

Prep for Basic Chemistry: Competency 2 Practice **Key**

Fill in your answer choice:

- Dimensional analysis* is a
 A ratio of equivalent values used to express the same quantity in different units
 B **technique of solving problems using units of measurement**
 C difference between the accepted and experimental values
- Precision*
 A is a standard of measurement; a single undivided whole
 B **refers to how close measured values are to one another**
 C sets the freezing point of water at 273.15 K and the boiling point of water at 373.15 K
($K = ^\circ C + 273.15$)
- All of the following measurements have five significant figures EXCEPT _____.
 A 30.003 mL
 B 33.003 mL
 C **0.00333 mm**
 D 0.33300 mg
 E 33003 L
- When dividing 0.403 m by 50.04 s, your answer should be rounded to a value that includes three significant figures.
 A **True**
 B False
- The measurement 240 L has 3 significant figures.
 A True
 B **False**
- A zero appearing between nonzero digits in a measurement is not significant.
 A True
 B **False**
- The measurement 0.00005 mg has one significant figure.
 A **True**
 B False
- When adding 59.0 Kg plus 5.90 Kg plus 5.004 Kg, your answer should be rounded to a value that includes two significant figures.
 A True
 B **False**
- $0.006 \text{ m} + 9.12 \text{ m} =$ **9.13 m**
- $8.80 \text{ L} - 7.7 \text{ L} =$ **1.1 L**
- $9.00 \text{ Kg} \times 0.90 =$ **8.10 Kg**
- $7.4000 \text{ cm} \div 0.024 =$ **308.33 cm**

Use dimensional analysis to reduce the following conversion-factor equations:

13. $6 \text{ cm} \times \frac{10 \text{ mm}}{1 \text{ cm}} = \underline{60 \text{ mm}}$

14. $5 \text{ L} \times \frac{100 \text{ cL}}{1 \text{ L}} = \underline{500 \text{ cL}}$

15. $300 \text{ mg} \times \frac{1 \text{ g}}{1000 \text{ mg}} \times \frac{1 \text{ Kg}}{1000 \text{ g}} = \underline{3 \times 10^{-4} \text{ Kg}}$

16. $\frac{45 \text{ ft} \cdot \text{lb}}{5 \text{ ft}} = \underline{9 \text{ lb}}$

17. Write a four-digit measurement that has two significant digits and no decimals.

Varies – Ex: 1200g

18. Write a three-digit measurement that has three significant digits, two decimal places and ends in 0.

Varies – Ex: 1.20m

19. Complete this measurement so it has five significant digits: 7__0.0__ Km

Varies – Ex: 710.02 Km

20. Complete this measurement so that it has six significant digits: 0.0__ 7 __ 00 __ __ cg

Varies – Ex: 0.00 7 1 00 2 3 cg