

Warmup:

Math Conversion

Word Puzzle

Metric Conversion Word Puzzle

v

1. Write the *prefixes* for the metric system in order from left to right. Then write the *name* of the metric units we have studied on the lines provided.

kilo hecto deka unit deci centi milli
m
L
g

The numbers in the boxes after each section of problems below correlate to each of the problem numbers. Complete the following problems. Next, find the term from those directly below which correlates with each problem number. Once you have found the term that matches the answer, write the term in the box with contains the number for the problem.

0.437	0.49	0.875	0.97	.5	9.752	25	43.7	89	97.62	160	342	437
to	did	because	from	to	he	steak	jump	wanted	croak	Texas	his	bugs

500	970	1,600	2,500	4,000	4,300	16,000	25,000	56,000	97,620	.00437	.576	57.6
pond	frog	Paris	French	why	move	the	decide	served	with	flies	meals	tried

2. $4\text{m} = \frac{4000}{1000} \text{mm}$

3. $49\text{cm} = \frac{49}{100} \text{m}$

4. $16\text{kg} = \frac{16000}{1000} \text{g}$

5. $97\text{cm} = \frac{970}{10} \text{mm}$

6. $25\text{L} = \frac{25000}{1000} \text{mL}$

7. $437\text{mg} = \frac{437}{1000} \text{g}$

8. $4.3\text{km} = \frac{4300}{1000} \text{m}$

9. $5\text{mm} = \frac{5}{1000} \text{cm}$

10. $1.6\text{L} = \frac{1600}{1000} \text{mL}$

Sentence:

² why	³ did	⁴ the	⁵ frog	⁶ decide	⁷ to	⁸ move	⁹ to	¹⁰ Paris?
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11. $87.5\text{cm} = \underline{.875}\text{ m}$

12. $9762\text{g} = \underline{9.762}\text{ kg}$

13. $8.9\text{cm} = \underline{89}\text{ mm}$

14. $3.42\text{m} = \underline{342}\text{ cm}$

15. $576\text{L} = \underline{.576}\text{ kL}$

16. $56\text{g} = \underline{56000}\text{ mg}$

17. $97.62\text{kg} = \underline{97620}\text{ g}$

18. $2.5\text{kL} = \underline{2500}\text{ L}$

19. $4.37\text{mg} = \underline{.00437}\text{ g}$

Sentence:

11 Because	12 he	13 wanted	14 his	15 meats	16 served	17 with	18 French	19 flies.
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HW #1: Answer Key

1) $3000 \text{ mg} = \underline{3} \text{ g}$
3 places to the left

2) $105 \text{ km} = \underline{105,000} \text{ m}$
3 places to the right

3) $500 \text{ cm} = \underline{5} \text{ m}$
2 places to the left

4) $7,500 \text{ lb} = \underline{3.75} \text{ T}$

5) $6 \text{ days} = \underline{144} \text{ hr}$

6) $20 \text{ cups} = \underline{1.25} \text{ gal}$

$$\frac{7500 \cancel{\text{lbs}}}{2000 \cancel{\text{lbs}}} \times \frac{1 \text{ ton}}{2000} = \frac{7500}{2000} \text{ ton}$$

$$\frac{6 \text{ days}}{1 \text{ day}} \times \frac{24 \text{ hrs}}{1 \text{ day}} = 6 \times 24 \text{ days}$$

$$\frac{20 \cancel{\text{ cups}}}{2 \cancel{\text{ cups}}} \times \frac{1 \cancel{\text{ pt}}}{2 \cancel{\text{ pts}}} \times \frac{1 \cancel{\text{ qt}}}{4 \cancel{\text{ qts}}} \times \frac{1 \text{ gal}}{4 \text{ qts}} = \frac{20}{2 \times 2 \times 4} \text{ gal}$$

7) Tom needs to build a fence on his property that is 1.5 miles long. Fencing is sold at Lowes by the foot. How many feet of fencing will Tom need to purchase to build his fence?

$$\left| \begin{array}{l|l} 1.5 \text{ miles} & 5280 \text{ ft} \\ \hline & 1 \text{ mile} \end{array} \right| = 1.5 \times 5280 \text{ ft} = \underline{\underline{7,920 \text{ ft}}}$$

8) I found a snake in my garden that was 0.125 hm long. How long is this snake in cm?

k h da u d c m 4 jumps to the right.

$$\begin{array}{cccccccc} | & | & | & | & | & | & | & | \\ \hline \text{km} & \text{hm} & \text{dam} & \text{m} & \text{dm} & \text{cm} & \text{mm} & \\ \downarrow & \underbrace{\quad} & \underbrace{\quad} & \underbrace{\quad} & \underbrace{\quad} & \underline{\underline{\text{cm}}} & & \\ 0.125 \text{ hm} & & & & & & & \end{array}$$

$\overset{\circ}{\underbrace{0.1250}} = \underline{\underline{1,250 \text{ cm}}}$

9) I have 5 quarts of yogurt in my refrigerator and want to serve it by the cup. How many servings of yogurt will I have? 20

$$\begin{array}{|c|c|c|} \hline 5 \text{ qts} & 2 \text{ pints} & 2 \text{ cups} \\ \hline \hline & 1 \text{ qt} & 1 \text{ pint} \\ \hline \end{array} = 5 \times 2 \times 2 \text{ cups} = 20 \text{ cups}$$

10) I kept my running time on my watch for the entire summer vacation. At the end of the summer I had logged 60,480 minutes. How many weeks of running would this be? 6

$$\begin{array}{|c|c|c|c|} \hline 60,480 \text{ min} & 1 \text{ hr} & 1 \text{ day} & 1 \text{ week} \\ \hline \hline & 60 \text{ min} & 24 \text{ hrs} & 7 \text{ days} \\ \hline \end{array} = \frac{60,480}{60 \times 24 \times 7} \text{ weeks}$$

$$= \frac{60,480}{10,080} = 6 \text{ weeks}$$

11) If I have lived in my house for 5,110 days and my neighbor has lived in his house for 15 years, who has lived in their house longer?

my neighbor

Prove your answer:

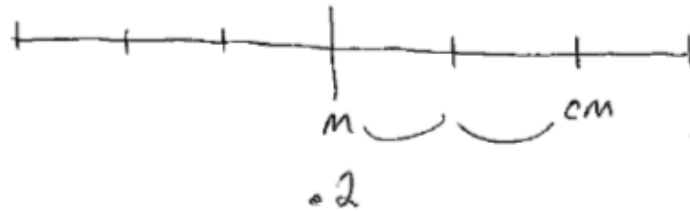
$$\left| \frac{5110 \text{ days}}{365 \text{ days}} \right| = \frac{5110}{365} \text{ years} = 14 \text{ years}$$

12) My car requires tires that are **no more than** 36 cm wide. A tire store has tires on sale that are 0.2 m wide. Should I purchase these tires for my car?

These tires are less than 36 cm, so yes.

Prove your answer:

k h da u d e m



2 places to the right.

$$.2 \text{ m} = \underline{20 \text{ cm}}$$

Partner Practice

English to English
Conversions

Algebra I

Name Key

Compare Units of Measure

Complete the tables of English Measures:

Length: 5280 ft = 1 mile 12 in = 1 ft 3 ft = 1 yard

Weight: 16 oz = 1 pound 2000 lb = 1 ton

Volume: 8 oz = 1 cup 2 cups = 1 pint

2 pints = 1 quart 4 quarts = 1 gallon

Time: 60 sec = 1 minute 60 min = 1 hour 24 hr = 1 day

7 days = 1 week 52 weeks = 1 year

12 months = 1 year 365 days = 1 year

Convert these units.

1. 42 months = 3.5 yr

$$\begin{array}{r|l} 42 \text{ months} & 1 \text{ yr} \\ \hline & 12 \text{ months} \end{array}$$

2. 3 c = 24 oz

$$\begin{array}{r|l} 3 \text{ cups} & 8 \text{ oz} \\ \hline & 1 \text{ cup} \end{array}$$

3. 504 hr = 3 weeks

$$\begin{array}{r|ll} 3 \text{ weeks} & 7 \text{ days} & 24 \text{ hr} \\ \hline & 1 \text{ week} & 1 \text{ day} \end{array}$$

4. 36 yd = 108 ft

$$\begin{array}{r|l} 36 \text{ yd} & 3 \text{ ft} \\ \hline & 1 \text{ yd} \end{array}$$

5. $\underline{6.25}$ T = 12,500 lb

$$\begin{array}{r|l} 12,500 \cancel{\text{lb}} & 1 \text{ T} \\ \hline & 2000 \cancel{\text{lb}} \end{array}$$

7. 3.5 min = $\underline{210}$ sec

$$\begin{array}{r|l} 3.5 \cancel{\text{min}} & 60 \text{ sec} \\ \hline & 1 \cancel{\text{min}} \end{array}$$

9. 72 months = $\underline{6}$ yr

$$\begin{array}{r|l} 72 \cancel{\text{months}} & 1 \text{ yr} \\ \hline & 12 \cancel{\text{months}} \end{array}$$

11. $\underline{60}$ oz = 3.75 lb

$$\begin{array}{r|l} 3.75 \cancel{\text{lb}} & 16 \text{ oz} \\ \hline & 1 \text{ lb} \end{array}$$

6. 4 mi = $\underline{21,120}$ ft

$$\begin{array}{r|l} 4 \cancel{\text{mi}} & 5280 \text{ ft} \\ \hline & 1 \cancel{\text{mi}} \end{array}$$

8. 32 qt = $\underline{8}$ gal

$$\begin{array}{r|l} 32 \cancel{\text{qt}} & 1 \text{ gal} \\ \hline & 4 \cancel{\text{qt}} \end{array}$$

10. $\underline{480}$ min = 8 hr

$$\begin{array}{r|l} 8 \text{ hr} & 60 \text{ min} \\ \hline & 1 \text{ hr} \end{array}$$

12. 34,320 ft = $\underline{6.5}$ mi

$$\begin{array}{r|l} 34,320 \cancel{\text{ft}} & 1 \text{ mi} \\ \hline & 5280 \cancel{\text{ft}} \end{array}$$

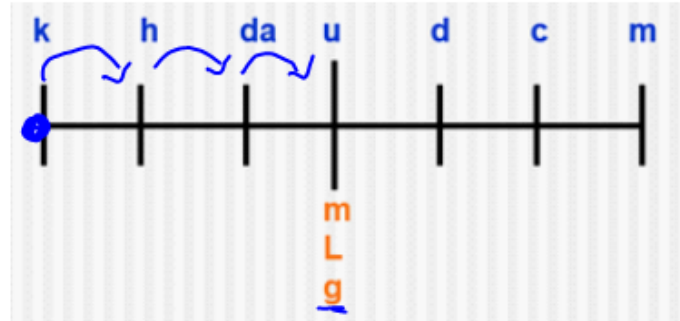
RECALL:

Ex 1: Convert 5 miles to feet.

5 miles	5280 ft
1	1 mile

$$= \underline{\underline{26,400}} \text{ ft}$$

Ex 2: Convert 50 kg to grams



50 000.

50,000g

Rate - ratio that compares quantities in different measures.

Ex 3: Convert 60 miles per hour to feet per minute.
 60 mph = _____ ft/min

↗ fraction

60 miles	5280 (ft)	1 hour	=
1 hour	1 mile	60 (min)	

$$\frac{60 \times 5280 \times 1}{1 \times 1 \times 60} \text{ ft/min}$$

$$\underline{\underline{5280 \text{ ft/min}}}$$

Ex 4: What is the highway speed limit of 65 mph in ft/sec?

$$\underline{65 \text{ mph}} = \text{_____ ft/sec}$$

65 miles	5280 (ft)	1 hour	1 min
1 hour	1 mile	60 min	60 (sec)

$$= \frac{65 \times 5280}{60 \times 60} \text{ ft/sec}$$

$$95.\bar{3} \text{ ft/sec}$$

Ex 5: The fastest recorded speed for an eastern gray kangaroo is 40 miles per hour. What is the kangaroo's speed in feet per second? 40 mph = 58.6 ft/sec

$$\begin{array}{|c|c|c|c|}
 \hline
 40 \text{ miles} & 1 \text{ hour} & 1 \text{ min} & 5280 \text{ ft} \\
 \hline
 1 \text{ hour} & 60 \text{ min} & 60 \text{ sec} & 1 \text{ mile} \\
 \hline
 \end{array} =$$

Ex 6: A school copy machine can make 4,500 copies every hour. At this rate, how many copies can it make per minute?

$$\begin{array}{|c|c|} \hline 4500 \text{ copies} & 1 \text{ hour} \\ \hline 1 \text{ hour} & 60 \text{ min} \\ \hline \end{array} = \underline{\underline{75 \text{ copies/min}}}$$

✓

Ex 7: Greg's car is traveling 66 ft/sec. How many miles per hour is Greg driving?

$$\begin{array}{|c|c|c|c|} \hline 66 \cancel{\text{ft}} & 1 \text{ mile} & 60 \cancel{\text{sec}} & 60 \cancel{\text{min}} \\ \hline 1 \cancel{\text{sec}} & 5280 \cancel{\text{ft}} & 1 \cancel{\text{min}} & 1 \text{ hr} \\ \hline \end{array} = \checkmark \underline{\underline{45 \text{ mph}}}$$

Ex 8: I plan to work at my job 40 hours each week. At this rate, how many hours will I work in one year?

$$\begin{array}{|c|c|} \hline 40 \text{ hrs} & 52 \text{ wks} \\ \hline 1 \text{ wk} & 1 \text{ yr} \\ \hline \end{array} = \underline{\underline{2080 \text{ hrs/wk}}}$$

✓

Converting Metric to English and English to Metric

		<u>Conversion Factor</u>
fl oz	↔ mL	29.58
gal	↔ L	3.79
in	↔ cm	2.54
m	↔ ft	3.28
mi	↔ km	1.61
oz	↔ g	28.35
kg	↔ lb	2.2



multiply by conversion factor



divide by conversion factor

In class examples:

Use the chart to convert these units. Show your work.

$$1. \quad 16 \text{ in} = \underline{40.64} \text{ cm}$$

$$16 \times 2.54 \curvearrowright$$

$$2. \quad 345 \text{ lb} = \underline{156.81} \text{ kg}$$

$$345 \div 2.20 \curvearrowright$$

$$3. \quad 450 \text{ km} = \underline{279.5} \text{ mi}$$

$$450 \div 1.61 \curvearrowright$$

$$4. \quad 1,200 \text{ mL} = \underline{40.57} \text{ fl oz}$$

$$1200 \div 29.58 \curvearrowright$$

$$5. \quad 40 \text{ m} = \underline{131.2} \text{ ft}$$

$$40 \times 3.28 \curvearrowright$$

$$6. \quad 4 \text{ gal} = \underline{15.16} \text{ L}$$

$$4 \times 3.79 \curvearrowright$$

7. Penny has a pencil that is 19 cm long. How long is the pencil in inches?

$$19_{\text{cm}} \div 2.54 = 7.48 \text{ in}$$

8. Macho Mike can lift 200 kg with ease. How much is this weight in pounds?

$$200 \text{ kg} \times 2.2 = 440 \text{ lbs}$$

The distance between Athens and Atlanta is 65 miles. How far is this in kilometers?

9.

$$65 \text{ miles} \times 1.61 = 104.65 \text{ km}$$

HW #2:

Converting Rates and Units