

**P 5.3** (pg 1 of 2) **Metric Review and Converting Derived & Compound Units**

Name \_\_\_\_\_

Name the metric "base" unit for the following measurements:

1. length \_\_\_\_\_
2. mass \_\_\_\_\_
3. volume \_\_\_\_\_
4. temperature \_\_\_\_\_
  
5. 1 ml is equal to how many  $\text{cm}^3$  ? \_\_\_\_\_

Derived and Compound Units - Make the following metric conversions:

6.  $78.3 \text{ cm}^3$  \_\_\_\_\_  $\text{dm}^3$
7.  $1.05 \text{ km}^2$  \_\_\_\_\_  $\text{m}^2$
8.  $15 \text{ cm}^3$  \_\_\_\_\_ L
9.  $0.060 \text{ cm}^3$  \_\_\_\_\_ ml
10.  $45.3 \text{ m}^2$  \_\_\_\_\_  $\text{cm}^2$
11.  $0.0058 \text{ m}^3$  \_\_\_\_\_  $\text{cm}^3$
12.  $1.24 \text{ g/L}$  \_\_\_\_\_ g/ml
13.  $786 \text{ g/cm}^3$  \_\_\_\_\_  $\text{g/mm}^3$
14.  $1.54 \text{ kg/L}$  \_\_\_\_\_ g/ml
15.  $5.52 \text{ g/cm}^3$  \_\_\_\_\_  $\text{kg/dm}^3$
16.  $88.5 \text{ g/ml}$  \_\_\_\_\_  $\text{kg/ml}$
17.  $6.51 \text{ g/ml}$  \_\_\_\_\_ g/L
18.  $1.5 \text{ g/ml}$  \_\_\_\_\_  $\text{kg/L}$
19.  $2.4 \text{ g/ml}$  \_\_\_\_\_  $\text{mg/L}$

**Review - Make the following metric conversions:**

20.  $8.6 \text{ m}$  \_\_\_\_\_ cm
21.  $32 \text{ mg}$  \_\_\_\_\_ g
22.  $0.260 \text{ L}$  \_\_\_\_\_ ml
23.  $5.61 \text{ km}$  \_\_\_\_\_ m  $\rightarrow$  \_\_\_\_\_ mm
24.  $0.044 \text{ km}$  \_\_\_\_\_ m
25.  $4.6 \text{ mg}$  \_\_\_\_\_ g
26.  $8.9 \text{ m}$  \_\_\_\_\_ dm
27.  $0.107 \text{ g}$  \_\_\_\_\_ cg
28.  $7.38 \text{ g}$  \_\_\_\_\_ kg
29.  $6.7 \text{ s}$  \_\_\_\_\_ ms
30.  $0.065 \text{ km}$  \_\_\_\_\_ dm
31.  $42.7 \text{ L}$  \_\_\_\_\_ ml
32.  $642 \text{ cg}$  \_\_\_\_\_ kg
33.  $8.73 \times 10^9 \text{ mg}$  \_\_\_\_\_ kg
34.  $3.4 \text{ cm}$  \_\_\_\_\_ mg
  
35. Which of the following linear measure is the longest?  
hint: convert all the measurements to the same units - doesn't matter which units as long as all the same.
  - a.  $6 \times 10^2 \text{ cm}$
  - b.  $0.06 \text{ km}$
  - c.  $6 \times 10^5 \text{ dm}$
  - d.  $6 \times 10^6 \text{ mm}$

1.

1. meters
2. grams
3. Liters
4. °C
5. the same 1.0 cm<sup>3</sup> ....memorize it.
6. 0.0783 dm<sup>3</sup>
  - Remember when changing cubed and squared units, you move the decimal point the appropriate number of places per the prefix change but ×2 if squared units and ×3 if cubed units.
7. 1,050,000 m<sup>2</sup>
8. 0.015 L Don't forget that 1 cm<sup>3</sup> = 1 ml.
9. 0.060 ml
10. 453,000 cm<sup>2</sup>
11. 5800 cm<sup>3</sup>
12.  $\left(\frac{1.24g}{1L}\right)\left(\frac{1L}{1000ml}\right) = 0.00124g / ml$
13.  $\left(\frac{786g}{cm^3}\right)\left(\frac{1cm}{10mm}\right)\left(\frac{1cm}{10mm}\right)\left(\frac{1cm}{10mm}\right) = 0.786g / mm^3$
14.  $\left(\frac{1.54kg}{1L}\right)\left(\frac{1L}{1000ml}\right)\left(\frac{1000g}{1kg}\right) = 1.54g / ml$   
(In effect the unit changes cancel each other out.)
15.  $\left(\frac{5.52g}{cm^3}\right)\left(\frac{1kg}{1000g}\right)\left(\frac{10cm}{1dm}\right)\left(\frac{10cm}{1dm}\right)\left(\frac{10cm}{1dm}\right) = 5.52kg / dm^3$   
(Again, the unit changes cancel each other out.)
16.  $\left(\frac{88.5g}{1ml}\right)\left(\frac{1kg}{1000g}\right) = 0.0885kg / ml$
17.  $\left(\frac{6.51g}{1ml}\right)\left(\frac{1000ml}{1L}\right) = 6,510g / L$
18.  $\left(\frac{1.5g}{1ml}\right)\left(\frac{1000ml}{1L}\right)\left(\frac{1kg}{1000g}\right) = 1.5kg / L$   
(Again, the unit changes cancel each other out.)
19.  $\left(\frac{2.4g}{1ml}\right)\left(\frac{1000mg}{1g}\right)\left(\frac{1000ml}{1L}\right) = 2,400,000mg / L$
20. 860 cm
21. 0.032 g
22. 260 ml
23. 5,610 m 5,610,000 mm
24. 44 m
25. 0.0046 g
26. 89 dm
27. 10.7 cg
28. 0.00738 kg
29. 6,700 ms
30. 650 dm
31. 42,700 ml
32. 0.00642 kg
33. 8.73×10<sup>3</sup> kg
34. this conversion can not be done, since you can't convert a length to a mass
  - that would be like trying to change inches to pounds
36. Convert each to same units (I chose cm) then compare
  - a. 600 cm
  - b. 600 cm
  - c. 6,000,000 cm
  - d. 600,000

*clearly c is the larger measurement*