or Jactor belmethod

DIMENSIONAL ANALYSIS PROBLEMS

1 hr = 60 min	$1 \min = 60 \sec$	1 ton = 2000 lbs	7 days = 1 week
24 hrs = 1 day	1 kg = 2.2 lbs	1 gal = 3.79 L	264.2 gal = 1 cubic meter
1 mi = 5,280 ft	1 kg = 1000 g	1 lb = 16 oz	20 drops = 1 mL
365 days = 1 yr	52 weeks = 1 yr	2.54 cm = 1 in	1 L = 1000 mL
0.621 mi = 1.00 km	1 yd = 36 inches	1 cc is 1 cm ³	$1 \text{ mL} = 1 \text{ cm}^3$

DIRECTIONS: Solve each problem using dimensional analysis. Every number must have a unit. Work must be shown. Conversion factors are given below

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1.) How many miles will a person run during a 10 kilometer race?

10 km
$$\times \frac{0.621 \text{ mi}}{1.00 \text{ km}} = 6.21 \text{ km}$$

2.) The moon is 250,000 miles away. How many feet is it from earth?

J.) A family pool holds 10,000 gallons of water. How many cubic meters is this?

4.) The average American student is in class 330 minutes/day. How many hours/day is this?

$$\frac{330 \text{ min}}{100 \text{ min}} \times \frac{1100 \text{ min}}{100 \text{ min}} = \frac{5.5100 \text{ min}}{1000 \text{ min}}$$
How many (seconds is this?

5) How many seconds are there in 1 year?

1 yr x 365 d x 34h x 60 min x 605 =
$$3.16 \times 10^{7}$$
 5

6) Lake Michigan holds 1.3×10^{15} gallons of water. How many liters is this?

$$1.3 \times 10^{15}$$
 got $\times \frac{3.79L}{lgot} = 4.927 \times 10^{15} L$

7) Pepsi puts 355 ml of pop in a can. How many drops is this?

How many cubic meters is this?

$$355 \text{ mLx} \frac{1 \text{ cm}^3}{1 \text{ mL}} \times \frac{1 \text{ m}}{100 \text{ cm}} \times \frac{1 \text{ m}}{100 \text{ cm}} \times \frac{1 \text{ m}}{100 \text{ cm}} = 3.55 \times 10^{-6} \text{ m}^3$$

8) Chicago uses 1.2 x 109 gallons of water /day. How many gallons per second must be pumped from the lake every second to supply the city?

9) Sixty miles/ hour is how many ft/sec?

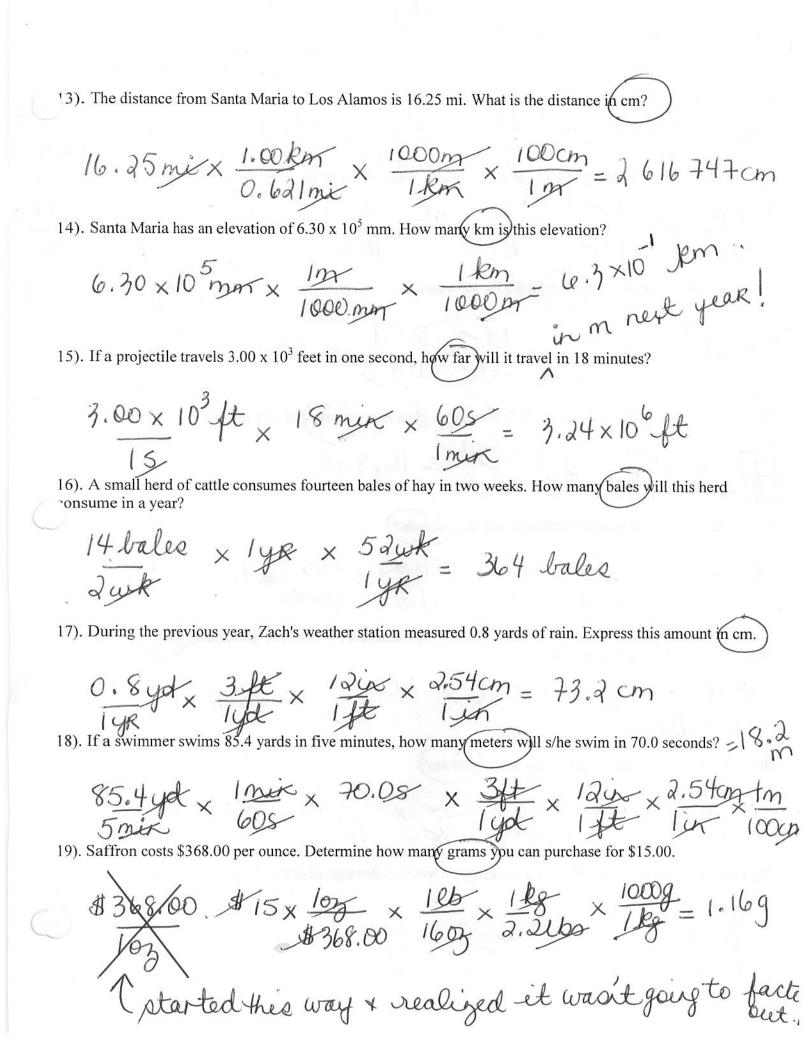
10) Lake Michigan holds 1.3 x 1015 gallons of water. If just Chicago removed water from the lake and it never rained again, how many days would the water last? Chicago uses 1.2 x 109 gallons of water /day

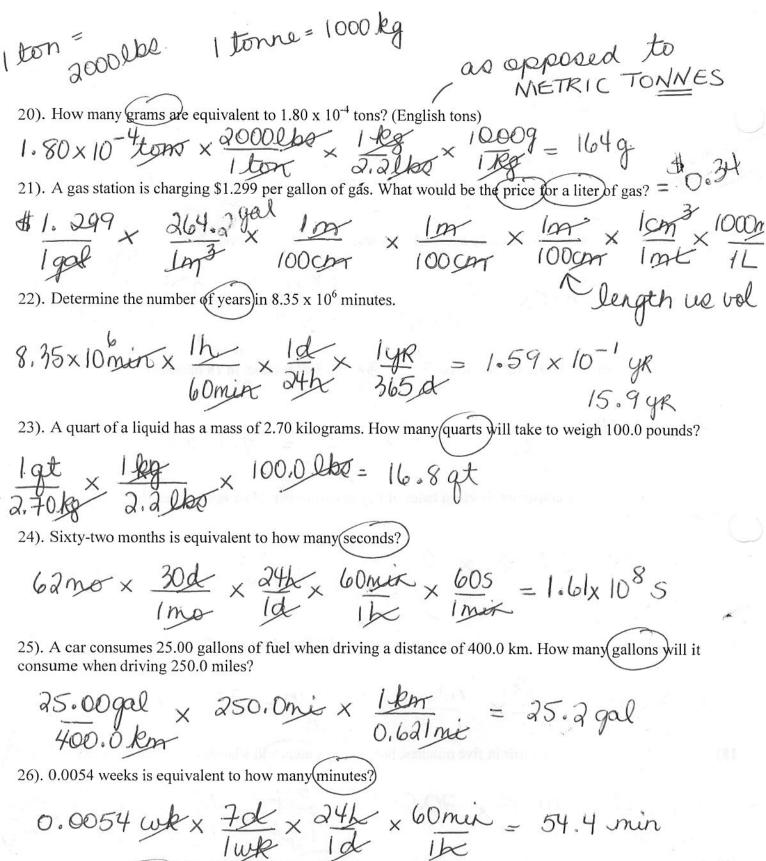
$$1.3 \times 10^{15}$$
 god $\times \frac{1 d}{1.2 \times 10^9}$ = $1.08 \times 10^6 d$

11). How many minutes are in 180.0 days?

180.0 d x
$$\frac{24k}{16k}$$
 x 60 min = 2.59×10^{5} min

12). If a person weighs 125 lbs, 8 oz., how many mg does s/he weigh?





27). How many feet per second is a wave going if it travels a distance of one mile in 7.35 seconds?

 $\frac{1}{7.355}$ × $\frac{5280}{1}$ = 718 ft