Students can use a calculator
Students can bring in a 3x5 card of notes

Name Steve

Pretest

PSC1341 [redacted]

Write your answer in the space provided. Show all work. Circle your final answer.

1. The density of mercury is 13.6 g/mL. There are 453.6 grams in a pound.

   What is the weight in pounds of 301 mL of mercury?

$$301\ mL \times \frac{13.6\ g}{mL} \times \frac{1\ lb}{453.6\ g} = 9.02\ lbs$$

2. A stone is dropped from the Empire State Building and strikes the ground 6.82 seconds later. How high is the building in meters?

$$d = v_i t + \frac{1}{2} a t^2$$

$v_i = 0$ so $v_i t = 0$

so

$$d = \frac{1}{2} a t^2$$

$$d = \frac{1}{2} a t^2 = \frac{1}{2}\left(9.80 \frac{m}{s^2}\right)(6.82\ s)^2$$

$$= 228\ m$$

3. An Electronic lift can raise a 480.0 kg mass a distance of 10.0 m in 5.0 seconds.

   What was the work done by the lift?

$$W = mgh = (480.0\ kg)\left(9.80 \frac{m}{s^2}\right)(10.0\ m) = 47{,}040\ J$$

or

47.0 kg

4. $^{90}_{39}Y$

   How many protons in this structure? 39

   How many neutrons in this structure? 51 (90-39)

5. Complete the following nuclear reactions.

$^{131}_{53}I \rightarrow {}^{131}_{54}Xe + {}^{0}_{-1}e$

$^{238}_{92}U \rightarrow {}^{234}_{90}Th + {}^{4}_{2}He$

$^{131}_{54}Xe$

$^{234}_{90}Th$

6. A piston is squished from 20.0 mL to 5.00 mL. If the initial pressure was 1.00 atm what is the final pressure? (assume constant temperature, $T_1=T_2$)

$\frac{P_1V_1}{T_1} = \frac{P_2V_2}{T_2}$

$\frac{P_1V_1}{V_2} = P_2 = \frac{(1.00atm)(20.0mL)}{(5.00mL)} = 4.00\,atm$

7. The formula for calcium hydroxide is $Ca(OH)_2$

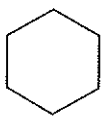
Ca^{2+} OH^{1-}

8. The name of $MgCO_3$ is magnesium carbonate

9. What is the name of CO_2? carbondioxide

10. Balance the following equation

$1\ C_6H_{12} + 9\ O_2 \rightarrow 6\ CO_2 + 6\ H_2O$

11. 

How many carbons in the above structure? 6

How many hydrogens in the above structure? 12