PhyzJob:
Converting Units on Planet Algon

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On a planet called Algon, an ordinary cup of drinking chocolate costs £8,000,000,000. Algonians use the following units of distance and time. (They consider the terran units for distance and time quite funny and unusual.) Oddly enough, they use the same set of prefixes to denote the various powers of ten as we do.

DISTANCE
1 firgo = 729 spon
1 spon = 81 breth
1 breth = 27 jibil
1 jibil = 3 tini

TIME
1 gen = 4 lif
1 lif = 8 sezn
1 sezn = 16 drot
1 drot = 32 rev
1 rev = 64 inc
1 inc = 128 blip

Solve the following conversion problems using the proper techniques. Show all work.

1. Exactly how many jibils are there in a firgo?

$$1\ \text{firgo} = \frac{1\ \text{firgo}}{1} \times \frac{729\ \text{spon}}{\text{firgo}} \times \frac{81\ \text{breth}}{\text{spon}} \times \frac{27\ \text{jibil}}{\text{breth}} = 1{,}594{,}323\ \text{jibil}$$

2. Exactly how many incs are there in a lif?

$$1\ \text{lif} = \frac{1\ \text{lif}}{1} \times \frac{8\ \text{sezn}}{\text{lif}} \times \frac{16\ \text{drot}}{\text{sezn}} \times \frac{32\ \text{rev}}{\text{drot}} \times \frac{64\ \text{inc}}{\text{rev}} = 262{,}144\ \text{inc}$$

3. How many firgos are there in a gigatini (Gt)? (Round to the units—the "ones.")

$$1\ \text{Gt} = \frac{1\text{E+9 tini}}{1} \times \frac{1\ \text{jibil}}{3\ \text{tini}} \times \frac{1\ \text{breth}}{27\ \text{jibil}} \times \frac{1\ \text{spon}}{81\ \text{breth}} \times \frac{1\ \text{firgo}}{729\ \text{spon}} = 209\ \text{firgo}$$

4. How many blips pass in a microgen (μg)? (Round to the units—the "ones.")

$$1\ \mu\text{g} = \frac{1\text{E-6 gen}}{1} \times \frac{4\ \text{lif}}{3\ \text{tini}} \times \frac{8\ \text{sezn}}{\text{lif}} \times \frac{16\ \text{drot}}{\text{sezn}} \times \frac{32\ \text{rev}}{\text{brot}} \times \frac{64\ \text{inc}}{\text{rev}} \times \frac{128\ \text{blip}}{\text{inc}}$$

134 blip

5. An Algonian was cruising along at 18.0 jibil/inc on a road where the speed limit was posted as 17 spd. Could the Algonian be given a speeding ticket?

$$\frac{18\ \text{jibil}}{\text{inc}} \times \frac{64\ \text{inc}}{\text{rev}} \times \frac{32\ \text{rev}}{\text{drot}} \times \frac{1\ \text{breth}}{27\ \text{jibil}} \times \frac{1\ \text{spon}}{91\ \text{breth}} = 16.8\ \text{spd}$$

The following table shows conversion factors between a variety of other Algonian measures. Some of the units are considered archaic and no longer enjoy common usage.

16 abba = 27 biba
8 cabo = 25 dabo
32 fubu = 7 gugu
20 hapa = 67 java
4 koki = 21 loki
17 mojo = 43 nosho

6. The dehydrated powder used to make a drink called wacup sells for 57 abba/java. What is the price in biba/hapa?

$$\frac{57\ \text{abba}}{\text{java}} \times \frac{27\ \text{biba}}{16\ \text{abba}} \times \frac{67\ \text{java}}{20\ \text{hapa}} = \frac{320\ \text{biba}}{\text{hapa}}$$

7. A schönktan heater uses energy at a rate of 75 dabo/mojo. What is that rate in cabo/nosho?

$$\frac{75\ \text{dabo}}{\text{mojo}} \times \frac{8\ \text{cabo}}{25\ \text{dabo}} \times \frac{17\ \text{mojo}}{43\ \text{nosho}} = \frac{9.5\ \text{cabo}}{\text{nosho}}$$

8. A radio station broadcasts with a carrier frequency of 108 megafubu/loki. What is that frequency in gugu/koki?

$$\frac{108\text{E+6 fubu}}{\text{loki}} \times \frac{7\ \text{gugu}}{32\ \text{fubu}} \times \frac{21\ \text{loki}}{4\ \text{koki}} = \frac{124\text{E+6 gugu}}{\text{koki}} = 124\text{Mg/k}$$