

## Answer on Question #75953, Chemistry / General Chemistry :

5. Each of the measurements below describes length. Rank them from longest length to shortest length. (1mi,1000in,100in,10m)

6. A study of the Earth by NASA determined there were  $9.90 \times 10^{11}$  tons of carbon stored in living plants on the Earth's surface, at the time of the study. Calculate the mass of carbon stored in these plants in grams. (1 ton = 907.19 kg)

7. Some unusual units of distance include the attoparsec and the furlong. Even if you've never heard of these units before, you can still perform conversions using the following conversion factors. Convert 11830 attoparsecs to furlongs.

8. A coal plant generates 70400000 kJ of energy to power homes each year. If 30.0 kJ of energy are produced per gram of coal, how many kilograms of coal are needed to sustain the power plant's energy production?

### Solution.

5. Longest length to shortest length: 1mi,1000in,100in,10m

6. A study of the Earth by NASA determined there were  $9.90 \times 10^{11}$  tons of carbon stored in living plants on the Earth's surface, at the time of the study. Calculate the mass of carbon stored in these plants in grams. (1 ton = 907.19 kg)

$$m = 9.9 \cdot 10^{11} \cdot 907.19 \cdot 10^3 = 8.981 \cdot 10^{17} \text{ g}$$

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$$1 \text{ furlong} = \frac{1}{8} \text{ mi} = 660 \text{ in} = 201.17 \text{ m}$$

$$L = 3,0856776 \cdot 10^{16} \cdot 10^{-18} \text{ m} = 3,0856776 \cdot 10^{-2} \text{ m}$$

$$L = \frac{3,0856776 \cdot 10^{-2} \text{ m}}{201.17 \text{ m}} = 1.534 \cdot 10^{-4} \text{ furlong}$$

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8. A coal plant generates 70400000 kJ of energy to power homes each year. If 30.0 kJ of energy are produced per gram of coal, how many kilograms of coal are needed to sustain the power plant's energy production?

$$m = \frac{704000000 \text{ kJ}}{30 \text{ kJ} / \text{g}} = 2346666.7 \text{ g} = 2346.7 \text{ kg}$$

$$m = 2346.7 \text{ kg}$$

**Answer:**

5. 1mi,1000in,100in,10m

6.  $m = 8.981 \cdot 10^{17} \text{ g}$

7.  $L = 1.534 \cdot 10^{-4} \text{ furlong}$

8.  $m = 2346.7 \text{ kg}$

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