

Faculty Submitting: Allison Kelly

Specify here whether “Pre” or “End” of Unit and the Unit #: End Unit **1**

Commented [KMA1]: Our original goal was to have 30% “difficult” problems but I found that the topics in this unit were simple enough that it was challenging to come up with difficult problems that were not just...mean

Commented [KMA2R1]: Maybe something to revisit later; we can combine skills from this unit into a more complex problem (reading a value and then doing some conversions I guess?)

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

Unit 1_ Question 1	Canvas Question Type: Numeric QUESTION GROUP, pick 2
1a	How many significant figures are there in 1.450
	4
1b	How many significant figures are there in 6.80
	3
1c	How many significant figures are there in 0.056
	2
1d	How many significant figures are there in 0.0089
	2
1e	How many significant figures are there in 140
	2
1f	How many significant figures are there in 50
	1
Read More	https://openstax.org/books/chemistry-2e/pages/1-5-measurement-uncertainty-accuracy-and-precision
Unit 1_ Question 2	Canvas Question Type: Multiple Answer
	Select all of the numbers with three significant figures Correct Answer: 0.0651 103 90.0 0.124

	Wrong Answers: 0.091 101.0																
Read More	https://openstax.org/books/chemistry-2e/pages/1-5-measurement-uncertainty-accuracy-and-precision																
Unit 1_ Question 3	Canvas Question Type: Multiple Answer																
	Select all of the numbers with two significant figures Correct Answers: 0.050 140 Wrong Answers: 130.0 0.09 0.0890																
Read More	https://openstax.org/books/chemistry-2e/pages/1-5-measurement-uncertainty-accuracy-and-precision																
Unit 1_ Question 4	Canvas Question Type: Multiple DropDown																
	Two chemists attempt to measure the density of an unknown metal. The true value of the density is 0.94 g/mL <table border="1" data-bbox="293 1203 591 1457"> <thead> <tr> <th colspan="2">Chemist 1 Data</th> </tr> </thead> <tbody> <tr> <td>Measurement 1</td> <td>0.90 g/mL</td> </tr> <tr> <td>Measurement 2</td> <td>0.99 g/mL</td> </tr> <tr> <td>Measurement 3</td> <td>1.05 g/mL</td> </tr> <tr> <td>Average</td> <td>0.98 g/mL</td> </tr> </tbody> </table> <table border="1" data-bbox="293 1507 591 1654"> <thead> <tr> <th colspan="2">Chemist 2 Data</th> </tr> </thead> <tbody> <tr> <td>Measurement 1</td> <td>0.96 g/mL</td> </tr> <tr> <td>Measurement 2</td> <td>0.93 g/mL</td> </tr> </tbody> </table>	Chemist 1 Data		Measurement 1	0.90 g/mL	Measurement 2	0.99 g/mL	Measurement 3	1.05 g/mL	Average	0.98 g/mL	Chemist 2 Data		Measurement 1	0.96 g/mL	Measurement 2	0.93 g/mL
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Measurement 2	0.93 g/mL																

Measurement 3	0.95 g/mL
Average	0.95 g/mL

Which data set is more accurate? [dropone]
Which data set is more precise? [droptwo]

DropOne: Chemist 2
Chemist 1

DropTwo: Chemist 2
Chemist 1

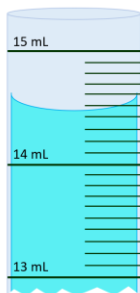
Read More

<https://openstax.org/books/chemistry-2e/pages/1-5-measurement-uncertainty-accuracy-and-precision#fs-idm1827280>

Unit 1_
Question 5

Canvas Question Type: Multiple Choice

What is the correct reading for the following graduate cylinder?

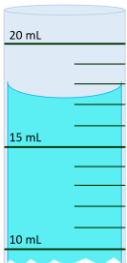


ALT TEXT: The image shows part of a graduated cylinder filled with a liquid. The liquid is between 14 mL and 15 mL, with 9 marks between those two measurements. The bottom of the meniscus just touches the 6th mark. The bottom of the meniscus is between the 4th and 5th mark.

Correct Answer: 14.47

Wrong Answers:

14.5
14.4
14.6
14.60

Read More	https://openstax.org/books/chemistry-2e/pages/1-5-measurement-uncertainty-accuracy-and-precision
Unit 1_ Question 6	Canvas Question Type: Multiple Choice
	<p>What is the correct reading for the following graduated cylinder?</p>  <p>ALT TEXT: The image shows part of a graduated cylinder filled with a liquid. The liquid is between 15 mL and 20 mL, with 4 marks between those two measurements. The bottom of the meniscus just touches the 3rd mark. The bottom of the meniscus is between the 2nd and 3rd mark</p>
	<p>Correct Answer: 17.4</p> <p>Wrong Answers:</p> <ul style="list-style-type: none"> 15.5 18.1 17 18
Read More	https://openstax.org/books/chemistry-2e/pages/1-5-measurement-uncertainty-accuracy-and-precision
Unit 1_ Question 7	Canvas Question Type: Multiple Choice
	<p>What is the correct answer for the following expression:</p> $\frac{(1.59 - 1.10)}{0.511}$
	<p>Correct Answer: 0.96</p> <p>Wrong Answers:</p> <ul style="list-style-type: none"> 0.959 -0.56 -0.563

Read More	https://openstax.org/books/chemistry-2e/pages/1-6-mathematical-treatment-of-measurement-results
Unit 1_ Question 8	Canvas Question Type: Multiple Choice QUESTION BANK, Pick 2
8a	What is the correct answer for the following expression: $120 + 68$
	Correct Answer: 190 Wrong Answers 180 188 180.0
8b	What is the correct answer for the following expression: $9.45 \div 3.21$
	Correct Answer: 2.94 Wrong Answers: 2.9 2.95 3 2.944
8c	What is the correct answer for the following expression: 3.0×5.89
	Correct Answer: 18 Wrong Answers 17.7 17.67 17
Read More	https://openstax.org/books/chemistry-2e/pages/1-6-mathematical-treatment-of-measurement-results
<i>[Units and dimensional analysis]</i>	
Unit 1_ Question 9	Canvas Question Type: Formula

Commented [KMA3]: We don't have an actual LO for this in our syllabus despite clearly covering in the class. So at some point this should actually be rewritten as an LO instead of a topic; This topic is probably several LOs wearing a trench coat

	Convert [length] decimeters to meters
	length*0.1 Length: 1 to 10
Read More	https://openstax.org/books/chemistry-2e/pages/1-4-measurements#fs-idm81128320
Unit 1_ Question 10	Canvas Question Type: Formula
	Convert [nano] x 10 ⁻⁷ meters to nanometers
	nano*100 Nano: 1 to 9, two decimals
Read More	https://openstax.org/books/chemistry-2e/pages/1-4-measurements#fs-idm81128320
Unit 1_ Question 11	Canvas Question Type: Formula
	Convert [mol] mmol to mols
	mol*10 ⁻³ 1 to 9, two decimals
Read More	https://openstax.org/books/chemistry-2e/pages/1-4-measurements#fs-idm81128320
Unit 1_ Question 12	Canvas Question Type: Formula
	Convert [mass] kg to mg
	mass*1000000 mass: 0.001 to 0.009, four decimal places
Read More	https://openstax.org/books/chemistry-2e/pages/1-4-measurements#fs-idm81128320
Unit 1_ Question 13	Canvas Question Type: Fill in multiple blanks QUESTION GROUP, pick 2
13a	Convert the following number to scientific notation 678,000 [6.78] x 10 ^ [5]
13b	Convert the following number to scientific notation 0.0091

	$[9.1] \times 10^{-3}$
13c	Convert the following number to scientific notation 539.4 $[5.394] \times 10^2$
13d	Convert the following number to scientific notation 0.0000295 $[2.95] \times 10^{-5}$
Read More	https://openstax.org/books/chemistry-2e/pages/b-essential-mathematics
Unit 1_ Question 14	Canvas Question Type: Formula
	If 1 gram equals 0.03527 ounces, how many grams does [mass] ounces weight?
	mass/0.03527 mass: 2-10, two decimal places
Read More	https://openstax.org/books/chemistry-2e/pages/1-6-mathematical-treatment-of-measurement-results#fs-idm222237232
Unit 1_ Question 15	Canvas Question Type: Formula
	If 1 shoe equals [socks] socks, how many socks are equivalent to [shoes] shoes?
	shoes*socks socks: 3 to 7, one decimal 2-5, one decimal
Read More	https://openstax.org/books/chemistry-2e/pages/1-6-mathematical-treatment-of-measurement-results#fs-idm222237232
Unit 1_ Question 16	Canvas Question Type: Formula
	Use the values in Table 1.6 to convert [cm] cm to yards
	cm/100*1.0936 cm 30-50, one decimal
Read More	https://openstax.org/books/chemistry-2e/pages/1-6-mathematical-treatment-of-measurement-results#fs-idm222237232

Unit 1_ Question 17	Canvas Question Type: Formula
	Use the values in Table 1.6 to convert [qt] qt to mL
	qt*0.94635*1000 qt 0.5 to 2.5, three decimal places
Read More	https://openstax.org/books/chemistry-2e/pages/1-6-mathematical-treatment-of-measurement-results#fs-idm222237232
Unit 1_ Question 18	Canvas Question Type: Formula
	You are looking to order new carpet for your bedroom and it costs \$ [dollar]/ft ² . If your bedroom is [area] m ² , how much will it cost (in dollars) to replace your carpet?
**	area*(1.0936^2)*9*dollar dollar: 1.5-3.5, two decimals area: 10-16, one decimal
Read More	https://openstax.org/books/chemistry-2e/pages/1-6-mathematical-treatment-of-measurement-results#fs-idm222237232
Video	Youtube: https://youtu.be/gQYlvodutjs Gdrive: https://drive.google.com/file/d/1kMw0rpqmo-Aq8IqDvJcAKpwa10Sn5_qs/view?usp=sharing
Unit 1_ Question 19	Canvas Question Type: Formula
**	An in-ground pool is [length] ft by [width] ft and 5.0 ft deep. How many liters of water are necessary to completely fill the pool?
	((length*width*5)*28.317 Length: 20-25, one decimal width 10-15, one decimal
Read More	https://openstax.org/books/chemistry-2e/pages/1-6-mathematical-treatment-of-measurement-results#fs-idm222237232
Video	Youtube: https://youtu.be/rNQZI70s-5M Gdrive: https://drive.google.com/file/d/1qwM_MKKsYAvPY0dccGPSn6MrdT04Rwab/view?usp=sharing

NOTE

There are actually 22 questions in this assignment since several of the question groups are “pick 2”