

## 3. UNIT ANALYSIS



CH30S

UNIT 1

WIEBE

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### REVIEW

A rectangular parcel of land has the dimensions of 14500 m long and 2000 m wide.

1. Convert each of these values into scientific notation.
2. How many significant digits are each of these values measured to?
3. Without using a calculator, calculate the area of the land. Round your answer correctly.

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## BASIC UNIT ANALYSIS

In the far away country of Yrtsimehc, the monetary currency is based on “izzles” rather than “dollars”. The following equivalencies are true in this currency:

$$1 \text{ frizzle} = 8 \text{ crizzles} \quad 6 \text{ drizzles} = 0.5 \text{ sizzles} \quad 2 \text{ crizzles} = 10 \text{ drizzles}$$

If you have 75 frizzles in the bank, how many sizzles is this equivalent to?

4

## EXAMPLE # 1

Given that:

$$2.21 \text{ lb} = 1.00 \text{ kg}$$

$$4.54 \text{ L} = 1.00 \text{ gal}$$

$$1.00 \text{ atm} = 101.3 \text{ kPa}$$

$$1.61 \text{ km} = 1.00 \text{ mile}$$

$$14 \text{ lb} = 1 \text{ stone}$$

$$2000 \text{ lb} = 1 \text{ ton}$$

$$16 \text{ oz} = 1 \text{ lb}$$

Mr. Wiebe weighs 14.3 stone. How many kilograms is this?

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## EXAMPLE #2

Given that:

$$2.21 \text{ lb} = 1.00 \text{ kg}$$

$$1.00 \text{ atm} = 101.3 \text{ kPa}$$

$$14 \text{ lb} = 1 \text{ stone}$$

$$16 \text{ oz} = 1 \text{ lb}$$

$$4.54 \text{ L} = 1.00 \text{ gal}$$

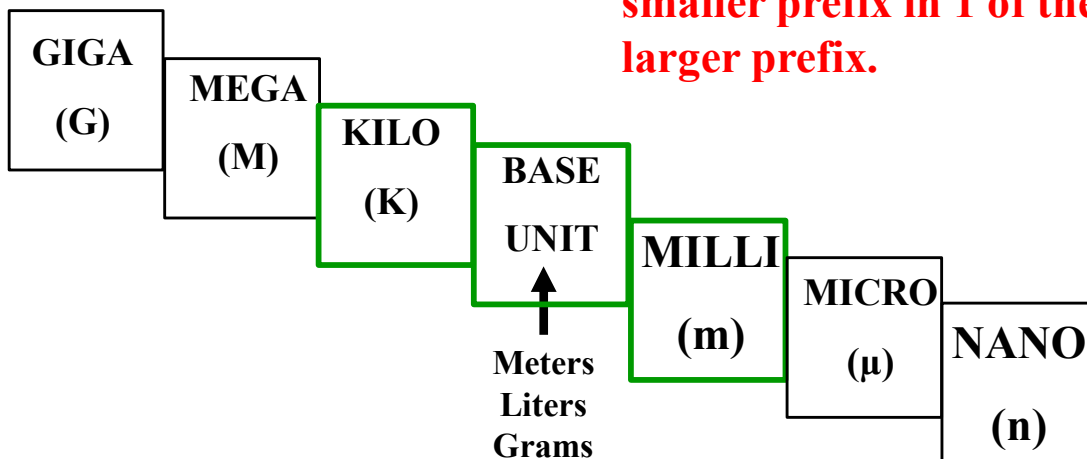
$$1.61 \text{ km} = 1.00 \text{ mile}$$

$$2000 \text{ lb} = 1 \text{ ton}$$

A recipe calls for 4 oz of sugar. How many grams of sugar would this be?

6

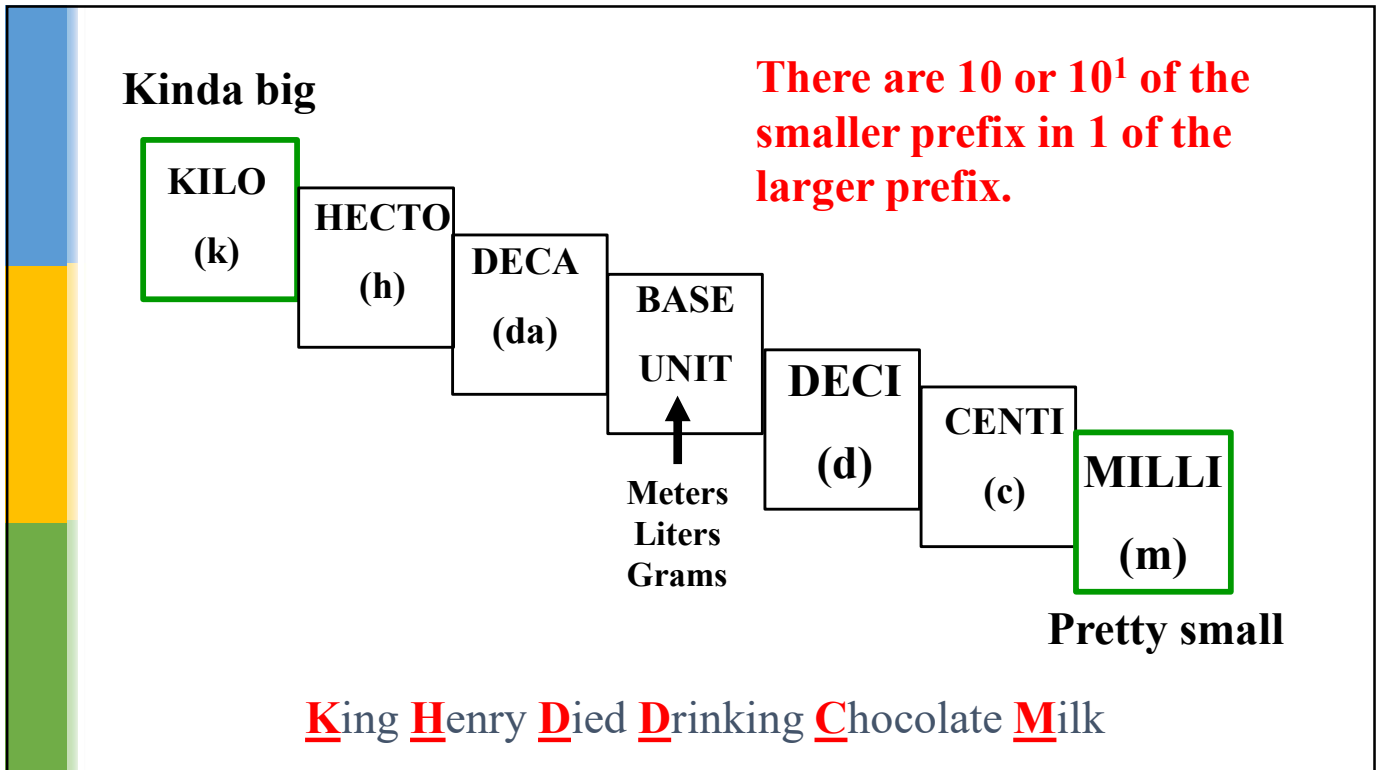
Very big



Very small

**Gig**antic **Mega**phones **Kill**ed 1 **Milli**on **Micro**scopic **Nano**bots

7



8

## EXAMPLE #3

Visible light, as well as ultraviolet, infrared, X-ray, and other radiation, is characterized by what is called wavelength. The wavelength of certain infrared light is 30 micrometers.

How many nanometers is this?

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## EXAMPLE #4

**A sample of an unknown metal has a volume of  $125 \text{ m}^3$**

How many cubic kilometers ( $\text{km}^3$ ) is this?

10

## EXAMPLE #5

**Ethanol, the alcohol found in beer, wine, and spirits, has a density of  $0.789 \text{ g/mL}$ .**

What is this density in  $\text{mg/kL}$ ?

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