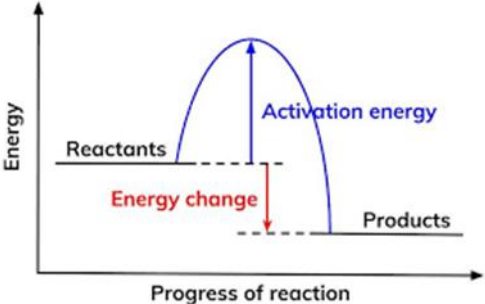
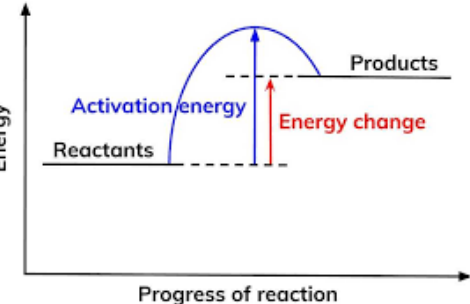


## Year 10 Chemistry Topic 4 Reactions FACT SHEET

Reactions	
1. What do we call chemicals present at the start of a reaction?	Reactants
2. What do we call chemicals made in a reaction?	Products
3. What is the state symbol for a solid?	(s)
4. What is the state symbol for a liquid?	(l)
5. What is the state symbol for a gas?	(g)
6. What is the state symbol for an aqueous solution?	(aq)
Conservation of mass	
7. The total mass of products =	The total mass of reactants
8. How many grams of zinc oxide can be made? Zinc (10g) + oxygen (3g) → Zinc oxide	13g
9. Explain why it might look like the mass of the products is less than the mass of the reactants?	<ul style="list-style-type: none"> <li>• A gas is made</li> <li>• Which goes into the air so we don't record its mass</li> </ul>
10. Explain why it might look like the mass of the products is more than the mass of the reactants	<ul style="list-style-type: none"> <li>• One of the reactants is a gas</li> <li>• So we don't measure its mass at the start</li> </ul>
Exothermic and endothermic reactions	
11. What happens in an endothermic reaction?	Heat is taken in from the surroundings
12. State an example of an endothermic reaction	Thermal decomposition
13. What happens during an exothermic reaction?	Heat is given out to the surroundings
14. List examples of exothermic reactions	<ul style="list-style-type: none"> <li>• Combustion</li> <li>• Oxidation</li> <li>• Neutralisation</li> </ul>
15. If a reversible reaction is endothermic in one direction, what will it be in the other direction?	Exothermic
16. Give an example of a use of exothermic reactions	Self-heating cans / hand warmers
17. Give an example of a use of endothermic reactions	Sports injury packs
Reaction profiles	
18. What must particles do to react?	Collide

<p>19. What do we call the minimum energy that particles need to collide with to react?</p>	<p>Activation energy</p>
<p>20. What type of reaction does this profile show? How can you tell?</p> 	<ul style="list-style-type: none"> <li>• Exothermic</li> <li>• Energy of the products is less than the energy of the reactants</li> </ul>
<p>21. What type of reaction does this profile show? How can you tell?</p> 	<ul style="list-style-type: none"> <li>• Endothermic</li> <li>• Energy of the products is more than the energy of the reactants</li> </ul>
<p><b>Metals reacting with oxygen</b></p>	
<p>22. Metal + oxygen →</p>	<p>Metal oxide</p>
<p>23. Zinc + oxygen →</p>	<p>Zinc oxide</p>
<p>24. What do we call a reaction in which a metal gains oxygen?</p>	<p>Oxidation</p>
<p>25. What do we call a reaction in which a metal loses oxygen?</p>	<p>Reduction</p>
<p>26. What type of reaction is this? Why? Lead + oxygen → lead oxide</p>	<ul style="list-style-type: none"> <li>• Oxidation</li> <li>• Lead gained oxygen</li> </ul>
<p>27. Is the copper oxidised or reduced? How can you tell? Copper oxide + carbon → copper + carbon dioxide</p>	<ul style="list-style-type: none"> <li>• Reduced</li> <li>• Copper lost oxygen</li> </ul>
<p><b>Metals reacting with water</b></p>	
<p>28. Describe the reactions of potassium, sodium and lithium with water (see also C1 fact sheet)</p>	<ul style="list-style-type: none"> <li>• Fizz, give off hydrogen</li> <li>• Move around</li> <li>• Spark</li> <li>• Turn water blue if it has universal indicator in it</li> </ul>
<p>29. Describe the reactions of calcium, magnesium, zinc, iron, copper with water</p>	<p>Don't react immediately (you probably won't see any reaction)</p>

<b>Metals reacting with acid</b>	
<b>30. Describe the reactions of magnesium, zinc and iron with hydrochloric and sulfuric acid</b>	<ul style="list-style-type: none"> <li>• Fizz</li> <li>• Hydrogen gas released</li> <li>• Exothermic (get hot)</li> </ul>
<b>Reactivity series and displacement reactions</b>	
<b>31. Put the following in order of their reactivity: zinc, magnesium, iron, copper, sodium, potassium, lithium</b>	Potassium, sodium, lithium, calcium, magnesium, zinc, iron, copper
<b>32. What do metals do to make ions?</b>	<b>Lose electrons</b>
<b>33. What type of ion do metals make?</b>	<b>Positive</b>
<b>34. What determines a metal's reactivity?</b>	Ability to make positive ions (how easy it is for the metal to lose electrons)
<b>35. A ____ reactive metal will displace a less reactive metal</b>	<b>More</b>
<b>Extracting metals</b>	
<b>36. How do we get unreactive metals, like silver and gold</b>	Mine them/ dig them up as they are elements/ pure
<b>37. How are most metals found in the Earth?</b>	In compounds
<b>38. How do we extract metals less reactive than carbon?</b>	<b>Heat with carbon</b> This is reduction of the metal as it loses oxygen
<b>39. Why is the metal in the metal oxide reduced when we heat the metal oxide with carbon?</b>	It loses oxygen
<b>Acids, alkalis and salts</b>	
<b>40. State the pH range for an acid</b>	<b>Between 1-6</b>
<b>41. What is the opposite of an acid?</b>	Base
<b>42. What do we call a soluble base?</b>	Alkali
<b>43. State the pH range for an alkali</b>	<b>Between 8 and 14</b>
<b>44. What pH does a neutral solution have?</b>	<b>7</b>
<b>45. State 2 ways to measure the pH of a solution</b>	<ul style="list-style-type: none"> <li>• Universal indicator</li> <li>• pH probe</li> </ul>
<b>46. State the colour of a strong acid with universal indicator</b>	Red
<b>47. State the colour of a weak acid with universal indicator</b>	Orange/ yellow

48. State the colour of a neutral solution with universal indicator	Green
49. State the colour of a weak alkali with universal indicator	Blue
50. State the colour of a strong alkali with universal indicator	purple
51. Which ions make a solution acidic?	H <sup>+</sup>
52. Which ions make a solution alkaline?	OH <sup>-</sup>
53. Is H <sub>2</sub> SO <sub>4</sub> and acid or alkali?	Acid
54. Is LiOH an acid or alkali?	Alkali
<b>Neutralisation and salts</b>	
55. How do you neutralise an acid?	Add an alkali
56. Write the neutralisation reaction in terms of the ions involved	H <sup>+</sup> + OH <sup>-</sup> → H <sub>2</sub> O
57. How many parts are there to a salt's name?	2
58. Where does the first part of a salt's name come from?	The metal in the reaction
59. Where does the second part of a salt's name come from?	The acid in the reaction
60. Which acid makes salts called chlorides?	Hydrochloric acid
61. Which acid makes salts called nitrates?	Nitric acid
62. Which acid makes salts called sulphates?	Sulphuric acid
63. Acid + alkali →	Salt + water
64. Acid + base →	Salt + water
65. Acid + metal →	Salt + hydrogen
66. Acid + metal carbonate →	Salt + water + carbon dioxide
<b>RPA Making soluble salts</b>	
67. Outline how to make a soluble salt	<ul style="list-style-type: none"> <li>• Mix the acid and the base</li> <li>• Filter - remove unreacted base</li> <li>• Evaporate the water (crystallisation)</li> </ul>
<b>Solutions and measurements</b>	
68. What are the units for concentration of a solution	Mass/ volume, e.g. g/dm <sup>3</sup>

<b>HIGHER TIER</b>	
1. When a particle gains electrons, we say it is...	<i>reduced</i>
2. When a particle loses electrons, we say it is....	<i>oxidised</i>
3. A reaction in which 1 particle is oxidised and another is reduced, is a .... reaction	<i>redox</i>
4. .What is strong acid?	<i>It is completely ionised in aqueous solution</i>
5. List examples of strong acids	<i>Hydrochloric, nitric, sulphuric</i>
6. What is a weak acid?	<i>It is partly ionised in aqueous solution</i>
7. List examples of weak acids	<i>Ethanoic, citric, carbonic</i>
8. For a given concentration of aqueous solutions, the stronger the acid, the .... the pH	<i>lower</i>
9. What happens to the hydrogen ion concentration of the solution as the pH decreases by 1 unit?	<i>It increases by a factor of 10</i>
10.What is a dilute solution?	<i>A low number of dissolved particles</i>
11.What is a concentrated solution?	<i>A high number of dissolved particles</i>