

Oct 17-7:38 AM

(5.12) 850 lb 66 mph KE = ?

$KE = \frac{1}{2} m v^2$

$J = \frac{kg \cdot m^2}{sec^2}$

Velocity $\downarrow \frac{1}{2}$ ($\frac{1}{2}$)²
 KE $\downarrow \frac{1}{4}$

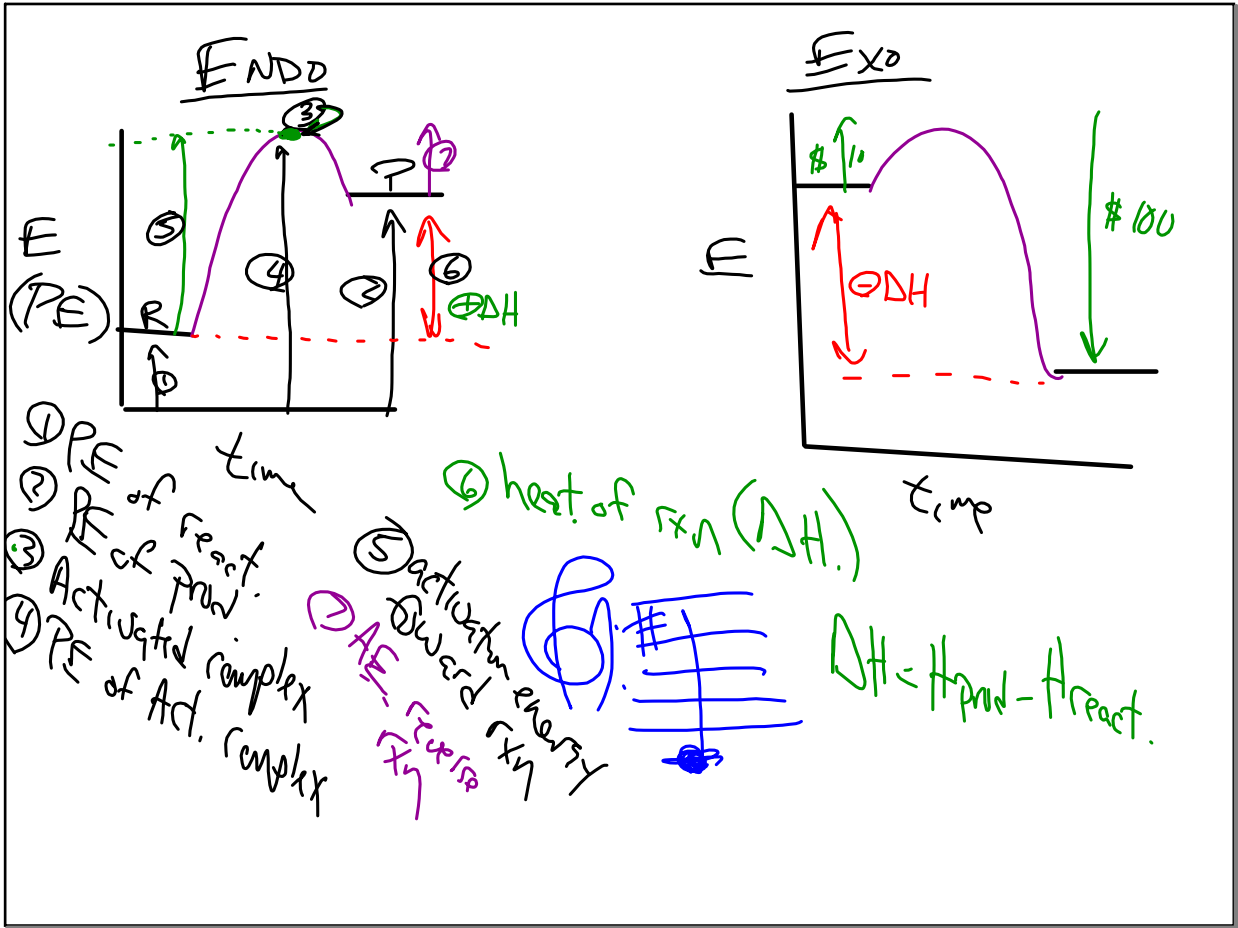
850 lb	1 kg			386.36 kg
	2.2 lb			

$v^2 =$

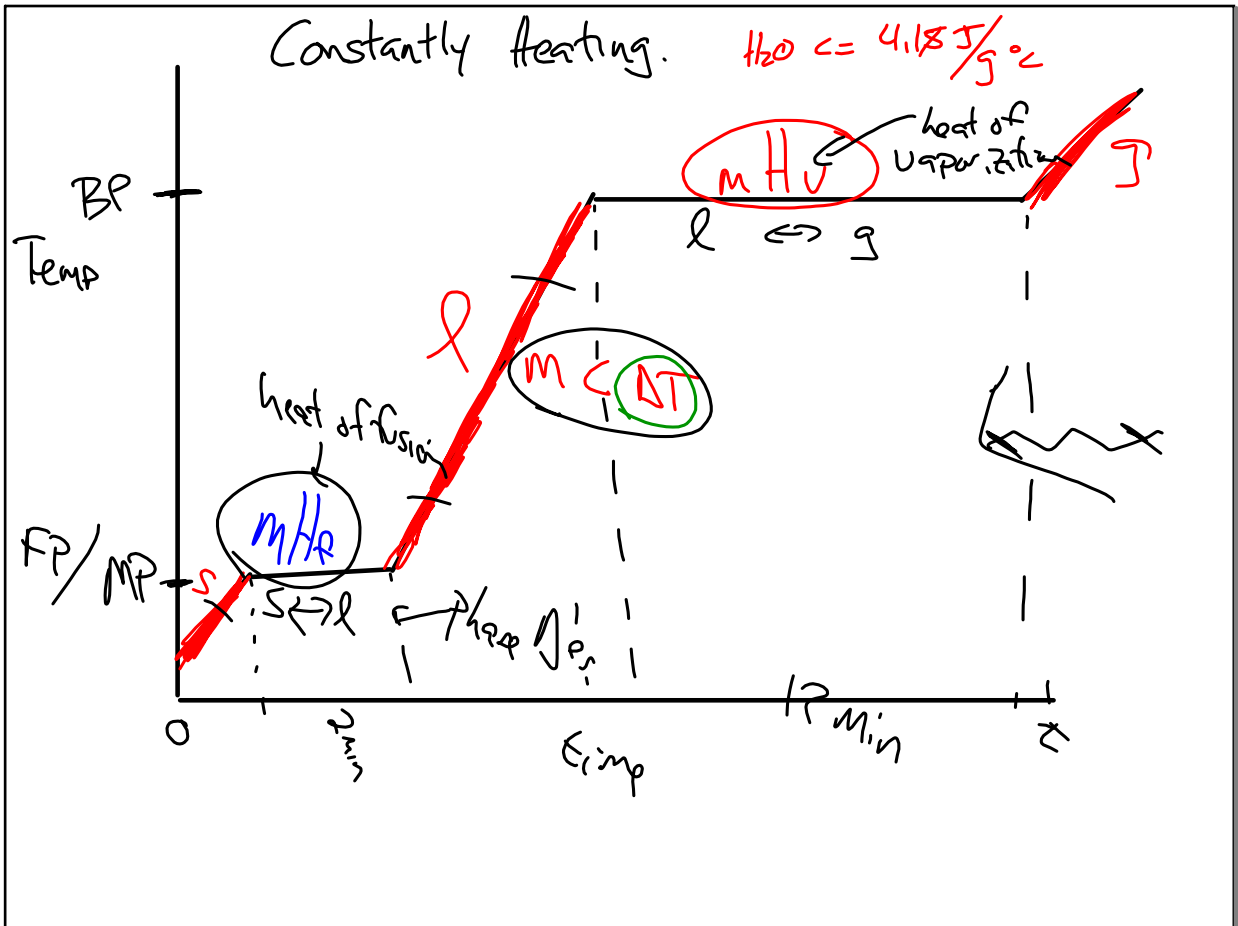
66 miles	1.6093 km	hr	min	29.5 m/sec
hr	1 miles	60 min	60 sec	

$KE = \frac{1}{2} (386.36) (29.5)^2 = 1.68 \times 10^5 J$

Oct 17-7:53 AM

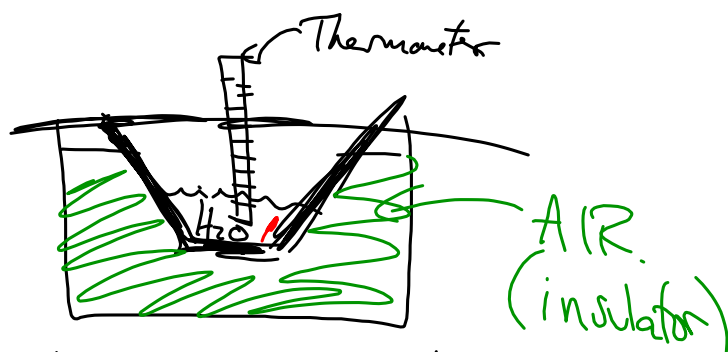


Oct 17-8:05 AM



Oct 17-8:16 AM

Calorimeter (Thermos)



$$\text{heat lost by Ni} = \text{heat gained H}_2\text{O}$$

$$m c (\Delta T) = m c \Delta T$$

$$(5g) c (100 - 30) = (5g)(4.18)(24 - 30)$$

Oct 17-8:43 AM

(Specific heat $\frac{J}{g^\circ C}$) extensive

(Heat Capacity $\frac{J}{^\circ C}$) intensive
mass independent.

Oct 17-8:51 AM

$2 \text{CH}_6\text{N}_2 + \text{SO}_2 \rightarrow 2 \text{N}_2 + 2 \text{CO}_2 + 6 \text{H}_2\text{O}$
 Methyldiazine Rocket fuel.

Combustion rxn
HEAT!

$\frac{7.794 \text{ J}}{0.1 \text{ C}}$
 heat capacity of Bomb Calorimeter

$4 \text{ g} \quad | \quad 1 \text{ mole} = 0.087 \text{ mole}$
 46 g

$25^\circ\text{C} \rightarrow 39.5^\circ\text{C} \quad \Delta T = 14.5^\circ$

Calc heat of combustion for 1 mole CH_6N_2

$\frac{113.013 \text{ J}}{0.087 \text{ mole}} = 1299 \text{ J/mole}$

$\frac{7.794 \text{ J}}{0.1 \text{ C}} \quad | \quad 14.5^\circ$
 $\frac{113.013 \text{ J}}{0.087 \text{ mole}}$

Oct 17-8:54 AM

0.5865 g Lactic acid.
 $\text{HC}_3\text{H}_5\text{O}_3$

4.812 KJ
 0.1 C

$23.1^\circ\text{C} \rightarrow 24.95^\circ\text{C} \quad \Delta T = 1.85^\circ$

Find heat of combustion
 KJ (J)

(a) per gram
 (b) per mole.

$\frac{4.812 \text{ KJ}}{0.1 \text{ C}} \quad | \quad 1.85^\circ = 8.9 \text{ KJ}$

$\frac{8.9 \times 10^3 \text{ J}}{0.5865 \text{ g}} =$

$\text{KJ} \rightarrow \text{K}$
 $\text{J} \rightarrow \text{g}$

Oct 17-9:09 AM

S/S4 + S6b

Oct 17-9:15 AM