

DATA

1)  $4.00 \text{ K} \left( \frac{1 \text{ K}}{1000 \text{ mL}} \right) = 4.00 \times 10^3 \text{ mL}$

2)  $3.56 \text{ min} \left( \frac{1 \text{ hr}}{60 \text{ min}} \right) \left( \frac{1 \text{ day}}{24 \text{ hr}} \right) = 2.47 \times 10^{-3} \text{ day}$

3.  $96700 \text{ mm} \left( \frac{1 \text{ m}}{1000 \text{ mm}} \right) = 96.7 \text{ m}$

4.  $1.50 \times 10^9 \text{ km} \left( \frac{1000 \text{ m}}{1 \text{ km}} \right) \left( \frac{1 \text{ yr}}{1000 \text{ mm}} \right) = 1.50 \times 10^{13} \text{ km}$

5.  $4.35 \text{ yr} \left( \frac{9.46 \times 10^{15} \text{ m}}{1 \text{ yr}} \right) \left( \frac{1 \text{ km}}{1000 \text{ m}} \right) = 4.12 \times 10^{13} \text{ km}$

6.  $3.5 \text{ yr} \left( \frac{1 \text{ min}}{1 \text{ hr}} \right) \left( \frac{1 \text{ day}}{24 \text{ hr}} \right) \left( \frac{1 \text{ yr}}{365 \text{ day}} \right) = 1.1 \times 10^{-7} \text{ yr}$

7.  $34100 \text{ g} \left( \frac{1 \text{ g}}{1000 \text{ mg}} \right) = 3.41 \times 10^7 \text{ mg}$

8.  $3.1104 \times 10^{14} \text{ yr} \left( \frac{365 \text{ day}}{1 \text{ yr}} \right) \left( \frac{24 \text{ hr}}{1 \text{ day}} \right) \left( \frac{1 \text{ min}}{60 \text{ s}} \right) \left( \frac{1 \text{ yr}}{1000 \text{ ms}} \right) = 2.7247 \times 10^{15} \text{ s}$

$3.1104 \times 10^{14} \text{ yr} \left( \frac{365 \text{ day}}{1 \text{ yr}} \right) \left( \frac{24 \text{ hr}}{1 \text{ day}} \right) \left( \frac{1 \text{ min}}{60 \text{ s}} \right) \left( \frac{1 \text{ yr}}{1000 \text{ ms}} \right) = 9.8090 \times 10^{15} \text{ ms}$

DAL

$$9.) 1.90 \times 10^5 \text{ kg} \left( \frac{1 \text{ eV}}{1.78 \times 10^{-36} \text{ kg}} \right) \left( \frac{1000 \text{ eV}}{1 \text{ keV}} \right) = 1.07 \times 10^{37} \text{ keV}$$

$$10.) 24.5 \text{ yr} \left( \frac{365 \text{ day}}{1 \text{ yr}} \right) \left( \frac{24 \text{ hr}}{1 \text{ day}} \right) \left( \frac{60 \text{ min}}{1 \text{ hr}} \right) \left( \frac{60 \text{ beats}}{1 \text{ min}} \right) = 1.03 \times 10^9 \text{ beats}$$

D A 2

1.)  $261 \text{ g} \left( \frac{1 \text{ kg}}{1000 \text{ g}} \right) = 0.261 \text{ kg}$  or  $2.61 \times 10^{-1} \text{ kg}$

2.  $3.00 \text{ day} \left( \frac{24 \text{ hr}}{1 \text{ day}} \right) \left( \frac{60 \text{ min}}{1 \text{ hr}} \right) \left( \frac{60 \text{ s}}{1 \text{ min}} \right) = 259200 \text{ s}$  or  $2.59 \times 10^5 \text{ s}$

3.  $9474 \text{ mm} \left( \frac{1 \text{ cm}}{10 \text{ mm}} \right) = 947.4 \text{ cm}$

4.  $0.73 \text{ kL} \left( \frac{1000 \text{ L}}{1 \text{ kL}} \right) = 730 \text{ L}$

5.  $5.93 \text{ cm}^3 \left( \frac{1 \text{ m}^3}{100 \text{ cm}^3} \right) = 0.0593 \text{ cm}^3$  or  $5.93 \times 10^{-2} \text{ cm}^3$

6.  $1 \text{ ft}^3 \left( \frac{12 \text{ in}}{1 \text{ ft}} \right) \left( \frac{12 \text{ in}}{1 \text{ ft}} \right) \left( \frac{12 \text{ in}}{1 \text{ ft}} \right) \left( \frac{1 \text{ m}^3}{100 \text{ cm}^3} \right) = 0.3 \text{ m}^3$

7.  $175 \text{ lbs} \left( \frac{454 \text{ g}}{1 \text{ lb}} \right) \left( \frac{1 \text{ kg}}{1000 \text{ g}} \right) = 79.5 \text{ kg}$

8.  $4.65 \text{ km} \left( \frac{1000 \text{ m}}{1 \text{ km}} \right) = 4650 \text{ m}$

9.  $0.74 \text{ kcal} \left( \frac{1000 \text{ cal}}{1 \text{ kcal}} \right) \left( \frac{1 \text{ min}}{60 \text{ sec}} \right) = 12 \text{ cal/s}$

D42

$$10.) 1.42 \frac{\text{g}}{\text{cm}^2} \left( \frac{1000 \text{ mg}}{1 \text{ g}} \right) \left( \frac{1 \text{ cm}^2}{10 \text{ mm}^2} \right) = 142 \text{ mg/mm}^2$$

$$11.) 9.81 \frac{\text{m}}{\text{hr}} \left( \frac{100 \text{ cm}}{1 \text{ m}} \right) \left( \frac{1.2 \text{ ft}}{1 \text{ m}} \right) \left( \frac{2.54 \text{ cm}}{1 \text{ in}} \right) \left( \frac{1 \text{ in}}{12 \text{ ft}} \right) \left( \frac{1 \text{ m}^2}{60 \text{ m}^2} \right) =$$

$$116000 \text{ ft/hr}^2$$

or

$$1.16 \times 10^5 \text{ ft/hr}^2$$

$$12.) 8.41 \frac{\text{g}}{\text{m}^2} \left( \frac{1 \text{ kg}}{1000 \text{ g}} \right) \left( \frac{1 \text{ L}}{1000 \text{ m}^2} \right) = 8.41 \text{ kg/L}$$

$$13.) 3.8 \frac{\text{km}}{\text{hr}} \left( \frac{60 \text{ y}}{60 \text{ min}} \right) \left( \frac{24 \text{ hr}}{1 \text{ day}} \right) \left( \frac{365 \text{ day}}{1000 \text{ yr}} \right) \left( \frac{1 \text{ km}}{1 \text{ m}} \right) \left( \frac{1 \text{ m}}{1000 \text{ m}} \right) = 7.4 \times 10^7 \text{ m/yr}$$

$$14.) 8.24 \frac{\text{g}}{\text{cm}^2} \left( \frac{1 \text{ cm}^2}{10 \text{ mm}^2} \right) \left( \frac{1000 \text{ mg}}{1 \text{ g}} \right) = 824 \text{ mg/mm}^2$$

$$15.) 2.05 \times 10^5 \frac{\text{g}}{1 \text{ m}^2} \left( \frac{1 \text{ hr}}{60 \text{ min}} \right) \left( \frac{1 \text{ day}}{24 \text{ hr}} \right) \left( \frac{365 \text{ day}}{1 \text{ yr}} \right) = 6.30 \times 10^8 \text{ yr}$$

$$16.) 12.5 \frac{\text{hr}}{1 \text{ hr}} \left( \frac{65 \text{ min}}{60 \text{ min}} \right) \left( \frac{1 \text{ hr}}{1 \text{ hr}} \right) = 115 \text{ min}$$

D42

17.)  $50 \text{ yr} \left( \frac{365 \text{ day}}{24 \text{ hr}} \right) \left( \frac{1 \text{ hr}}{3600 \text{ s}} \right) \left( \frac{1 \text{ yr}}{1 \text{ yr}} \right) = 2 \times 10^9 \text{ s}$

18.)  $22 \text{ min} \left( \frac{1 \text{ hr}}{60 \text{ min}} \right) \left( \frac{1 \text{ hr}}{65 \text{ mi}} \right) \left( \frac{5280 \text{ ft}}{1 \text{ mi}} \right) = 130000 \text{ ft}$

19.)  $3.73 \times 10^8 \text{ km}^3 \left( \frac{1000 \text{ m}^3}{1 \text{ km}^3} \right) = 3.73 \times 10^{11} \text{ m}^3$

$3.73 \times 10^8 \text{ km}^3 \left( \frac{1000 \text{ m}^3}{1 \text{ km}^3} \right) \left( \frac{1 \text{ yr}^3}{1 \text{ yr}^3} \right) \left( \frac{1 \text{ yr}}{1000 \text{ yr}} \right) \left( \frac{1 \text{ L}}{1 \text{ L}} \right) = 3.73 \times 10^{10}$

20.)  $102 \text{ min} \left( \frac{1 \text{ hr}}{60 \text{ min}} \right) = 1.70 \text{ hrs}$

$97 \text{ km} \left( \frac{1000 \text{ m}}{1 \text{ km}} \right) \left( \frac{1 \text{ hr}}{100 \text{ m}} \right) \left( \frac{1 \text{ hr}}{1 \text{ hr}} \right) \left( \frac{2.54 \text{ cm}}{12 \text{ in}} \right) \left( \frac{5280 \text{ ft}}{1 \text{ mi}} \right) = 60 \text{ m}$

$60 \div 1.70 = 35 \text{ m/hr}$  No she doesn't

21.)  $2.25 \text{ cups} \left( \frac{8 \text{ oz}}{1 \text{ qt}} \right) \left( \frac{1 \text{ qt}}{2 \text{ qt}} \right) \left( \frac{16 \text{ oz}}{1 \text{ qt}} \right) \left( \frac{1 \text{ qt}}{946 \text{ mL}} \right) \left( \frac{1 \text{ L}}{1000 \text{ mL}} \right) = 0.532 \text{ L}$

$0.5 \text{ lbs} \left( \frac{454 \text{ g}}{1 \text{ lbs}} \right) = 227 \text{ g}$

no I wouldn't eat these! doesn't check out

22.)  $50 \text{ m} * 25 \text{ m} * 1.5 \text{ m} = 1875 \text{ m}^3$

$1875 \text{ m}^3 \left( \frac{1 \text{ m}^3}{100 \text{ cm}^3} \right) \left( \frac{1 \text{ yr}}{1 \text{ yr}} \right) \left( \frac{1 \text{ yr}}{1000 \text{ yr}} \right) \left( \frac{1 \text{ gal}}{3.786 \text{ L}} \right) = 50 \text{ gal}$

DH2

23.)

$$2.4 \times 10^5 \text{ yr.} \left( \frac{58.90 \text{ yr.}}{1 \text{ yr.}} \right) \left( \frac{12.1 \text{ yr.}}{1 \text{ ft}} \right) \left( \frac{2.54 \text{ cm}}{1 \text{ in.}} \right) \left( \frac{1 \text{ in.}}{100 \text{ cm}} \right) \left( \frac{3.0 \times 10^2 \text{ ft}}{1 \text{ s}} \right)$$

One way = 1.26 s multiply by two to find the time to hit the reflector and come back. 2.6 s

Practice

↑  
your weight

$$1) \frac{140 \text{ lbs}}{5} \left| \frac{1 \text{ drop}}{1 \text{ drop}} \right| \frac{10 \text{ lbs/day}}{4 \text{ drops}} \left| \frac{1 \text{ day}}{4 \text{ drops}} \right| = 3.5 \text{ drops/dose}$$

$$2) 15 \text{ ppl} \left| \frac{4 \text{ lbs}}{1 \text{ person}} \right| \frac{10.2 \text{¢}}{10.2 \text{¢}} \left| \frac{1 \text{¢}}{1 \text{¢}} \right| \frac{1 \text{¢}}{1 \text{¢}} = \$73.90$$

No you are short \$3.90

$$3) 9 \text{ times daily} \left( \frac{1 \text{ pic}}{3 \text{ drops}} \right) = 3 \text{ pics}$$

$$4) 31 \text{ students} \left( \frac{3 \text{ pens}}{1 \text{ student}} \right) \left( \frac{6 \text{ pens}}{1 \text{ pack}} \right) \left( \frac{1 \text{ pack}}{1 \text{ pack}} \right) = \$21.86$$

\$22 w/st

5) same as # 3 sorry!!

$$6) 10 \text{ acceptances} \left( \frac{3 \text{ apps}}{1 \text{ accep.}} \right) \left( \frac{3 \text{ apps}}{1 \text{ app}} \right) \left( \frac{2 \text{ hrs}}{1 \text{ app}} \right) \left( \frac{500 \text{ cal}}{1 \text{ hr}} \right) \left( \frac{1 \text{¢}}{100 \text{ cal}} \right) \left( \frac{1 \text{¢}}{3 \text{ apps}} \right)$$

$$270 \text{ cleans} \quad 300 \text{ w/st}$$

$$7) 1000000 \left( \frac{2 \text{ wks}}{2 \text{ wks}} \right) \left( \frac{5 \text{ days}}{5 \text{ days}} \right) \left( \frac{1 \text{ wk}}{1 \text{ wk}} \right) \left( \frac{1 \text{ day}}{1 \text{ day}} \right) \left( \frac{1 \text{ hr}}{1 \text{ hr}} \right) = 8 \times 10^6 \text{ burgers}$$

$$8) 10 \text{ km} \left( \frac{1000 \text{ m}}{1 \text{ km}} \right) \left( \frac{100 \text{ cm}}{1 \text{ m}} \right) \left( \frac{1 \text{ m}}{1 \text{ m}} \right) \left( \frac{1 \text{ ft}}{1 \text{ ft}} \right) \left( \frac{12 \text{ in}}{12 \text{ in}} \right) \left( \frac{2.54 \text{ cm}}{2.54 \text{ cm}} \right) \left( \frac{5280 \text{ ft}}{5280 \text{ ft}} \right) = 6 \text{ miles}$$

Practice

$$9) 250000 \text{ m} \left( \frac{5280 \text{ ft}}{1 \text{ m}} \right) = 1.3 \times 10^9 \text{ ft}$$

$$10) 10000 \text{ gal} \left( \frac{4 \text{ qt}}{1 \text{ gal}} \right) \left( \frac{946 \text{ mL}}{1 \text{ qt}} \right) \left( \frac{1 \text{ L}}{1000 \text{ mL}} \right) \left( \frac{1 \text{ m}^3}{1 \text{ L}} \right) = 378400$$

$$400000 \text{ m}$$

$$11) 350 \text{ min} \left( \frac{1 \text{ hr}}{60 \text{ min}} \right) = 5.8 \text{ hr/day}$$

$$350 \text{ min} \left( \frac{1 \text{ day}}{60 \text{ s}} \right) = 21000 \text{ s/day}$$

$$12) 1.3 \times 10^3 \text{ gal} \left( \frac{4 \text{ qt}}{1 \text{ gal}} \right) \left( \frac{946 \text{ mL}}{1 \text{ qt}} \right) \left( \frac{1 \text{ L}}{1000 \text{ mL}} \right) = 4.9 \times 10^3 \text{ L}$$

$$13) 1.2 \times 10^9 \text{ gal} \left( \frac{1 \text{ day}}{1 \text{ yr}} \right) \left( \frac{1 \text{ yr}}{365 \text{ days}} \right) \left( \frac{60 \text{ min}}{1 \text{ hr}} \right) \left( \frac{60 \text{ s}}{1 \text{ min}} \right) = 1.4 \times 10^4 \text{ gal/s}$$

$$14) 60 \text{ hr} \left( \frac{1 \text{ hr}}{60 \text{ min}} \right) \left( \frac{1 \text{ min}}{60 \text{ s}} \right) \left( \frac{5280 \text{ ft}}{1 \text{ m}} \right) = 880 \text{ ft/s}$$

$$15) 1.3 \times 10^{15} \text{ gal} \left( \frac{1 \text{ day}}{1.2 \times 10^9 \text{ gal}} \right) = 1.1 \times 10^6 \text{ days}$$

$$16) 180.0 \text{ day} \left( \frac{24 \text{ hr}}{60 \text{ min}} \right) \left( \frac{1 \text{ yr}}{1 \text{ hr}} \right) = 260000 \text{ min}$$

$$17) 125.5 \text{ lbs} \left( \frac{454 \text{ g}}{1 \text{ lbs}} \right) \left( \frac{1 \text{ kg}}{1000 \text{ g}} \right) = 56980000 \text{ mg}$$



$$16.) 16.25 \text{ m} \cdot \left( \frac{5280 \text{ ft}}{1 \text{ mi}} \right) \left( \frac{1 \text{ ft}}{12 \text{ in}} \right) \left( \frac{1 \text{ in}}{2.54 \text{ cm}} \right) = 261500 \text{ cm}$$

$$19.) 18 \text{ m} \cdot \left( \frac{60 \text{ s}}{1 \text{ min}} \right) \left( \frac{1 \text{ s}}{3.20 \times 10^3 \text{ ft}} \right) = 3200000 \text{ ft}$$

$$20.) 1 \text{ yr} \left( \frac{52 \text{ wk}}{1 \text{ yr}} \right) \left( \frac{14 \text{ bales}}{2 \text{ wk}} \right) = 364 \text{ bales}$$

$$21.) 0.8 \text{ yd} \left( \frac{3 \text{ ft}}{1 \text{ yd}} \right) \left( \frac{12 \text{ in}}{2.54 \text{ cm}} \right) \left( \frac{1 \text{ ft}}{1 \text{ in}} \right) = 70 \text{ cm}$$

$$22.) 70.0 \text{ s} \left( \frac{1 \text{ m} \cdot \text{s}}{60 \text{ s}} \right) \left( \frac{5 \text{ min}}{85.4 \text{ yd}} \right) \left( \frac{3 \text{ ft}}{1 \text{ yd}} \right) \left( \frac{12 \text{ in}}{2.54 \text{ cm}} \right) \left( \frac{1 \text{ m}}{100 \text{ cm}} \right) = 18.22 = 20 \text{ m}$$

$$23.) 15.00 \left( \frac{1 \text{ oz}}{18.75} \right) \left( \frac{454 \text{ g}}{1 \text{ lb}} \right) \left( \frac{1 \text{ lb}}{16 \text{ oz}} \right) = 1.2 \text{ g}$$

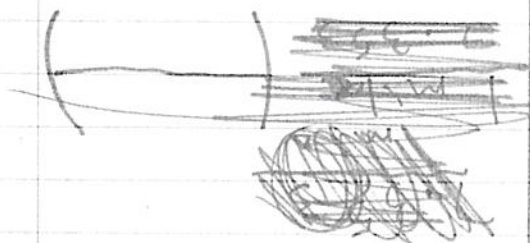
$$24.) 1.80 \times 10^{-4} \text{ ton} \left( \frac{2000 \text{ lbs}}{1 \text{ ton}} \right) \left( \frac{454 \text{ g}}{1 \text{ lb}} \right) \left( \frac{1 \text{ ton}}{1000 \text{ g}} \right) = 163 \text{ g}$$

$$25.) 1 \text{ L} \left( \frac{1000 \text{ mL}}{1 \text{ L}} \right) \left( \frac{1 \text{ qt}}{946 \text{ mL}} \right) \left( \frac{1 \text{ qt}}{4 \text{ qt}} \right) \left( \frac{1 \text{ qt}}{3.2 \text{ qt}} \right) = 0.87 \text{ qt}$$

$$26.) 8.35 \times 10^6 \text{ min} \left( \frac{1 \text{ hr}}{60 \text{ min}} \right) \left( \frac{1 \text{ day}}{24 \text{ hr}} \right) \left( \frac{365 \text{ days}}{1 \text{ yr}} \right) = 15.9 \text{ yr}$$

$$27.) 100.0 \text{ lbs} \left( \frac{454 \text{ g}}{1 \text{ lb}} \right) \left( \frac{1 \text{ kg}}{1000 \text{ g}} \right) \left( \frac{1 \text{ g}}{1 \text{ g}} \right) \left( \frac{1 \text{ g}}{2.70 \text{ kg}} \right) = 16.8 = 20 \text{ g}$$

$$\boxed{5260 \text{ ft} / 7.355 = 718 \text{ ft} / \text{s}}$$



31.)

$$\boxed{0.0054 \text{ wk}} \left( \frac{7 \text{ days}}{24 \text{ hr}} \right) \left( \frac{1 \text{ day}}{1 \text{ hr}} \right) \left( \frac{60 \text{ min}}{1 \text{ hr}} \right) = \boxed{5 \text{ min}}$$

$$\boxed{25 \text{ gal}}$$

$$29.) \quad 0.50 \text{ mi} \left( \frac{5280 \text{ ft}}{1 \text{ mi}} \right) \left( \frac{12 \text{ in}}{1 \text{ ft}} \right) \left( \frac{2.54 \text{ cm}}{1 \text{ in}} \right) \left( \frac{1 \text{ m}}{100 \text{ cm}} \right) \left( \frac{1 \text{ km}}{1000 \text{ m}} \right) \left( \frac{25 \text{ gal}}{400 \text{ km}} \right)$$

$$28.) \quad 62 \text{ months} \left( \frac{30 \text{ days}}{1 \text{ month}} \right) \left( \frac{24 \text{ hr}}{1 \text{ day}} \right) \left( \frac{3600 \text{ s}}{1 \text{ hr}} \right) = \boxed{1.6 \times 10^8 \text{ s}}$$