46) $\frac{10}{9}$ Chaldron = 1 wey $\Rightarrow$ 1 Chaldron = $\frac{9}{10}$ wey

$$1 \text{ Chaldron} = \frac{9}{10} \text{ wey} \times \frac{4}{\frac{40}{3}} \frac{\text{bags}}{\text{wey}} = 12 \text{ bags}$$

$$1 \text{ Chaldron} = \frac{9}{10} \text{ wey} \times 64\phi \frac{\text{pottles}}{\text{wey}} = 576 \text{ pottles}$$

$$1 \text{ Chaldron} = \frac{9}{10} \text{ wey} \times 12024\phi \frac{\text{gills}}{\text{wey}}$$

$$= 108216 \text{ gills}$$

Repeat this process to get the rest of the values:

Answers will Vary –

50) a) Suppose you descend 10 ft for every flight of stairs to the floor below & you take ~25 s to do this (everyone is taking the stairs)

To descend 500 ft will take 1000 seconds

or $\frac{1000\text{s}}{60\text{s/min}} \sim 17$ minutes (could seem like a VERY long time).

b) With a 2 ft stride, this could take 250 s or ~ 4 minutes.

c) $\frac{500\text{ ft}}{65\text{ mi/hr}} = \frac{500\text{ ft}}{65\text{ mi/hr}} \times \frac{1\text{ hr}}{1} \times \frac{1\text{ mi}}{5280\text{ ft}} \times \frac{60\text{ min}}{1\text{ hr}} \times \frac{60\text{ s}}{1\text{ min}}$

≈ 5 seconds.

You WILL Crash if you are texting & driving!

So "500 ft could be BIG or Small depending on the Circumstances".

52a) $\frac{21\ mi}{gallon} = \frac{21\ mi}{gallon} \times \frac{3.785\ li}{gallon} \times \frac{1.61\ Km}{1\ mi}$

$= 8.93\ \frac{Km}{li}$ $\quad 1\ li \hookrightarrow 8.93\ Km$

$8.93\ Km \rightarrow 1\ liter$

$\Rightarrow$

$100\ Km \rightarrow \frac{1\ liter}{8.93\ Km} \times 100\ Km = 11.2\ liters$

So $\frac{21\ mi}{gallon} \Rightarrow \frac{11.2\ liters}{100\ Km}$.

b) $\frac{6\ li}{100\ Km} = \frac{6\ li}{100\ Km} \times \frac{1.61\ Km}{mi} \times \frac{1\ gallon}{3.785\ li}$

$= 4.25 \times 10^{-3}\ \frac{gallon}{mi} = 39.2\ \frac{mi}{gallon}$.

OR $0.235 \times 10^{3}\ \frac{mi}{gallon}$

↑

Clearly wrong.

c) $f\ \frac{mi}{gallon} \Rightarrow \frac{1}{f}\ \frac{gallon}{mi}$

$\frac{1}{f}\ \frac{gallon}{mi} = \frac{1}{f}\ \frac{gallon}{mi} \times \frac{3.785\ li}{gallon} \times \frac{1\ mi}{1.61\ Km} \times \frac{100\ Km}{100\ Km}$

$= \frac{1}{f}(235)\ \left(\frac{li}{100\ Km}\right)$ $\quad c = \frac{235}{f}$

56) a) Since the medicine reaches the entire volume, assuming density is same for you and your child, $\frac{V_{you}}{V_{child}} \sim \frac{M_{you}}{M_{child}} \sim 4$

So Child's dosage is $\frac{1}{4}(250\,ml) = 62.5\,ml \sim 63\,ml$.

Based on ratio of lengths (see below)

$V_{child} \approx \frac{1}{8}$ your volume so dosage is $\sim 31\,ml$

b) Coating $\Rightarrow$ surface area. $\frac{\text{Your height}}{\text{Child's height}} = 2$

$[A] \sim [L]^2$ So

$\frac{\text{Your dosage}}{\text{Child's dosage}} \sim [L]^2 \sim (2)^2 = 4$ $\uparrow$ $L \equiv \frac{L_{you}}{L_{child}}$

$\Rightarrow$ Child's dosage $= \frac{1}{4}$ (your dosage) $= 3.75\,mL \sim 4\,ml$.