Chemist:_____ Chemist:_____

Dimensional Analysis Rally Coach

Directions: The paper is the ball. Pass it back and forth to each other, filling out the problems in your column. The chemist not solving a problem is the coach! Don't forget there is a back!

1 mile = 1760 yds	16 oz = 1 lb	1 L = 1.0567 qts	1 day = 24 hours
1 yd = 3 ft	2000 lbs = 1 ton	4 qts = 1 gal	1 hour = 60 mins
1 ft = 12 in	1 oz = 28.35 g	32 oz = 1 qt	1 min = 60 secs
1 mile = 1.609 km	1 kg = 2.205 lbs	1 qt = 2 pts	1 kg = 1000 g

1. A runner competed in a 5-mile run. How many yards did she run?

$$5\text{ mi} \times \frac{1760\text{ yds}}{1\text{ mi}} = 9000\text{ yds}$$

(1 s.f.)

2. A cheesecake recipe calls for 8 oz. of sour cream for the topping. Sour cream is sold at the store in pints. How many pints do you need to buy?

$$8\text{ oz} \times \frac{1\text{ qt}}{32\text{ oz}} \times \frac{2\text{ pt}}{1\text{ qt}} = .5\text{ pt}$$

(1 s.f.)

1. A runner competed in a 15 km run. How many miles did she run?

$$15\text{ km} \times \frac{1\text{ mi}}{1.609\text{ km}} = 9.3\text{ mi}$$

(2 s.f.)

2. A lasagna recipe calls for 16 oz of ricotta but ricotta cheese is only sold in quarts. How many quarts of ricotta cheese do you need to buy at the store?

$$16\text{ oz} \times \frac{1\text{ qt}}{32\text{ oz}} = .50\text{ qt}$$

(2 s.f.)

3. In the US lunchmeat is sold by the pound, while in Italy it is sold by the gram. How many grams of meat would you need it you needed 0.75 pounds?

$$.75\text{lbs} \times \frac{1\text{kg}}{2.205\text{lbs}} \times \frac{1000\text{g}}{1\text{kg}} = 340\text{g} \quad (2\text{ s.f.})$$

3. In the US milk is sold by the gallon, while in Italy it is sold by the liter. How many liters of milk would you need to equal 1.0 gallon?

$$1.0\text{gal} \times \frac{4\text{qts}}{1\text{gal}} \times \frac{1\text{L}}{1.0567\text{qt}} = 3.8\text{L} \quad (2\text{ s.f.})$$

4. In the Tour de France, cyclists ride 1,653.6 m over 20 days. How many feet do they go?

$$1653.6\text{m} \times \frac{1\text{km}}{1000\text{m}} \times \frac{1\text{mi}}{1.609\text{km}} \times \frac{5280\text{ft}}{1\text{ mi}}$$

$$= 5426.3\text{ft} \quad (5\text{ s.f.})$$

4. After a nice meal, perhaps you'd finish it off with a 5 pound cake for dessert. What would the name of this cake be in grams?

$$5\text{ lbs} \times \frac{1\text{ kg}}{2.205\text{ lbs}} \times \frac{1000\text{g}}{1\text{ kg}} = 2000\text{g} \quad (1\text{ s.f.})$$

5. Mark McGwire hit 70 home runs in the 1998 season. Given that there are 4 bases and 90 feet between each base, how many miles did he run that season just from home runs?

$$70\text{hr} \times \frac{4\text{bases}}{1\text{hr}} \times \frac{90\text{ft}}{1\text{base}} \times \frac{1\text{mi}}{5280\text{ft}} = 5\text{mi} \quad (1\text{ s.f.})$$

5. In Europe gasoline is sold by the liter. Assume that it takes 14 gallons of gasoline to fill the tank of a compact car. How many liters of gasoline will it take?

$$14\text{gal} \times \frac{4\text{ qt}}{1\text{gal}} \times \frac{1\text{L}}{1.0567\text{qt}} = 53\text{ L} \quad (2\text{ s.f.})$$

6. A penny has a density of .895 g/mL. What is the density in lbs/L?

$$.895\text{g/mL} \times \frac{1\text{Kg}}{1000\text{g}} \times \frac{2.205\text{lbs}}{1\text{kg}} \times \frac{1000\text{mL}}{1\text{L}}$$

$$= 1.97\text{ lbs/L} \quad (3\text{ s.f.})$$

6. A cheetah runs 68 mi/hour, what is the speed in km/sec?

$$68\text{mi/hr} \times \frac{1.609\text{km}}{1\text{mi}} \times \frac{1\text{hr}}{60\text{min}} \times \frac{1\text{min}}{60\text{sec}}$$

$$.030\text{ Km/sec} \quad (2\text{ s.f.})$$