OBHS Core Questions:

Subject: Science

Year and Term: Year 11 Autumn Term

Topic: C4 Chemical changes with C3 recap

Learn these questions to build a strong foundation of knowledge for this half-term. Ask family or friends to test you regularly, or practise on your own using the 'Look, Say, Cover, Write' method.

Question	Answer
1. What does the law of conservation of mass state?	Atoms are not made or lost in a reaction, so the mass stays the same. The mass at the start of the reaction is equal to the mass at the end.
2. Why do we need to balance chemical equations?	To show that the number of atoms of each element is the same on both sides.
3. What does a big number in front of a formula mean? For example 2NaO.	It shows how many molecules or moles there are.
4. What does a small number after a symbol in a formula mean? For example: H_2O	It shows how many atoms of that element are in the molecule.
5. What is relative formula mass (M_r)?	It is the total of the relative atomic masses of all the atoms in a compound.
6. How do you calculate relative formula mass?	Add up the atomic masses of each atom in the compound.
7. If the relative atomic mass of oxygen is 16 and the realative atomic mass of hydrogen is 1, what is the relative formula mass of H_2O?	H = 1 x 2 = 2 O = 16 2+16 = **18**
8. Why is the mass the same on both sides of a balanced equation?	Because atoms are not lost or made in a chemical reaction.
9. What could cause a change in mass during a reaction?	A gas might escape or be taken in.
10. Give an example of when mass seems to increase during a reaction.	When a metal reacts with oxygen from the air.
11. Give an example of when mass seems to decrease during a reaction.	When gas escapes the reaction
12. What does uncertainty mean in a measurement?	It means we are not exactly sure of the result. This could be caused by mistakes made when reading result off of equipment – such as a thermometer or not being sure when a reaction has finished.
13. How can we show uncertainty in results?	uncertainty = ± half the range
14. What unit is chemical amount measured in? (HT)	Moles (mol).
15. What is the mass of one mole of a substance equal to? (HT)	It is equal to its relative formula mass in grams.
16. What is the Avogadro constant? (HT)	6.02 x 10^^{23} particles per mole.
17. What does one mole of any substance contain? (HT)	The same number of particles as one mole of another substance.

18. How do you calculate the number of moles? (HT)	Divide the mass in grams by the Mr. Mass/M_r
19. How can we use moles to balance equations? (HT)	By working out the ratio of moles of each substance.
20. What does a balanced equation show in terms of moles? (HT)	The ratio of moles of reactants and products.
21. What is a limiting reactant? (HT)	The reactant that runs out first and limits how much product is made.
22. Why do we sometimes use an excess of one reactant? (HT)	To make sure all of the other reactant is used up.
23. What happens if a reactant is limiting? (HT)	The amount of product depends on the amount of that reactant.
24. What is concentration?	The amount of solute in a certain volume of solution.
25. What is the unit of concentration?	Grams per dm^3 (g/dm^3).
26. How do you calculate the mass of solute in a solution?	Multiply the concentration by the volume.
27. What is formed when metals react with oxygen?	Metal oxides
28. What type of reaction involves a metal gaining oxygen?	Oxidation
29. What is reduction in terms of oxygen?	Loss of oxygen
30. What ion do metals form when reacting?	Positive
31. What determines a metal's reactivity?	Where it is found on the reactivity series, and their tendency to form ions.
32. Which metal is most reactive: iron or potassium?	Potassium
33. Which gas is produced when metals react with acids?	Hydrogen
34. Which two non-metals are often included in the reactivity series?	Hydrogen, carbon
35. What type of reaction occurs when a more reactive metal takes the place of another?	Displacement
36. Which metal can be found unreacted in the Earth?	Gold
37. What element is used to reduce metal oxides if they're below it in the reactivity series?	Carbon
38. What is oxidation in terms of electrons? (HT only)	Loss of electrons
39. What is reduction in terms of electrons? (HT only)	Gain of electrons
40. What are the products of a chemical reaction between an acid and a metal?	Salt and hydrogen
41. What is an ion?	A charged particle
42. What ion do acids produce in water?	H^+
43. What ion do alkalis produce in water?	OH^-
44. What pH would a neutral substance have?	7
45. What products are made from acid + base?	Salt and water
46. What makes an acid strong? (HT only)	Complete ionisation in an aqueous solution

47. What makes an acid weak? (HT only)	Partial ionisation in an aqueous solution
48. What is electrolysis?	Using electricity to separate metal ions from non-metal ions
49. Which electrode has a negative charge?	Cathode is negatively charged Anode is positively charged
50. Which electrode attracts positive ions?	Cathode
51. In electrolysis of lead bromide, what forms at the cathode?	Lead, because it makes a positive ion, the cathode is negatively charged so attracts the positive lead ion
52. What type of reaction happens at the cathode? (HT only)	Reduction