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VCE Chemistry ½  
Moles & Molar Mass [2.1]  
Test

20 Marks. 1 Minute Reading. 16 Minutes Writing

Results:

Quiz Questions	_____ / 15
Extension	_____ / 5



## Section A: Quiz Questions (15 Marks)

### Question 1 (3 marks)

Tick whether the following statements are **true** or **false**.

Statement	True	False
a. One mole of silver will have the same number of atoms as one mole of copper.		
b. Avogadro's number tells us the number of moles that we have in one gram of every substance.		
c. The number 0.001 only has one significant figure, whereas the number 1.00001 has a total of 6 significant figures.		
d. One method of calculating moles is by using Avogadro's number and the number of atoms, whereas the other method requires you to use the mass of atoms you have and the molar mass of the compound.		
e. The molar mass of fluorine is 9, and the molar mass of hydrogen is 1.		
f. Five moles of glucose would have the same mass as five moles of silver ethanoate since both glucose and silver ethanoate are polyatomic compounds.		

Space for Personal Notes

**Question 2** (5 marks)

Sia is curious as to the sheer number of atoms that she could have in her hand at any given time. In order to put a number to this, Sia takes a sample of sodium from her school lab and uses this to test some of her mole calculation skills.

- a. How many atoms are in one mole of Sodium? (1 mark)

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- b. Given that Sia has 64.0 grams of sodium, how many moles would this be? (1 mark)

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- c. Thus, in this sample, how many atoms would Sia have? (1 mark)

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- d. Explain to Sia what Avogadro's number is and how it helps us in chemistry. Make reference to Sia's one-mole sample of sodium. (2 marks)

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**Question 3** (4 marks)

A chemist, upon performing a careful analysis of a sample of hexane, identifies that they have a total of  $4.99 \times 10^3$  molecules of hexane in a beaker, which will be later used for a combustion reaction inside of an engine.

- a. How many moles of hexane exist in this sample? (1 mark)

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- b. What mass of hexane is the chemist using in this sample? (1 mark)

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- c. The chemist notices that the values for the moles of hexane are less convenient to use than the number of molecules of hexane since the factors are smaller, as seen in its power notation. Given this inconvenience, why are moles used? (2 marks)

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Space for Personal Notes

**Question 4** (3 marks)

After a long day at school, Rehaan makes it to his lab, where he begins experimenting with different chemicals to see what he can produce. During this reaction, Rehaan combines Lithium, his favourite metal, with oxygen to produce Lithium oxide.

- a. Rehaan started off with ten grams of Lithium. How many moles is this? (1 mark)

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- b. After the experiment, Rehaan was left with 10.968 grams of Lithium oxide. How many molecules is this? (1 mark)

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- c. Given this calculation, how many moles of oxygen gas were consumed? (1 mark)

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**Section B: Extension (5 Marks)****Question 5 (5 marks)**

Taige is obsessed with the world of chemistry calculations and the concept of the mole. In her off time, she is helping a friend revise so that they can become as educated as her on the concept.

- a. Explain, in chemistry terms, what 1 mole means. (2 marks)

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- b. Taige takes  $5.44 \times 10^{14}$  atoms of Beryllium and places it in front of her friend. What would the mass of this beryllium be? (2 marks)

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- c. After looking at atoms on the periodic table, Taige notices the number 12 on the carbon atom and sees this as the atomic mass. What is the unit for this number? (1 mark)

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Space for Personal Notes



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VCE Chemistry ½

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