Year 9 Chemistry – Bonding, structure and the properties of matter – Spring Term - Knowledge Overview

Year group:	Unit:		Date (from and to):	
Week beginning:	**Big question / concept:**	**Learning intentions:**	**Resources**	
			Offline:	**Online including links on how to access these:**
4th January 2021	What are the 3 types of bonding?	Explain how Ionic bonding occurs in compounds formed from metals combined with non-metals. Explain how Covalent bonding occurs in most non-metallic elements and in compounds of non-metals. Explain how Metallic bonding occurs in metallic elements and alloys. Describe what an ionic compound is Work out the empirical formula of an ionic compound from a given model or diagram that shows the ions in the structure.	Read slides 3-8 on Home learning pack. Answer questions on slide 9-10. Mark Answers using slide 11. Read slide 12-13 and make notes on the key points. Describe the limitation of the two models on slide 13	Introduction to Ionic bonding online lesson https://classroom.thenational.academy/lessons/ionic-bonding-introduction-70wk4c Ionic bonding online lesson https://classroom.thenational.academy/lessons/further-ionic-bonding-6cu32c Covalent bonding online lesson https://classroom.thenational.academy/lessons/covalent-bonding-65hpcc Metallic bonding online lesson https://classroom.thenational.academy/lessons/metallic-bonding-cdjk0e Then complete the exam questions: https://sysijuz.exampro.net/# https://yuauuiu.exampro.net/ Watch the Ionic compounds lesson https://classroom.thenational.academy/lessons/properties-of-ionic-compounds-6hj66c

11th of January 2021		**Students should be able to:** Draw dot and cross diagrams. Represent the covalent bonds in small molecules, in the repeating units of polymers and in part of giant covalent structures, using a line to represent a single bond. Describe the limitations of using dot and cross, ball and stick, two and three-dimensional diagrams. Deduce the molecular formula of a substance from a given model or diagram.	Read slides 17-19 on the home learning pack and make notes on the key points. Answer exam questions on slide 20 -21 Mark your answers using slide 22-23	Watch the following video on how to draw dot and cross diagrams https://www.youtube.com/watch?v=IV404giwIE0 Then answer the following exam questions https://yejyruy.exampro.net/

18th of January 2021		Describe that metals consist of giant structures of atoms arranged in a regular pattern. Draw a diagram to show the bonding in metals	Read slide 24-25 and make notes on the key points. Answer exam question on slide 26 Mark your answers using slide 27.	Lesson on Metallic bonding https://classroom.thenational.academy/lessons/metallic-bonding-cdjk0e Then complete the following exam question: https://ciaolyj.exampro.net/
	How is bonding and structure related to the properties of substances?	**Students should be able to:** Draw diagrams to represent solids, liquids and gases. Explain the different temperatures at which changes of state occur in terms of energy transfers and types of bonding. Explain the limitations of the particle theory in relation to changes of state. (HT)	Read slides 29-33 Complete the exam questions on slide 34-35 Mark your answers using slide 36 .	First watch this video on GCSE POD https://members.gcsepod.com/shared/podcasts/title/10955/66852 Then watch this lesson on Solids, liquids and gases. https://classroom.thenational.academy/lessons/solids-liquids-and-gases-cmr36d

25th of January 2021		Describe the properties of ionic compounds Explain why ionic compounds have high melting and boiling points with reference to their structure. Explain why certain states of ionic compounds can conduct electricity Describe the properties of substances that consist of small covalent molecules. Explain the properties of substances that consist of small covalent molecules.	Read through slides 38 to 41 and make notes on the key points You need to complete the following: 1) What is an ionic bond? 2) What does an Ionic bond form between? 3) Describe the bonding in NaCl? (in your response use slide 38-41)	Lesson on Ionic compounds https://classroom.thenational.academy/lessons/properties-of-ionic-compounds-6hj66c. Then watch the following video from GCSE POD: https://members.gcsepod.com/shared/podcasts/title/10954/66756 Simple covalent molecules lesson https://classroom.thenational.academy/lessons/simple-covalent-molecules-70v66e

1st of February 2021		Describe properties of polymers (melting point) Explain these using the structure of polymers Describe the bonding in giant covalent structures Describe and explain the properties of giant covalent structures	Read slides 42 to 47 and make notes on the key points. You need to complete the following 1) Describe and explain why diamond has a high melting point and boiling point? 2) Can you describe the difference between a metal and an alloy? 3) Explain why metals conduct electricity (in your response use slide 42-47)	Polymers lesson https://classroom.thenational.academy/lessons/polymers-6rvkgr Giant covalent structures lesson https://classroom.thenational.academy/lessons/the-giant-covalent-structures-c5h3cc

08th of February 2021		Explain the properties of diamond in terms of its structure and bonding. Explain the properties of graphite in terms of its structure and bonding. Know that graphite is similar to metals in that it has delocalised electrons. Describe the structure of graphene Describe simply the structure of fullerenes and carbon nanotubes Give uses of fullerenes and nanotubes and relate these to their properties	Read slide 51-52 and make notes on the key points Complete exam question on slide 53. Mark your answers using slide 54. Read slides 55-59 and make notes on the key points. Complete exam questions on 60, 61 & 62. Mark your answers using slide 63. Read slides 65-69 and make notes on the key points. Complete exam questions on 70-71 Mark your answers using slide 72-73	First watch the following video on GCSE POD https://members.gcsepod.com/shared/podcasts/title/10956/66768 Then watch this lesson on Giant covalent structures https://classroom.thenational.academy/lessons/the-giant-covalent-structures-c5h3cc Graphite lesson: https://classroom.thenational.academy/lessons/the-giant-covalent-structures-c5h3cc Complete the exam question using the link below: https://guquoyh.exampro.net/ Graphene, fullerenes and carbon nanotubes lesson https://classroom.thenational.academy/lessons/giant-covalent-structures-graphene-68rp6e Complete the exam questions using the links below: https://qonooaz.exampro.net/ https://zayukit.exampro.net/