Test 1 - Review / Answers

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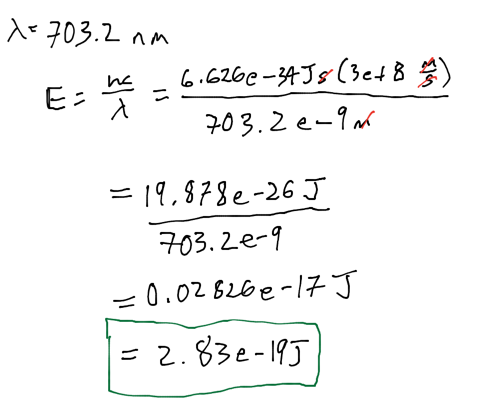
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# Test 1 - Review / Answers

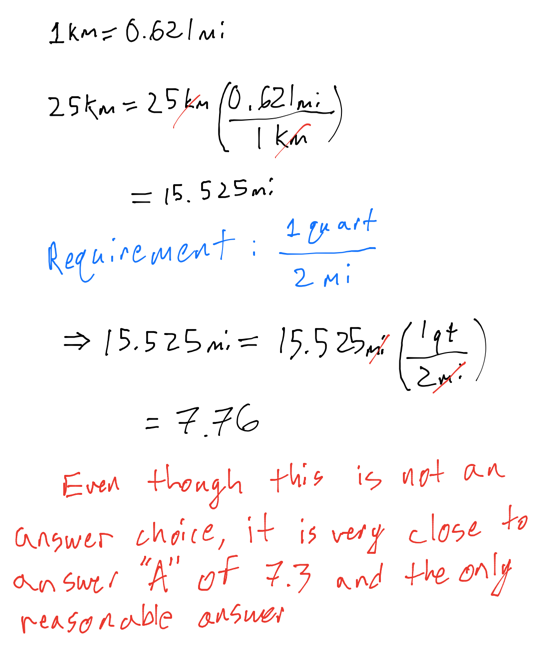
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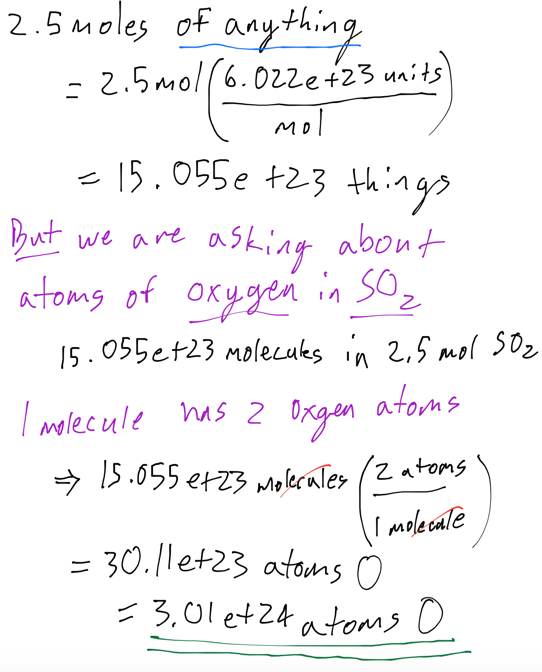
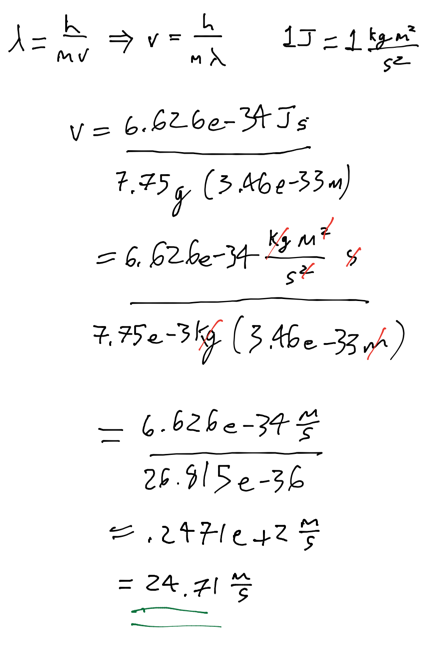
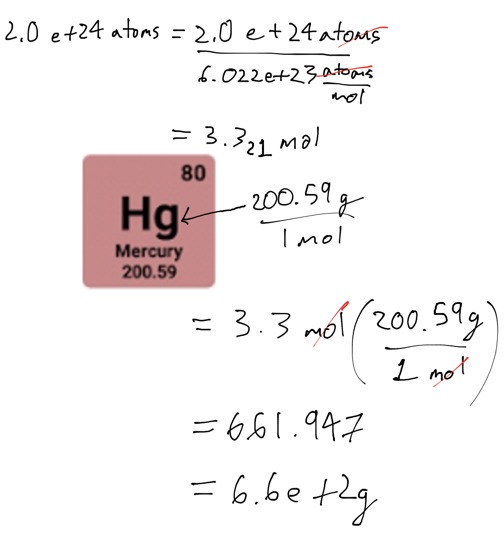
## Questions

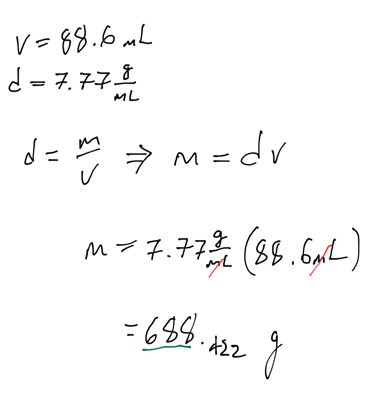
* Calculate the energy of the red light emitted by a neon atom with a wavelength of 703.2 nm.
  + 3.54 \* 10^-19 J
  + 4.27 \* 10^-19 J
  + 2.34 \* 10^-19 J
  + 6.45 \* 10^-19 J
  + 2.83 \* 10^-19 J



* Because of the high heat and low humidity in the summer in Death Valley, California, a visitor requires about one quart of water for every two miles traveled on foot. Calculate the approximate number of liters required for a person to walk 25 kilometers in Death Valley
  + 7.3 L
  + 295 L
  + 76 L
  + 117 L



* What decimal power does the abbreviation p represent
  + 1 \* 10^6
  + 1 \* 10^9
  + 1 \* 10^-1
  + 1 \* 10^-12
  + 1 \* 10^-15
* Which of the following represent isotopes:
  + 
  + 2.5 g
  + 6.0 \* 10^2
  + 1.0 \* 10^-2
  + 2.4 \* 10^2
  + 1.0 \* 10^2
* This is a confusingly worded question (my opinion). What the question is asking you to do is identify a pair of isotopes of the same element. One must understand that all variations of an element (even the most common) is an isotope. A pair of isotopes would be of the same element (meaning same atomic number / number of protons). The only options with the same atomic numbers are A and C which have an atomic number of 21.
* Meter is a measure of
  + length
  + temperature
  + mass
  + time
  + volume
* What species is represented by the following information?
  + p+ = 12, n° = 14, e- = 10
  + Si^4+
  + Mg
  + Ne
  + Si
  + Mg^2+
* To identify which element this information represents, you must look at the atomic number or the number of protons (p+). p+ = 12. We look at the periodic table and find that the element with atomic number 12 is magnesium (Mg). However, this is not the end of the problem. Neutrons do not affect the answer because the answers do not show isotopes, but electrons (e-) do affect the answer because some of the answers show a non-neutral charge. Because p+ = 12 and e- = 10, there are more positive charges than negative charges in the atom, making the overall charge 2+ (two more protons than neutrons). Therefore, the complete answer is Mg^2+
* How many significant figures are there in the answer for the following problem?
  + 34.2 + 0.6699 + 18?
  + one
  + two
  + three
  + four
* With addition and subtraction, the accuracy of the final answer can be no greater than the least accurate measurement. Because 18 is the least precise, the final answer will have only have no precision past the decimal making the number of significant digits 2 (answer would be 53)
* How many atoms of oxygen are in 2.50 moles of SO\_2?
  + 4.52 \* 10^24
  + 1.51 \* 10^24
  + 5.02 \* 10^23
  + 3.01 \* 10^24
  + 7.53 \* 10^23
* 
* Determine the velocity of a marble (m = 7.75 g) with a wavelength of 3.46 \* 10^-33 m
  + 40.5 m/s
  + 2.47 m/s
  + 24.7 m/s
  + 38.8 m/s
  + 52.9 m/s
* 
* Calculate the mass (in g) of 2.0 \* 10^24 atoms of Hg
  + 3.9 \* 10^2 g
  + 2.4 \* 10^2 g
  + 3.2 \* 10^2 g
  + 1.5 \* 10^2 g
  + 6.5 \* 10^2 g
* 
* Determine the mass of an object that has a volume of 88.6 mL and a density of 7.77 g/mL.
  + 96.4 g
  + 0.0877 g
  + 11.4 g
  + 80.8 g
  + 688 g



* What species is represented by the following information?
  + p+ = 47, n° = 62, e- = 46
  + Ag+
  + Nd
  + Pd
  + Ag
  + Pd+

To identify which element this information represents, you must look at the atomic number or the number of protons (p+). p+ = 47. We look at the periodic table and find that the element with atomic number 47 is silver (Ag). However, this is not the end of the problem. Neutrons do not affect the answer because the answers do not show isotopes, but electrons (e-) do affect the answer because some of the answers show a non-neutral charge. Because p+ = 12 and e- = 10, there are more positive charges than negative charges in the atom, making the overall charge 2+ (two more protons than neutrons). Therefore, the complete answer is Mg^2+

* A wooden baseball bat is an example of
  + a compound
  + an element
  + a heterogeneous mixture
  + a homogeneous mixture
* An atom of 32 P contains \_ electrons
  + 32
  + 47
  + 17
  + 27
  + 15

The 32 doesn’t actually matter. What matters is the “P”. P is the element. After looking it up on the periodic table, you see that it’s atomic number is 15, meaning that it has 15 protons. Because we assume the atom is neutral, then it would have 15 electrons.

* Which of the following is an example of the law of multiple proportions?
  + A sample of chlorine is found to contain three times as much Cl-35 as Cl-37
  + Two different compounds formed from carbon and oxygen have the following mass ratios: 1.33 g O: 1 g C and 2.66 g O: 1 g C.
  + Two different samples of table salt are found to have the same ratio of sodium to chlorine.
  + The atomic mass of bromine is found to be 79.90 amu
  + Nitrogen dioxide always has a mass ratio of 2.28 g O: 1 g N
* The mass of a single arsenic atom is 1.244 \* 10^-22 g. This is the same mass as
  + 1.244 \* 10^-16 mg
  + 1.244 \* 10^-25 kg
  + 1.244 \* 10^-28 μg
  + 1.244 \* 10^-31 ng
* Electromagnetic radiation with a wavelength of 640 nm appears as orange light to the human eye. The frequency of this light is \_ s^-1.
  + 4.688 \* 10^14
  + 4.688 \* 10^5
  + 1.920 \* 10^2
  + 1.920 \* 10^11
  + 2.133 \* 10^-15
* How much energy (in kJ) do 3.0 moles of photons, all with wavelength of 675 nm, contain?
  + 177 kJ
  + 354 kJ
  + 418 kJ
  + 532 kJ
  + 238 kJ
* The density of air under ordinary conditions at 25°C is 1.19 g/L. How many kilograms of air are in a room that measures 10.0 ft x 11.0 ft and has an 10.0 ft ceiling? 1 in = 2.54cm; 1 L = 10^3 cm^3
  + 3.32
  + 0.138
  + 3.71 \* 10^4
  + 0.0795
  + 37.1
* Which of the following are examples of extensive properties?
  + volume
  + color
  + density
  + temperature
  + solubility
* Gallium has an atomic mass of 69.723 amu. The Ga-69 (68.926 amu) is 60.111%. What is the amu of the other isotope?
  + 70.924 amu
  + 70.932 amu
  + 70.928 amu
  + 70.928 amu

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## CH101-008 UA Fall 2016

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Notes and study materials for The University of Alabama's Chemistry 101 course offered Fall 2016.