

Name: _____ Class: _____

4pts
each

80pts

Dimensional Analysis

Use dimensional analysis to convert the following measurements. Show all of your work.
Write your final answer with correct significant figures on the line.

1. 14.0 cm to meters 0.140 m $1.40 \times 10^{-1} \text{ m}$

4 $14 \text{ cm} \left| \frac{1 \text{ m}}{10^2 \text{ cm}} \right.$

2. 31.0 g to mg $3.10 \times 10^4 \text{ mg}$

4 $31.0 \text{ g} \left| \frac{10^3 \text{ mg}}{1 \text{ g}} \right. \quad 3.10 \times 10^4$

3. 116.5 m to km $1.165 \times 10^{-1} \text{ km}$ 0.1165 km

4 $116.5 \text{ m} \left| \frac{1 \text{ km}}{10^3 \text{ m}} \right.$

4. 285.9 cm to km $2.859 \times 10^{-3} \text{ km}$

4 $285.9 \text{ cm} \left| \frac{1 \text{ m}}{10^2 \text{ cm}} \right| \frac{1 \text{ km}}{10^3 \text{ m}} \right.$

4. 0.006394 km to cm $6.394 \times 10^2 \text{ cm}$ or 639.4

4 $0.006394 \text{ km} \left| \frac{10^3 \text{ m}}{1 \text{ km}} \right| \frac{10^2 \text{ cm}}{1 \text{ m}} \right.$

4. $8.4 \times 10^{-6} \text{ kg}$ to cg $8.4 \times 10^{-1} \text{ cg}$ or 0.84 cg

4 $8.4 \times 10^{-6} \text{ kg} \left| \frac{10^3 \text{ g}}{1 \text{ kg}} \right| \frac{10^2 \text{ cg}}{1 \text{ g}} \right.$

4. $1.47 \times 10^5 \text{ mm}$ to km $1.47 \times 10^{-1} \text{ km}$ or 0.147 km

4 $1.47 \times 10^5 \text{ mm} \left| \frac{1 \text{ m}}{10^3 \text{ mm}} \right| \frac{1 \text{ km}}{10^3 \text{ m}} \right.$

8. 4.7 kg to cg 4.7×10^5 cg

$$4.7 \text{ kg} \left| \frac{10^3 \text{ g}}{1 \text{ kg}} \right| \frac{10^2 \text{ cg}}{1 \text{ g}}$$

9. 138.4 mg to g 1.384×10^{-1} g or 0.1384 g

$$138.4 \text{ mg} \left| \frac{1 \text{ g}}{10^3 \text{ mg}}$$

10. 65.5 km to m 6.55×10^4 m

$$65.5 \text{ km} \left| \frac{10^3 \text{ m}}{1 \text{ km}}$$

11. 23.6 dm to cm 236 2.36×10^2 cm

$$23.6 \text{ dm} \left| \frac{1 \text{ m}}{10^1 \text{ dm}} \right| \frac{10^2 \text{ cm}}{1 \text{ m}}$$

12. 2.36×10^4 s to days 2.73×10^1 day

$$2.36 \times 10^4 \text{ s} \left| \frac{1 \text{ min}}{60 \text{ s}} \right| \frac{1 \text{ hr}}{60 \text{ min}} \left| \frac{1 \text{ day}}{24 \text{ hr}} \right.$$

13. 13.6 dm^3 to cm^3 1.36×10^4 cm^3

$$13.6 \text{ dm}^3 \left| \frac{1 \text{ m}^3}{10^3 \text{ dm}^3} \right| \frac{10^6 \text{ cm}^3}{1 \text{ m}^3}$$

14. 20.6 km/hr to m/s 5.72 m/s

$$\frac{20.6 \text{ km}}{\text{hr}} \left| \frac{10^3 \text{ m}}{1 \text{ km}} \right| \frac{1 \text{ hr}}{3600 \text{ s}}$$

08

15. 0.058 m/s to cm/s 5.8 cm/s

$$\frac{0.058 \text{ m}}{\text{s}} \left| \frac{10^2 \text{ cm}}{\text{m}} \right.$$

16. 3.49 km/hr to m/s 0.969 m/s

$$\frac{3.49 \text{ km}}{\text{hr}} \left| \frac{10^3 \text{ m}}{1 \text{ km}} \right| \left| \frac{1 \text{ hr}}{3600 \text{ s}} \right.$$

17. 14.7 g/cm^3 to g/mL $1.47 \times 10^3 \text{ g/mL}$

$$\frac{14.7 \text{ g}}{\text{cm}^3} \left| \frac{10^2 \text{ cm}^3}{\text{g}} \right| \left| \frac{1 \text{ cm}^3}{1 \text{ mL}} \right. \quad 1470$$

18. $7.3 \times 10^5 \text{ cm}^3/\text{s}$ to cm^3/day $6.3 \times 10^{10} \text{ cm}^3/\text{day}$

$\frac{\text{cm}^3}{\text{s}}$

$$\frac{7.3 \times 10^5 \text{ cm}^3}{\text{s}} \left| \frac{3600 \text{ s}}{1 \text{ hr}} \right| \left| \frac{24 \text{ hr}}{1 \text{ day}} \right.$$

19. $8.05 \times 10^5 \text{ g/cm}^3$ to kg/dm^3 $8.05 \times 10^5 \text{ kg/dm}^3$

$$\frac{8.05 \times 10^5 \text{ g}}{\text{cm}^3} \left| \frac{1 \text{ kg}}{10^3 \text{ g}} \right| \left| \frac{10^6 \text{ cm}^3}{1 \text{ m}^3} \right| \left| \frac{1 \text{ m}^3}{10^3 \text{ dm}^3} \right.$$

20. $3.42 \times 10^3 \text{ kg/m}^2$ to g/cm^2 $3.42 \times 10^2 \text{ g/cm}^2$

$$\frac{3.42 \times 10^3 \text{ kg}}{\text{m}^2} \left| \frac{10^3 \text{ g}}{1 \text{ kg}} \right| \left| \frac{1 \text{ m}^2}{10^4 \text{ cm}^2} \right.$$