### Chemical reactions and physical changes

1. List 2 examples of physical changes
   - Melting
   - Freezing
   - Evaporating
   - Condensing
   - Dissolving

2. List 3 ways you can tell a chemical reaction has happened
   - Fizzing/bubbles
   - Colour change
   - Temperature change (gets hot/cold)

3. What do we call the chemicals that we have at the start of a reaction?
   Reactants

4. What do we call the chemicals that are made in the reaction?
   Products

5. How is a chemical reaction different to a physical change?
   - The products of a chemical reaction are not the same as the reactants
   - It is often difficult to reverse a chemical reaction

### Exothermic and endothermic reactions

6. What do we call a reaction which releases heat?
   Exothermic

7. What do we call a reaction which takes in heat?
   Endothermic

8. List examples of exothermic reactions
   - Combustion
   - Oxidation
   - Neutralisation

9. Name an example of an endothermic reaction
   Thermal decomposition

10. The temperature of a reactant is 30°C. During the reaction the temperature reaches 50°C. Is the reaction exothermic or endothermic? Explain how you can tell
    - Exothermic
    - The temperature increased

11. The temperature of a reactant is 30°C. During the reaction the temperature reaches 15°C. Is the reaction exothermic or endothermic? Explain how you can tell
    - Endothermic
    - The temperature decreased

### Neutralisation

12. State the pH range for an acid
    Between 1-6

13. State the pH range for an alkali
    Between 8 and 14
<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
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<tbody>
<tr>
<td>14. What pH does a neutral solution have?</td>
<td>7</td>
</tr>
</tbody>
</table>
| 15. State 2 ways to measure the pH of a solution                       | • Universal indicator  
• pH probe |
| 16. State the colour of a strong acid with universal indicator         | Red    |
| 17. State the colour of a weak acid with universal indicator           | Orange/yellow |
| 18. State the colour of a neutral solution with universal indicator    | Green  |
| 19. State the colour of a weak alkali with universal indicator         | Blue   |
| 20. State the colour of a strong alkali with universal indicator       | Purple |
| 21. How do you neutralise an acid?                                    | Add an alkali |
| 22. How do you neutralise an alkali?                                  | Add an acid |
| 23. What product is always made in a neutralisation reaction?          | A salt |
| 24. Acid + alkali →                                                    | salt + water |
| 25. What does combustion mean?                                        | Burning |
| 26. Is combustion exothermic or endothermic?                           | Exothermic |
| 27. Name the gas that is needed for combustion                         | Oxygen |
| 28. Name the products made from the combustion of coal, oil and gas    | • Carbon dioxide  
• Water  
• Carbon monoxide (if combustion is incomplete) |
| 29. Name the product made when a fuel contains sulphur                 | Sulphur dioxide |
| 30. What happens to a compound in a thermal decomposition reaction?     | • It breaks down  
• When it is heated |
| 31. Is thermal decomposition exothermic or endothermic? Why?            | • Endothermic  
• It needs to be heated |
| 32. Calcium carbonate →                                                | calcium oxide + carbon dioxide |
| 33. Magnesium carbonate →                                              | magnesium oxide + carbon dioxide |
| 34. __________ → sodium oxide + carbon dioxide                         | Sodium carbonate |
### Metals and water

| 35. Describe the reactions of potassium, sodium and lithium with water | • Fizz, give off hydrogen  
• Move around  
• Spark  
• Turn water blue if it has universal indicator in it |
<table>
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<tbody>
<tr>
<td>36. Sodium + water $\rightarrow$</td>
<td>sodium hydroxide + hydrogen</td>
</tr>
<tr>
<td>37. Potassium + water $\rightarrow$</td>
<td>potassium hydroxide + hydrogen</td>
</tr>
<tr>
<td>38. Describe the reactions of copper and magnesium with water</td>
<td>Don’t react immediately (you probably won’t see any reaction)</td>
</tr>
</tbody>
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### Metals and oxygen

<table>
<thead>
<tr>
<th>39. Describe what happens when copper reacts with oxygen</th>
<th>Outside becomes black (this is copper oxide)</th>
</tr>
</thead>
</table>
| 40. Describe what happens when magnesium reacts with oxygen | • Bright spark  
• White powder formed (this is magnesium oxide) |

### Reactivity series

| 41. I can put the following metals in order of their reactivity: lithium, magnesium, potassium, copper, sodium, calcium | • Potassium  
• Sodium  
• Lithium  
• Calcium  
• Magnesium  
• Copper |
<table>
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<tr>
<td>42. What do we call a reaction where one metal takes the place of the other metal?</td>
<td>Displacement</td>
</tr>
<tr>
<td>43. Magnesium sulphate + calcium $\rightarrow$</td>
<td>Calcium sulphate + magnesium</td>
</tr>
</tbody>
</table>
| 44. Calcium sulphate + copper $\rightarrow$ | No reaction  
Because calcium is more reactive than copper |