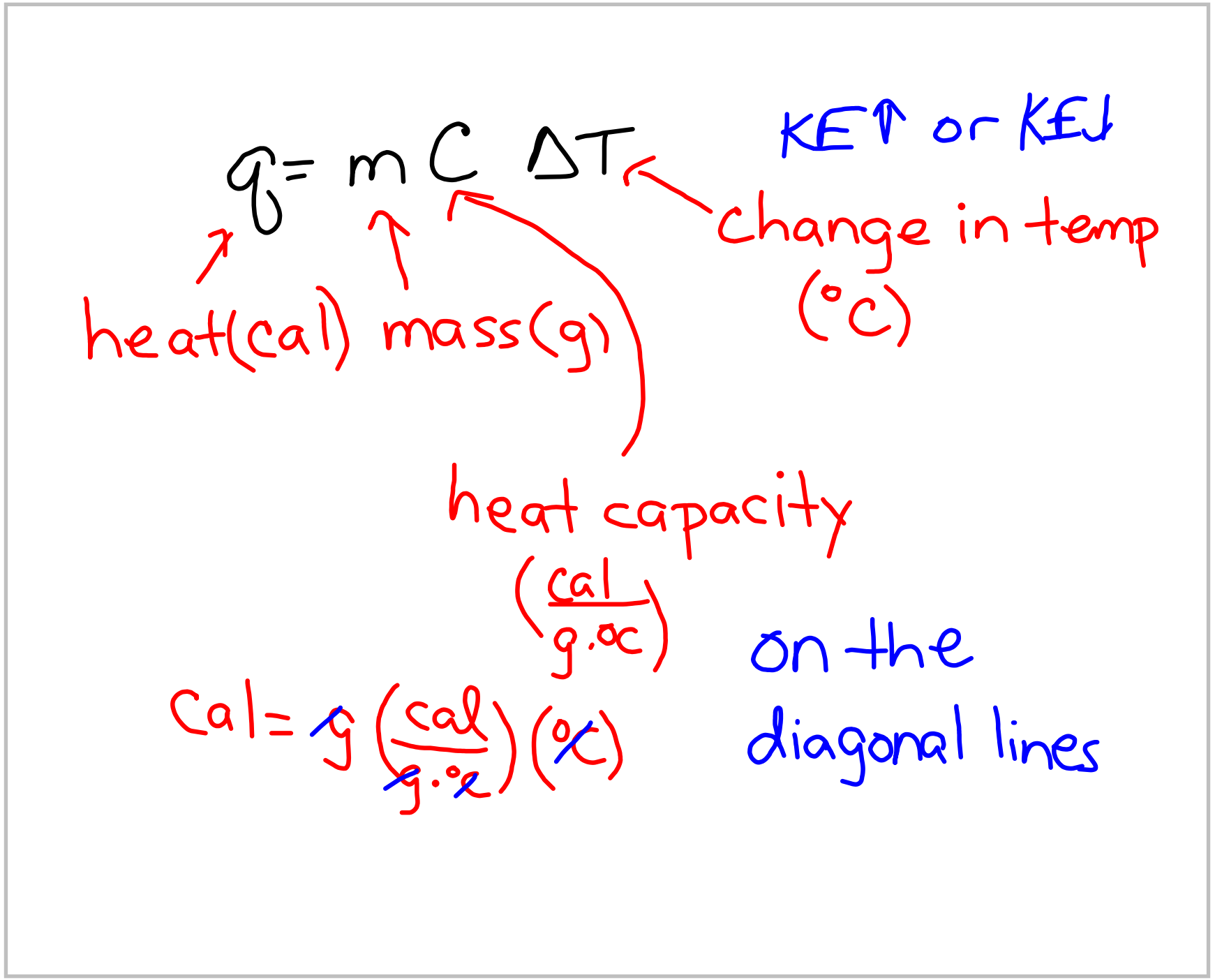
- Potential Energy- the energy that is stored
Only occurs when there is no change in temp.

Vaporization -

boiling

evaporation


Cooling Curve
120c
100c
T
e0c
m
P
-2c
g KE↓
condensation
g → l
PE↓
l KE↓
freezing
l → s
PE↓
KE↓
s
Time →


$q = m C \Delta T$
KE↑ or KE↓
change in temp (°C)
heat(cal)
mass(g)
heat capacity $\left(\frac{cal}{g \cdot °C}\right)$
$cal = g \left(\frac{cal}{g \cdot °C}\right)(°C)$
on the diagonal lines

PE↑ PE↓

$q = m f_f$

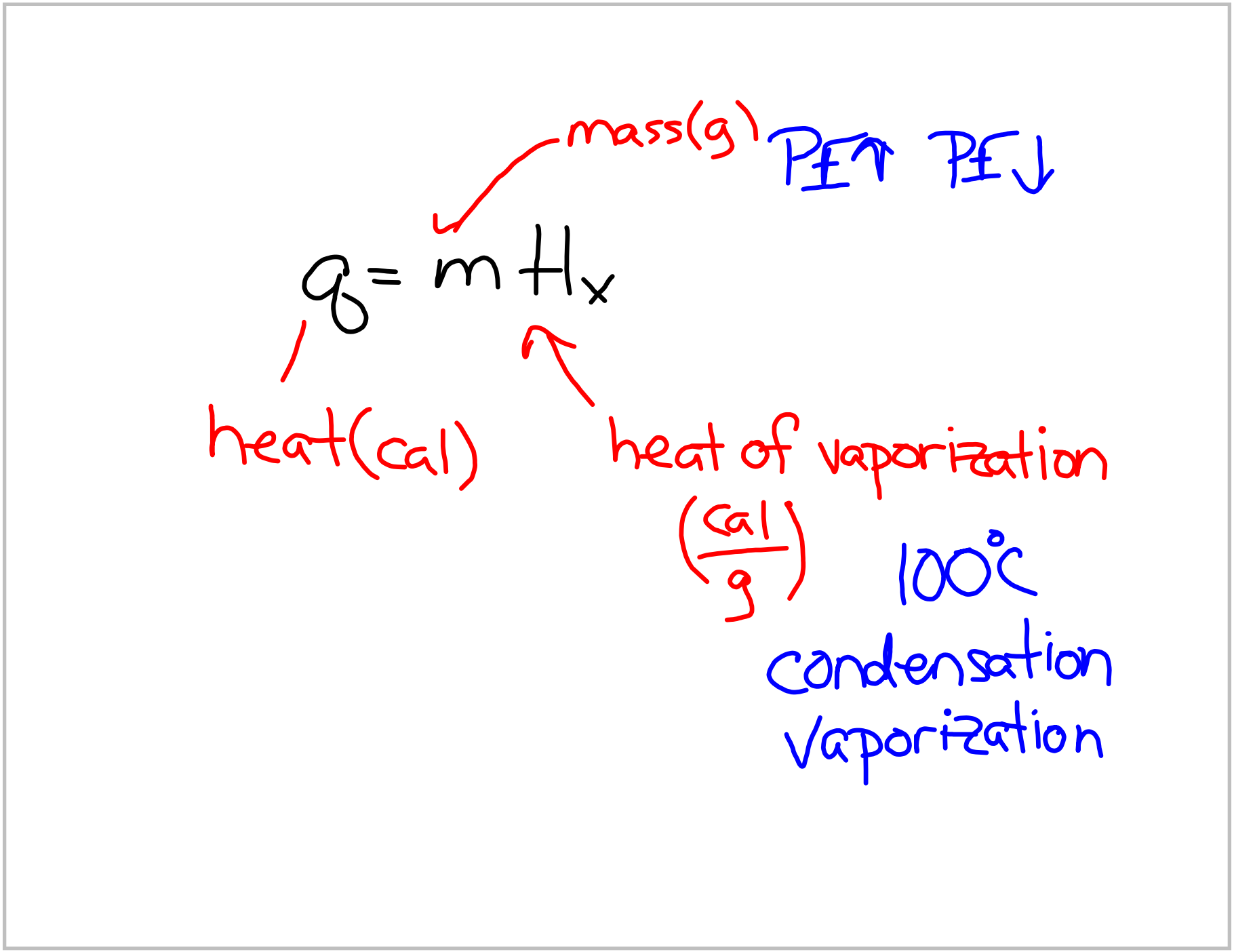
heat(cal)

mass(g)

melting and freezing 0°C

heat of fusion $\left(\frac{cal}{g}\right)$

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


mass(g)
PE↑ PE↓
$q = m H_x$
heat(cal)
heat of vaporization
$\left(\frac{cal}{g}\right)$
100°C
condensation
vaporization

2.

$$q = m H_f$$

$$= (250\,g)\left(80.0\,\frac{cal}{g}\right)$$

$$= 20000\,cal$$

$$= 2.0 \times 10^4\,cal$$

3.

$$q = m H_v$$

$$q = (4.5 \times 10^5 \text{ g})\left(540.0 \frac{\text{cal}}{\text{g}}\right)$$

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

1.

$$q = m C \Delta T$$

$$\begin{array}{r} 88.3^\circ C \\ -\ 25.0^\circ C \\ \hline 63.3^\circ C \end{array}$$

$$= (25.0\,g)\left(0.1566 \frac{cal}{g \cdot {}^\circ C}\right)(63.3\,{}^\circ C)$$

$$= 247.8195\ cal$$

$$= 248\ cal$$

$$248 \neq 2.48$$

$$2.478195 \times 10^2\ cal$$

$$2.48 \times 10^2\ cal$$

4. $T_i = 27.3^\circ C$

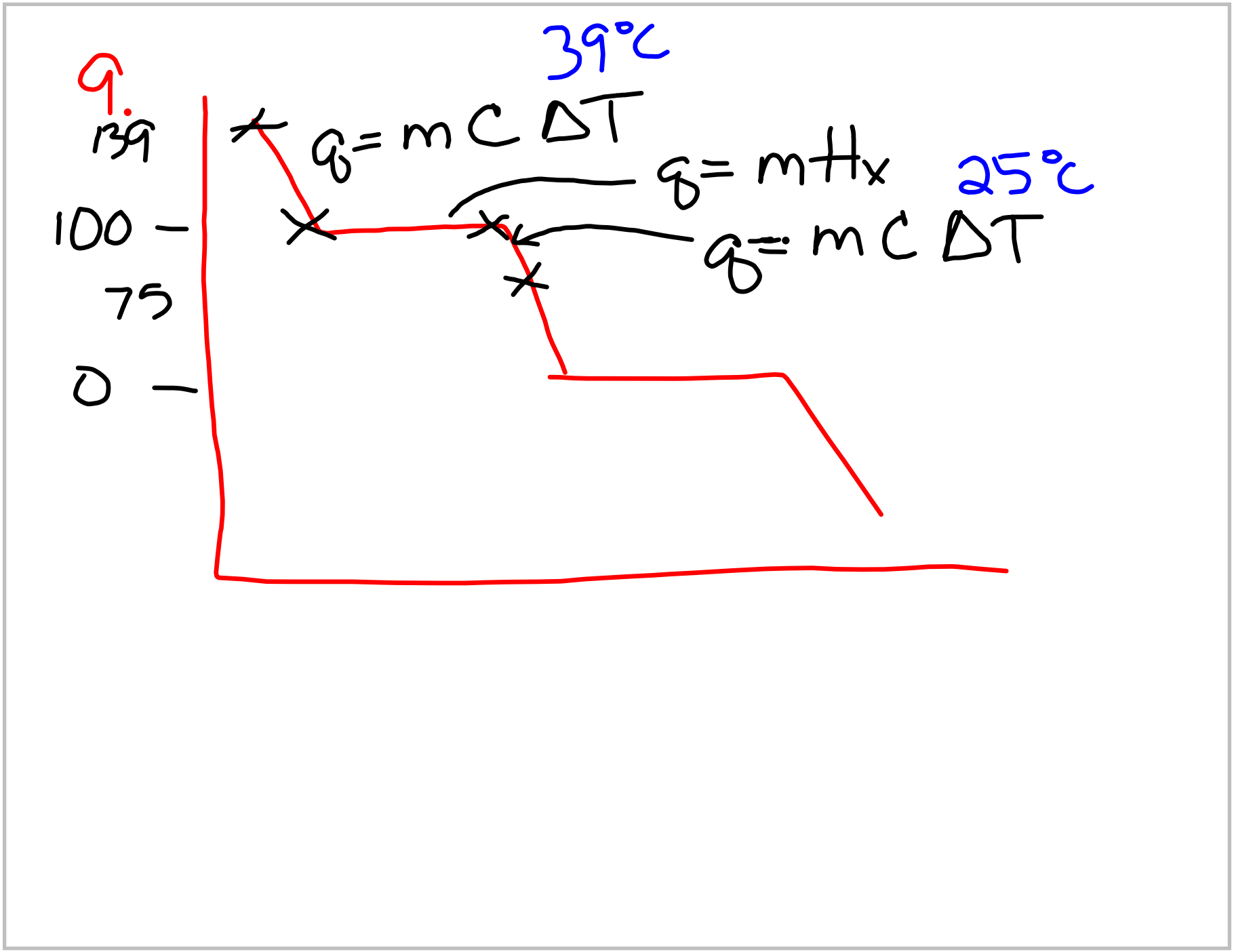
$$q = mC\Delta T$$

$$23{,}000_{cal} = (325\,g)\left(1.0\frac{cal}{g\cdot{}^\circ C}\right)x$$

$$\frac{23{,}000}{325} = \frac{325(x)}{325}$$

$$70.76923077 = x$$

$$27.3 + 70.8 = 98.1^\circ C$$


39°C
q
139
100
75
0
q = m C ΔT
q = m Hx
25°C
q = m C ΔT

① $q = mC\Delta T$

$= (250)(0.48)(39°C)$

$4680\ cal$

② $q = mH_v$

$= (250)(540.0)$

$= 135000$

③ $q = mC\Delta T$

$(250)(1)(25.0)$

$= 6250\ cal$

4680 cal
135000 cal
6250 cal

145930 cal

150,000 cal