

Dimensional analysis #1

Name _____ KEY _____

Show all set-ups!!

Given the following information:

$1 \text{ quark} = 2.9 \text{ whos}$

$1 \text{ whos} = 5 \text{ mabees}$

$1 \text{ bug} = 3.7 \text{ quarks}$

$1 \text{ kuz} = 3.2 \text{ mabees}$

Change:

- 1.) 3.0 quark to bug $\rightarrow 3.0 \text{ q} \times \frac{1 \text{ b}}{3.7 \text{ q}} = 0.81081081 \text{ b}$ 1. 0.81 b

q \rightarrow b

- 2.) 1.3 mabees to quarks $\rightarrow 1.3 \text{ m} \times \frac{1 \text{ w}}{5 \text{ m}} \times \frac{1 \text{ q}}{2.9 \text{ w}} = 0.089655172 \text{ q}$ 2. 0.090 q

m \rightarrow w \rightarrow q

- 3.) 7.0 whos to bugs $\rightarrow 7.0 \text{ w} \times \frac{1 \text{ q}}{2.9 \text{ w}} \times \frac{1 \text{ b}}{3.7 \text{ q}} = 0.652376514 \text{ b}$ 3. 0.65 b

w \rightarrow q \rightarrow b

- 4.) 8.75 kuz to quarks $\rightarrow 8.75 \text{ k} \times \frac{3.2 \text{ m}}{1 \text{ k}} \times \frac{1 \text{ w}}{5 \text{ m}} \times \frac{1 \text{ q}}{2.9 \text{ w}} = 1.931034483 \text{ q}$ 4. 1.93 q

k \rightarrow m \rightarrow w \rightarrow q

- 5.) 2.5 bug to kuz $\rightarrow 2.5 \text{ b} \times \frac{3.7 \text{ q}}{1 \text{ b}} \times \frac{2.9 \text{ w}}{1 \text{ q}} \times \frac{5 \text{ m}}{1 \text{ w}} \times \frac{1 \text{ k}}{3.2 \text{ m}} = 41.9140625 \text{ k}$ 5. 42 k

b \rightarrow q \rightarrow w \rightarrow m \rightarrow k

- 6.) 2.0×10^{-3} quarks to mabees $\rightarrow 2.0 \times 10^{-3} \text{ q} \times \frac{2.9 \text{ w}}{1 \text{ q}} \times \frac{5 \text{ m}}{1 \text{ w}} =$ 6. 0.029 m

q \rightarrow w \rightarrow m \rightarrow k

- 7.) 900. quarks to whos $\rightarrow 900 \text{ q} \times \frac{2.9 \text{ w}}{1 \text{ q}} = 2610 \text{ w}$ 7. 2610 w

q \rightarrow w

- 8.) 4.8×10^5 kuz to mabees $\rightarrow 4.8 \times 10^5 \text{ k} \times \frac{3.2 \text{ m}}{1 \text{ k}} = 1536000 \text{ m}$ 8. $1.5 \times 10^6 \text{ m}$

k \rightarrow m

- 9.) 205 mabees to whos $\rightarrow 205 \text{ m} \times \frac{1 \text{ w}}{5 \text{ m}} = 41 \text{ w}$ 9. 41.0 w

m \rightarrow w

- 10.) 15 bug² to quarks² $\rightarrow 15 \text{ b}^2 \times \frac{3.7^2 \text{ q}^2}{1^2 \text{ b}^2} = 205.35 \text{ q}^2$ 10. 210 q²

b² \rightarrow q²

- 11.) 2.5 mabees² to kuz² $\rightarrow 2.5 \text{ m}^2 \times \frac{1^2 \text{ k}^2}{3.2^2 \text{ m}^2} = 0.24 \text{ k}^2$ 11. 0.24 k²

m² \rightarrow k²

- 12.) 1.50×10^3 kuz² to bug² \rightarrow

k² \rightarrow m² \rightarrow w² \rightarrow q² \rightarrow b²

 $1500 \text{ k}^2 \times \frac{3.2^2 \text{ m}^2}{1^2 \text{ k}^2} \times \frac{1^2 \text{ w}^2}{5^2 \text{ m}^2} \times \frac{1^2 \text{ q}^2}{2.9^2 \text{ w}^2} \times \frac{1^2 \text{ b}^2}{3.7^2 \text{ q}^2} = 5.336441625 \text{ b}^2$ 12. 5.34 b²