Name: _____ Date: _____

Dimensional Analysis Worksheet

Setup and solve the following using dimensional analysis.

1 mile = 5,280 ft
1 inch = 2.54 cm
3 feet = 1 yard
454 g = 1lb
946 mL = 1 qt
4 qt = 1 gal

Don't forget: What you want
What you've got

1. 5,400 inches to miles

2. 16 weeks to seconds

3. 54 yards to mm

4. 19 inches to feet

5. 840 in. to cm.

6. 36 cm/sec to mph

7. 1.09 g/mL to lbs/gal

8. 32 ft/sec to meters/min

9. You have the Heebie-Geebies. Your grandmother sends you a remedy for the Heebie-Geebies with the following instructions: "Take 1 drop per 10 lbs. of body weight per day divided into 4 doses until the Heebie-Geebies are gone." How many drops do you take per dose??

10. You're throwing a pizza party for 15 people and figure that each person will eat 4 slices. You call up the pizza place and learn that each pizza will cost you $14.78 and it will be cut into 12 slices. How much is the pizza going to cost you? You only have $70. Will you have enough money?

11. Every three times I clean my bedroom, my mother makes me an apple pie. I cleaned my bedroom 9 times. How many apple pies does she owe me? (What?! Your mother doesn't reward you for cleaning your bedroom? Aren't there child labor laws? To make up for that injustice, you may have this very easy problem.)

12. In my chemistry class, 28 students are each given 3 pens. If there are 8 pens in one package, priced at $1.88 per package, what is the total cost of giving away pens?

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Dimensional Analysis Worksheet

Setup and solve the following using dimensional analysis.

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LAST "Fraction" Should look like

Don't forget: What you want
              What you've got

1. 5,400 inches to miles

$$\frac{5400\ in}{1} \quad \frac{1\ ft}{12\ in} \quad \frac{1\ mi}{5280\ ft} \quad = .085\ Mi.$$

2. 16 weeks to seconds

$$\frac{16\ weeks}{1} \quad \frac{7\ days}{1\ wks} \quad \frac{24\ hrs.}{1\ day} \quad \frac{60\ min}{1\ hr} \quad \frac{60\ sec}{1\ min} \quad = 9676800\ secs.$$

3. 54 yards to mm

$$\frac{54\ yds}{1} \quad \frac{3\ ft}{1\ yd.} \quad \frac{12\ in.}{1\ ft} \quad \frac{2.54\ cm}{1\ in} \quad \frac{10\ mm}{1\ cm} \quad = 49377.6\ mm$$

4. 19 inches to feet

$$\frac{19\ in.}{1} \quad \frac{1\ ft}{12\ in} \quad = 1.58\ ft$$

5. 840 in. to cm.

$$\frac{840\ in}{1} \quad \frac{2.54\ cm}{1\ in} \quad = 2133.6\ cm$$

6. 36 cm/sec to mph

$$\frac{36\ cm}{1\ sec} \quad \frac{1\ in}{2.54\ cm} \quad \frac{1\ ft}{12\ in} \quad \frac{1\ mi}{5280\ ft} \quad \frac{60\ sec}{1\ min} \quad \frac{60}{1\ hr} \quad = .805\ mph$$

7. 1.09 g/mL to lbs/gal

$$\frac{1.09 \text{ g}}{1 \text{ mL}} \quad \frac{1 \text{ lb}}{454 \text{ g}} \quad \frac{940 \text{ mL}}{1 \text{ qt}} \quad \frac{4 \text{ qt}}{1 \text{ gal}} = 9.08 \text{ lbs./gal}$$

8. 32 ft/sec to meters/min

$$\frac{32 \text{ ft}}{1 \text{ sec}} \quad \frac{12 \text{ in}}{1 \text{ ft}} \quad \frac{2.54 \text{ cm}}{1 \text{ in}} \quad \frac{1 \text{ m}}{100 \text{ cm}} \quad \frac{60 \text{ sec}}{1 \text{ min}}$$

585.22
m/min

9. You have the Heebie-Geebies. Your grandmother sends you a remedy for the Heebie-Geebies with the following instructions: "Take 1 drop per 10 lbs. of body weight per day divided into 4 doses until the Heebie-Geebies are gone." How many drops do you take per dose?? Need to know drop/dose

$$\frac{1 \text{ day}}{4 \text{ doses}} \quad \frac{1 \text{ drop}}{10 \text{ lbs} \times \text{dose}}$$

10. You're throwing a pizza party for 15 people and figure th[...] slices. You call up the pizza place and learn that each pi[...] it will be cut into 12 slices. How much is the pizza going to [...] $70. Will you have enough money? NO

$$\frac{1 \text{ pizza}}{14.78} \quad \frac{14.78}{1 \text{ pizza}} \quad \frac{15 \text{ persons}}{1 \text{ party}} \quad \frac{1 \text{ party}}{15 \text{ persons}}$$

How much per Slice? $\frac{14.78}{1 \text{ piz}} \quad \frac{1 \text{ piz}}{12 \text{ slice}} = \$1.23$ Dollars per party

$$\frac{15 \text{ people}}{1} \times \frac{4 \text{ slices}}{1 \text{ person}} \times \frac{1 \text{ pizza}}{12 \text{ slices}}$$

$$\frac{60}{12} \text{ pizza}$$

5 pizzas

*

11. Every three times I clean my bedroom, my mother makes [...] cleaned my bedroom 9 times. How many apple pies doe[...] Your mother doesn't reward you for cleaning your bedro[...] laws? To make up for that injustice, you may have this ver[...]

$$\frac{3}{1} \quad \frac{3}{1} \quad \frac{3}{1} \qquad 3 \text{ pies}$$

12. In my chemistry class, 28 students are each given 3 pens. If there are 8 pens in one package, priced at $1.88 per package, what is the total cost of giving away pens?

$$\frac{84 \text{ total pens}}{8 \text{ pens in a pack}} = 10.5 \text{ packs} \cdot 1.88 \text{ per pack}$$

$$\frac{1 \text{ pack}}{1} \quad \frac{1.88}{1 \text{ pack}} \quad \frac{1 \text{ pack}}{8 \text{ pens}} \quad \frac{3 \text{ pens}}{1 \text{ stu}} \quad \frac{28 \text{ students}}{1 \text{ class}} \qquad \$19.74$$