

Unit 1 Problem Set

Learning Objective: Recognize uncertainty in measurements, use significant figures in dimensional analysis problem solving, and understand the difference between accuracy and precision

Read more about this topic:

[Section 1.5](#)

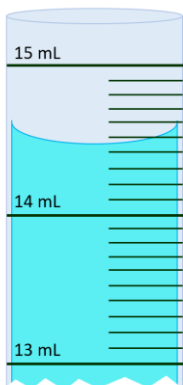
[Section 1.6](#)

- For each of the following numbers, indicate how many significant figures there are:
 - 1.450
 - 6.80
 - 0.056
 - 0.0089
 - 140
 - 50
- Select all of the numbers with three significant figures
 - 0.0651
 - 0.091
 - 101.0
 - 103
 - 90.0
 - 0.124
- Select all of the numbers with two significant figures
 - 130.0
 - 0.050
 - 0.09
 - 0.0890
 - 140
- Two chemists attempt to measure the density of an unknown metal. The true value of the density is 0.94 g/mL. Which data set is more accurate? Which data set is more precise?

Chemist 1 Data		Chemist 2 Data	
Measurement 1	0.90 g/mL	Measurement 1	0.96 g/mL
Measurement 2	0.99 g/mL	Measurement 2	0.93 g/mL
Measurement 3	1.05 g/mL	Measurement 3	0.95 g/mL
Average	0.98 g/mL	Average	0.95 g/mL

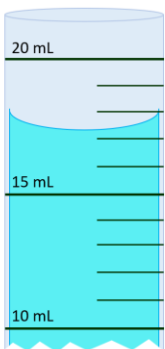
5. What is the correct reading for the following graduated cylinder?

- a. 14.4
- b. 14.47
- c. 14.5
- d. 14.6
- e. 14.60



6. What is the correct reading for the following graduate cylinder?

- a. 15.5
- b. 17
- c. 17.4
- d. 18
- e. 18.1



7. What is the correct answer for the following expression:

$$\frac{(1.59 - 1.10)}{0.511}$$

- a. -0.56
- b. -0.563
- c. 0.959
- d. 0.96

8. Question Group

- a. What is the correct answer for the following expression: $120 + 68$
 - i. 180
 - ii. 180.0
 - iii. 188
 - iv. 190
- b. What is the correct answer for the following expression: $9.45 \div 3.21$
 - i. 2.9
 - ii. 2.94
 - iii. 2.944
 - iv. 2.95
 - v. 3
- c. What is the correct answer for the following expression: 3.0×5.89
 - i. 17
 - ii. 17.67
 - iii. 17.7
 - iv. 18

Learning Objective: Units and dimensional analysis

Read more about this topic:

[Section 1.4](#)

[Section 1.6](#)

[Appendix B](#)

9. Convert 8.15 decimeters to meters

10. Convert 1.71×10^{-7} meters to nanometers

11. Convert 8.61 mmol to mols

12. Convert 0.018 kg to mg

13. Convert each of the following numbers to scientific notation

- a. 678,000
- b. 0.0091
- c. 539.4
- d. 0.0000295

14. If 1 gram equals 0.03527 ounces, how many grams does 9.27 ounces weigh?

15. If 1 shoe equals 4.1 socks, how many socks are equivalent to 2.6 shoes?
16. Use the values in [Table 1.6](#) to convert 21.4 cm to yards
17. Use the values in [Table 1.6](#) to convert 0.624 qt to mL
18. You are looking to order new carpet for your bedroom and it costs \$ 2.35/ft². If your bedroom is 10.4 m², how much will it cost (in dollars) to replace your carpet?
[Watch a video of a similar problem](#)
19. An in-ground pool is 21.0 ft by 12.7 ft and 5.0 ft deep. How many liters of water are necessary to completely fill the pool?
[Watch a video of a similar problems](#)