Unit Conversions
Powerpoints and Videos

- *You will need your interactive notebook, pencil*
- *You will need to write down the standard, unit question and Today's question in your notebook.*
- *As you watch the powerpoint and the videos, please take notes*
- *You may find that you need to pause the videos at times to record information*
- *For later reference the powerpoint and videos will be available on my site.*

CCGPS Coordinate Algebra
Day 1 (8-15-12) Unit 1

Be sure to copy this information in your notebook.

UNIT QUESTION: Why is it important to understand the relationship between quantities?

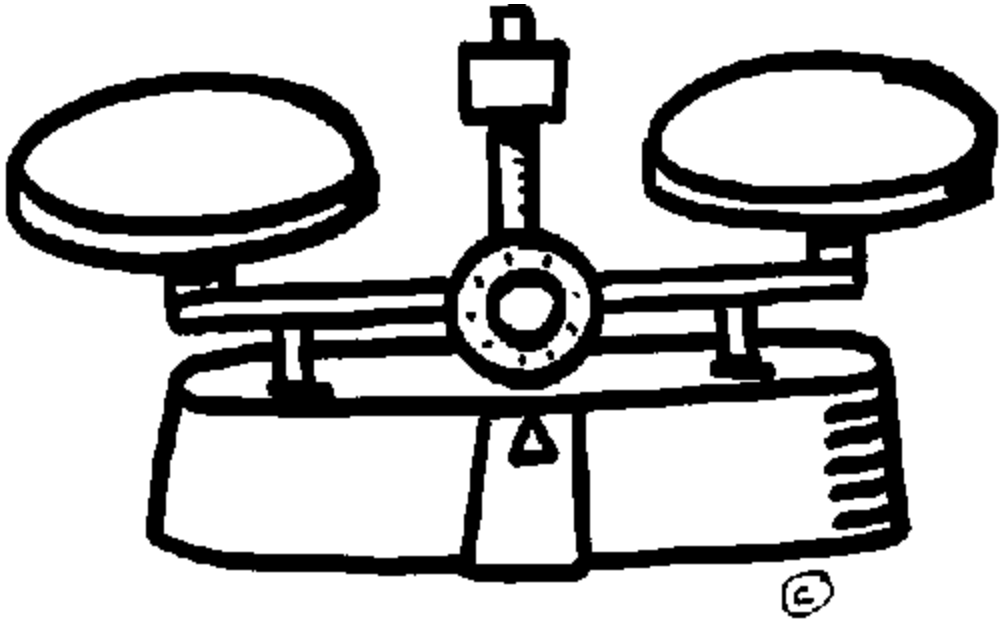
Standard: MCC9-12.N.Q.1-3, MCC9-12.A.SSE.1, MCC9-12.A.CED.1-4

Today's Question:
How are unit conversions performed, and why is it important?

Standard: MCC9-12.N.Q.1 and N.Q.2

Measurements

Problem Solving Using Conversion Factors



Example 1

1. Bob studied for 2.5 hrs. How many minutes did he study for?

Multiply by: $\frac{\text{What you want}}{\text{What you have}}$

How many minutes are in 2.5 hours?

Initial unit

2.5 hr

Conversion factor *unit* *Final*

$$2.5\ \text{hr} \times \frac{60\ \text{min}}{1\ \text{hr}} = 150\ \text{min}$$

cancel

Learning Check (complete in your notebook)

i) A rattlesnake is 2.44 m long. How long is the snake in cm?

A) 2440 cm

B)244 cm

C)24.4 cm

Solution (check your work and make corrections in your notebook)

A rattlesnake is 2.44 m long. How long is the snake in cm?

B)244 cm

$$2.44\ \text{m} \times \frac{100\ \text{cm}}{1\ \text{m}} = 244\ \text{cm}$$

Example 2

How many seconds are in 1.4 days?

Unit plan: days → hr → min → seconds

Solution

Unit plan: days → hr → min → seconds

$$1.4 \text{ day} \times \frac{24 \text{ hr}}{1 \text{ day}} \times \frac{60 \text{ min}}{1 \text{ hr}} \times \frac{60 \text{ sec}}{1 \text{ min}}$$

$$= 120{,}960 \text{ sec}$$

Learning Check (complete in your notebook

ii) If the ski pole is 3.0 feet in length, how long is the ski pole in mm?

Solution (check your work and make corrections in your notebook)

$$3.0\ \text{ft} \times \frac{12\ \text{in}}{1\ \text{ft}} \times \frac{2.54\ \text{cm}}{1\ \text{in.}} \times \frac{10\ \text{mm}}{1\ \text{cm}} =$$

$$= 914.4\ \text{mm}$$

Example 3

John Isner serves 140 miles per hour. How fast is that feet per second?

Solution

$$\frac{140 \text{ miles}}{1 \text{ hr}} \times \frac{5{,}280 \text{ ft.}}{1 \text{ mile}} \times \frac{1 \text{ hr}}{60 \text{ min}} \times \frac{1 \text{ min}}{60 \text{ sec.}} =$$

$$= 205.3 \text{ ft/sec.}$$

Example 1

1. Convert 12 liters to barrels.

1.05 qt = 1 liter

2 barrels = 73 gallons

Multiply by: $\frac{\text{What you want}}{\text{What you have}}$

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How many barrels is 12 liters?

$$12\,L \cdot \frac{1.05\,\$}{1\,L} \cdot \frac{1\,gal}{4\,\$} \cdot \frac{2\,bar}{73\,gal}$$

$$= \frac{25.2}{292}\ barrels = 0.08630137\ barrels$$

August 15, 2013

A football field is 100 yards in length.

iv) How many inches is that?

v) How many cm?

1” = 2.54 cm

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$$= \frac{25.2}{292}\ barrels = 0.08630137\ barrels$$

Solution

$$\frac{1\,\text{drop}}{2\,\text{sec}} \cdot \frac{60\,\text{sec}}{1\,\text{min}} \cdot \frac{60\,\text{min}}{1\,\text{hr}} \cdot \frac{24\,\text{hr}}{1\,\text{day}} \cdot \frac{365\,\text{day}}{1\,\text{yr}} \cdot \frac{100\,\text{mL}}{575\,\text{drops}}$$

$$= \frac{3,153,600,000}{1150}$$

$$= 2,742,260.87\ \text{mL/yr}$$

Learning Check

If a faucet drips at the rate of 1 drop every 2 seconds for 1 year, how many mL of water is wasted?

575 drops = 100 mL

Solution

$$\frac{1\,\text{drop}}{2\,\text{sec}} \cdot \frac{60\,\text{sec}}{1\,\text{min}} \cdot \frac{60\,\text{min}}{1\,\text{hr}} \cdot \frac{24\,\text{hr}}{1\,\text{day}} \cdot \frac{365\,\text{day}}{1\,\text{yr}} \cdot \frac{100\,\text{mL}}{575\,\text{drops}}$$

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What's Next

- Prepare to watch a short video on unit conversions, please continue to take notes.

- Unit Conversion made easy

http://www.youtube.com/watch?v=XKCZn5MLKvk

- metric conversions - shortcut method

http://www.youtube.com/watch?v=XS-8FCqYo5M