Chemistry 11 – Unit 2 Review– Units, Density and Significant Figures

1. Complete the following table (Try it from memory first)

Prefix	Abbreviation	Exponent
	μ	
		10^6
	d	
milli		
	k	
		10^{-2}

2. Make the following unit conversions

a)   0.00085 L = _____ μL

b)   50 ks = _____ Ms

c)   2 cg = _____ μg

d)   0.1 dm = _____ mm

e)   0.96 kg/L = _____ mg/μL

3. The density of molybdenum is 10.2 g/mL. What is the mass of a 0.60 L piece of Mo?

4. 110.9 mL of gadolinium has a mass of 0.875 kg. Calculate the density of gadolinium in units of g/L.

5. The density of tungsten is 19 300 g/L. Find the volume occupied by a 2.0 kg sample of tungsten.

6. a) The density of carbon dioxide at standard temperature and pressure is 1.96 g/L.

Calculate the mass of a 600 mL sample of carbon dioxide.

b) The density of air is about 1.29 g/L at standard temperature and pressure. Would carbon dioxide tend to rise up or sink down in the atmosphere? _____

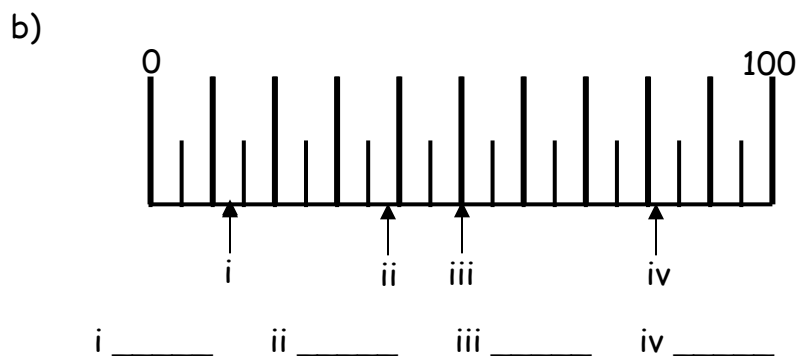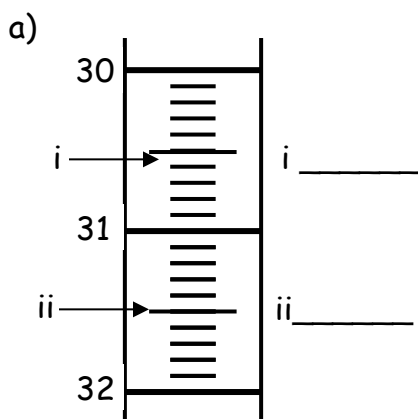7. Of the following balances, which is the most precise?

a)

b)

c)
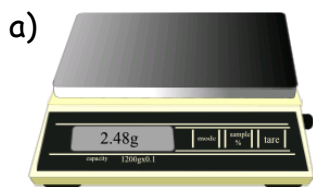
Answer _____. How do you know? _____

8. The _____ digit in any measurement has some uncertainty.

9. The number of certain digits + 1 is called the number of _____ _____

11. What is meant by the **accuracy** of a measurement? _____

12. On each of the following scales, determine the correct reading which the arrow is pointing to. The answer must be expressed in the number of significant digits which accurately reflects the precision of the instrument.

a)

```
30

i          i _____

31

ii         ii _____

32
```

b)

```
0                                               100

        i         ii   iii          iv

i _____     ii _____     iii _____     iv _____
```

13. Determine the number of **significant digits** (figures) in each of the following numbers.

a) 45.002 _____   b) 3.400 $\times$ 10^{-4} _____   c) 0.000003 _____   d) 3 000 _____

14. Express each of the following numbers in scientific notation to **2 significant** figures.

a) 45 670 _____   b) 0.000 034 48 _____   c) 3 000 000 _____

15. Perform the following calculations and express the answer in the correct number of significant digits or decimal places as justified by the data. Don't forget the rules for multiplication and division and for addition and subtraction.

a) 3.4587 $\times$ 0.0112 = _____   b) 5.600 $\times$ 10^{-7}/ 0.700 = _____

c) 8.6 + 0.4573 = _____   d) 3.2697 – 0.411 = _____

e) 2.68 $\times$ 10^3 + 1.229 $\times$ 10^5 = _____   f) 2.3 $\times$ 10^{-7} $\times$ 8.22298 = _____

16. Describe three safety concerns that you deem most important in the Chemistry lab.

17. What information can be gained from the following symbols? Explain each!