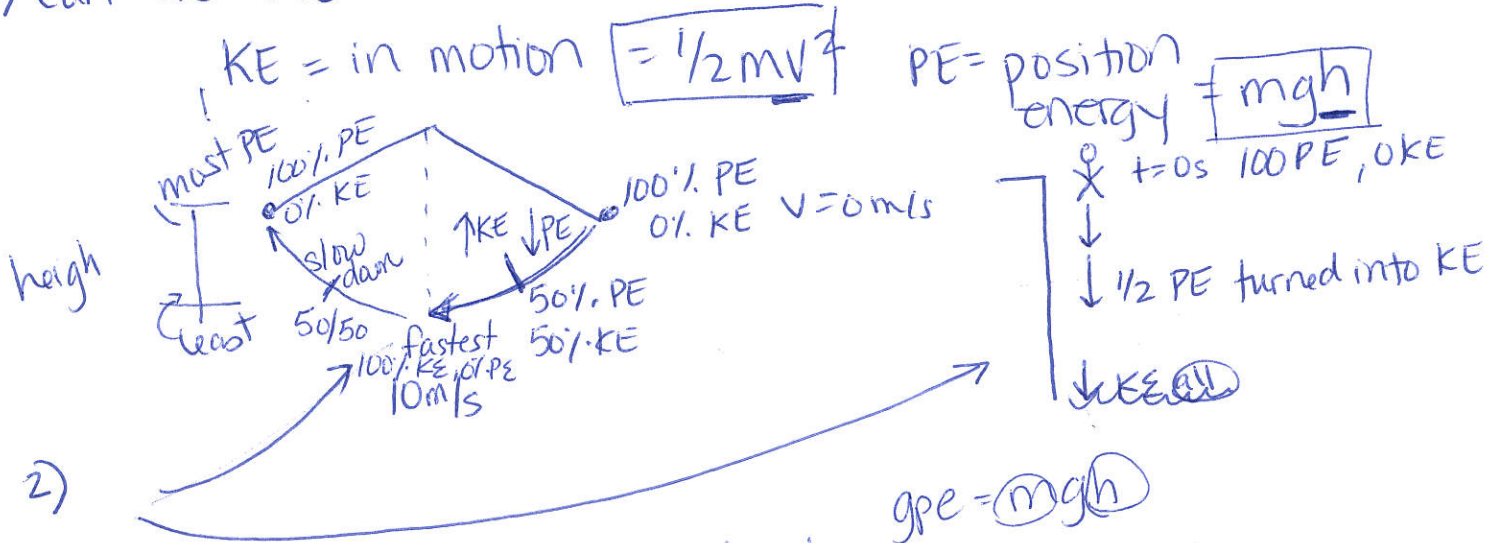


Nature of Energy p 128-133 SCI-7

1) Can we have KE + PE at the same time?



2)

$gpe = (mgh)$
 gpe changes as height changes, mass changes

3) how can we increase KE of a truck without increasing velocity?

$K = \frac{1}{2}mv^2$
 increase mass

4) Molecules in air

- temp

- ~ same KE

$KE = \frac{1}{2}mv^2 = 100 \text{ J}$

- all molecules have same KE

$H_2 = 2 \text{ g}$ - fastest v

$N_2 = 28 \text{ g}$

$O_2 = 32 \text{ g}$

$^{12}C^{16}O_2 = 44 \text{ g}$ - slowest v

$H_2O = 18 \text{ g}$

5) $KE = \frac{1}{2}mv^2$

$\frac{1}{2} (1.06 \text{ kg}) (50 \text{ m/s})^2$
 $\frac{1}{2} (1.06 \text{ kg}) (2500 \text{ m}^2/\text{s}^2)$

$= 75 \text{ J}$

6) $\frac{1}{2}mv^2 = 8.800 \text{ J}$

mgh $PE = 2mgh$
 $4,400 \text{ J}$ 8.800 J

7) $= mgh = 80 \text{ kg} (10 \text{ m/s}^2) (5 \text{ m})$
 $= 4000 \text{ J}$