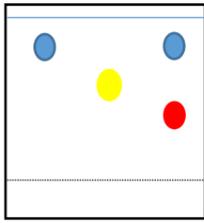
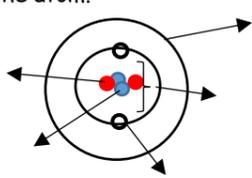


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<p>80%+</p>	<p>Link properties of a substance to its type of bonding</p> <p>Identify isotopes and explain what they are</p> <p>Calculate the Rf value for a given chromatograph</p> <p>Work out the formula of complex compounds and the numbers of atoms</p> <p>Calculate the relative formula mass for a compound</p> <p>Provide two examples of nanotechnology and its uses</p> <p>Describe the process of fractional distillation in detail giving examples</p>	<p>1) Copper is able to conduct electricity but bromine is not. Explain why this is the case.</p> <p>2) Linda has five different atoms. The mass and atomic number are shown below. Which are isotopes of the same element? How do you know?</p> <table border="1" data-bbox="840 489 1533 608"> <tr> <td>15</td> <td>13</td> <td>29</td> <td>19</td> <td>21</td> </tr> <tr> <td>A</td> <td>B</td> <td>C</td> <td>D</td> <td>E</td> </tr> <tr> <td>6</td> <td>8</td> <td>15</td> <td>8</td> <td>14</td> </tr> </table> <p>3) Sarah is testing a new dye for clothes. She wants to know the Rf value for the blue dye to ensure that it is a safe colour for human skin. Can you calculate this for her?</p> <table border="1" data-bbox="1333 652 1743 756"> <tr> <td>Rf Value</td> <td>Safe for human skin</td> </tr> <tr> <td><0.5</td> <td>No</td> </tr> <tr> <td>>0.5</td> <td>Yes</td> </tr> </table>  <p>4) Can you work out the formula for these compounds and the number of atoms?</p> <table border="1" data-bbox="709 845 1974 1023"> <tr> <th>Name</th> <td>Lead Nitrate</td> <td>Copper Sulphate</td> <td>Calcium Carbonate</td> <td>Silver Hydroxide</td> <td>Magnesium Nitrate</td> <td>Lithium Carbonate</td> </tr> <tr> <th>Formula</th> <td>Pb(NO₃)₂</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <th>Number of atoms</th> <td>9</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table> <p>5) Can you calculate the relative formula mass for the following compounds? (a) MgSO₄ (b) CuCl₂ (c) Pb(NO₃)₂ (d) Al₂O₃ (e) NiCO₃</p> <p>6) Research and describe 'nanotechnology'. Give a description and then at least 2 examples of how it is used.</p> <p>7) Give two detailed examples of fractional distillation explaining how it occurs and the changes of state that occur. Link to melting and boiling point of a compound and size of the molecule.</p>	15	13	29	19	21	A	B	C	D	E	6	8	15	8	14	Rf Value	Safe for human skin	<0.5	No	>0.5	Yes	Name	Lead Nitrate	Copper Sulphate	Calcium Carbonate	Silver Hydroxide	Magnesium Nitrate	Lithium Carbonate	Formula	Pb(NO ₃) ₂						Number of atoms	9																			
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<p>70%</p>	<p>Decide whether a substance is a solid, liquid or gas using knowledge of its melting and boiling points.</p> <p>Describe how each type of bonding occurs using diagrams to support your explanation</p> <p>Explain the reason for a charge on a positive and negative ion</p> <p>Work out simple formulae for compounds</p> <p>Count the number of elements in a compound</p> <p>Explain patterns and trends in the periodic table</p>	<table border="1" data-bbox="709 1270 1375 1469"> <tr> <th>Substance</th> <th>Melting Point (°C)</th> <th>Boiling Point (°C)</th> </tr> <tr> <td>Aluminium</td> <td>660</td> <td>2450</td> </tr> <tr> <td>Argon</td> <td>-189</td> <td>-186</td> </tr> <tr> <td>Astatine</td> <td>300</td> <td>400</td> </tr> <tr> <td>Barium</td> <td>710</td> <td>1640</td> </tr> </table> <p>1) What state would Aluminium be at room temperature? 2) Which element(s) would be a liquid at 200°C? 3) Which element(s) would be a gas at 640°C?</p> <p>2) For each scenario in 60% Q5, explain using diagrams to support, how these substances would bond. You must include all of the following key terms: <i>electrons, electrostatic attraction, protons, positive, negative, delocalise, sea of electrons, attract, share, outer shell.</i></p> <p>3) Explain why Copper becomes a positive ion during ionic bonding.</p> <p>4) For each compound below, write the correct formula and work out how many elements there are.</p> <table border="1" data-bbox="709 1676 1974 1855"> <tr> <th>Name</th> <td>Sodium Chloride</td> <td></td> <td></td> <td>Lithium Fluoride</td> <td></td> <td>Magnesium Oxide</td> </tr> <tr> <th>Formula</th> <td>NaCl</td> <td>AgO₂</td> <td>CuO</td> <td></td> <td>KBr</td> <td></td> </tr> <tr> <th>Number of elements</th> <td>2</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table> <p>5) Explain why the reactivity changes as you move down group 1 and group 7. You must include the following key terms: <i>electrons, valance electron, positive, negative, nucleus, electrostatic attraction.</i></p>	Substance	Melting Point (°C)	Boiling Point (°C)	Aluminium	660	2450	Argon	-189	-186	Astatine	300	400	Barium	710	1640	Name	Sodium Chloride			Lithium Fluoride		Magnesium Oxide	Formula	NaCl	AgO ₂	CuO		KBr		Number of elements	2																									
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<p>60%</p>	<p>Describe what happens to the particles in a liquid as it begins to change state</p> <p>Decide on the appropriate separation technique for the given scenario</p> <p>Give the ions for a range of different elements</p> <p>Identify the type of bonding for different substances</p> <p>Calculate the number of protons, neutrons and electrons in an atom.</p> <p>Describe patterns and trends in the periodic table</p>	<p>1) Sarah is holding an ice cube in her hand. Describe what will happen to the particles in the ice cube as it begins to turn from a solid into a liquid.</p> <p>2) (a) Abdul is trying to get separate some salt and water. He would like the use the salt on his chips. How should he do this? (b) Anna has got a mixture of ink and water. She wants to separate them and collect the water so that she can drink it. How should she do this?</p> <p>3) For each element below, write the correct ion with the correct charge</p> <table border="1" data-bbox="709 2240 1974 2329"> <tr> <th>Name</th> <td>E.g. Sodium</td> <td>Magnesium</td> <td>Chlorine</td> <td>Oxygen</td> <td>Sulphur</td> <td>Calcium</td> </tr> <tr> <th>Ion</th> <td>E.g. Na⁺</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table> <p>4) Which type of bonding would you find in each of the following substances? Explain your answer. (a) Copper and Chlorine (b) Sodium (c) Carbon and Oxygen</p> <p>5) For each element, calculate the number of protons, neutrons and electrons.</p> <table border="1" data-bbox="709 2493 1974 2745"> <tr> <th>Element</th> <td>e.g. Lithium</td> <td>Hydrogen</td> <td>Helium</td> <td>Nitrogen</td> <td>Potassium</td> <td>Lead</td> </tr> <tr> <th>Atomic No.</th> <td>3</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <th>Mass No.</th> <td>7</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <th>Protons</th> <td>3</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <th>Neutrons</th> <td>4</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <th>Electrons</th> <td>3</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table> <p>6) Describe the changes in reactivity as you move down groups 1 and 7. Give examples to support your answer.</p>	Name	E.g. Sodium	Magnesium	Chlorine	Oxygen	Sulphur	Calcium	Ion	E.g. Na ⁺						Element	e.g. Lithium	Hydrogen	Helium	Nitrogen	Potassium	Lead	Atomic No.	3						Mass No.	7						Protons	3						Neutrons	4						Electrons	3					
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	<p>Draw particle diagrams for solids, liquids and gases</p> <p>Classify particles models as elements, compounds and mixtures</p> <p>Match the method of separation to its explanation</p> <p>Identify compounds from their symbols</p> <p>Give properties of giant metallic, small covalent, giant covalent and giant ionic structures</p> <p>Match the sub-particle to its relative atomic mass and charge</p> <p>Describe 2 properties of each key group on the periodic table</p>	<p>1) Can you draw the correct particle model for each state below? Solid has been done for you.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> Solid </div> <div style="text-align: center;"> Liquid </div> <div style="text-align: center;"> Gas </div> </div> <p>2) Next to each particle model, decide whether it is representing an element, compound or mixture.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>(a) </p> </div> <div style="text-align: center;"> <p>(b) </p> </div> <div style="text-align: center;"> <p>(c) </p> </div> <div style="text-align: center;"> <p>(d) Explain your answer to part (c)</p> </div> </div> <p>3) Match the name of the separation method to its description:</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">Crystallisation</td> <td style="width: 50%;">A mixture of insoluble solid and a liquid are passed through a piece of filter paper. The insoluble solid remains in the filter paper and the liquid passes through</td> </tr> <tr> <td>Filtration</td> <td>A mixture of colours is separated using a solvent</td> </tr> <tr> <td>Chromatography</td> <td>A soluble solid and a solvent are separated by heating. The solvent evaporates and the soluble solid is obtained</td> </tr> <tr> <td>Distillation</td> <td>A soluble solid and a solvent are separated by heating. The solvent evaporates is then cooled so that it condenses and can be collected</td> </tr> </table> <p>4) For each compound below, write the correct formula</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 15%;">Name</td> <td style="width: 25%;">Methane</td> <td style="width: 25%;"></td> <td style="width: 25%;">Sodium Chloride</td> <td style="width: 25%;"></td> <td style="width: 25%;">Sulphur Dioxide</td> <td style="width: 25%;"></td> </tr> <tr> <td>Formula</td> <td></td> <td>CO₂</td> <td></td> <td>MgO</td> <td></td> <td>H₂O</td> </tr> </table> <p>5) For each type of structure, identify the correct properties:</p> <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th></th> <th>Metals/Non-metals</th> <th>Melting and Boiling point (low/high)</th> <th>Does it conduct electricity?</th> <th>Example</th> </tr> </thead> <tbody> <tr> <td>Giant Ionic Compound</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Giant Metallic Compound</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Simple Covalent Compound</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Giant Covalent Compound</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>6) Fill in the gaps: An atom is made up of _____, _____ and _____. The _____ and _____ are found in the nucleus of the atom and the _____ orbit the nucleus in _____ or energy levels. _____ and _____ are the same size whereas an _____ is tiny - about 0.0005 the size. _____ are positive, _____ have no charge (they are neutral) and _____ have a negative charge.</p> <p>7) I have a piece of sodium. Give two properties that tell me it belongs in group 1.</p>	Crystallisation	A mixture of insoluble solid and a liquid are passed through a piece of filter paper. The insoluble solid remains in the filter paper and the liquid passes through	Filtration	A mixture of colours is separated using a solvent	Chromatography	A soluble solid and a solvent are separated by heating. The solvent evaporates and the soluble solid is obtained	Distillation	A soluble solid and a solvent are separated by heating. The solvent evaporates is then cooled so that it condenses and can be collected	Name	Methane		Sodium Chloride		Sulphur Dioxide		Formula		CO ₂		MgO		H ₂ O		Metals/Non-metals	Melting and Boiling point (low/high)	Does it conduct electricity?	Example	Giant Ionic Compound					Giant Metallic Compound					Simple Covalent Compound					Giant Covalent Compound				
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	<p>Classify substances as solids, liquids and gases giving properties to support your answer</p> <p>Classify substances as elements or compounds</p> <p>Name 4 ways of separating a mixture</p> <p>Identify an element by its symbol</p> <p>Classify a substance as a metal or non-metal</p> <p>Label the inside of an atom</p> <p>Label the key groups on the periodic table</p>	<p>1) Draw 4 lines: Match each substance to its property and then its state:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Wood</td> <td style="width: 33%;">Spreads to fill the shape of the container</td> <td style="width: 33%;">Gas</td> </tr> <tr> <td>Helium</td> <td>Can flow</td> <td>Solid</td> </tr> <tr> <td>Milk</td> <td>Keeps its original shape</td> <td>Liquid</td> </tr> </table> <p>2) Put each substance into the correct column below. Sulphur, Oxygen, Sodium Chloride, Lithium, Carbon dioxide, Water, Hydrogen.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="width: 50%;">Elements</th> <th style="width: 50%;">Compounds</th> </tr> </thead> <tbody> <tr> <td style="height: 40px;"></td> <td></td> </tr> </tbody> </table> <p>3) The 4 ways of separating a mixture are: F _____, C _____, C _____ and D _____.</p> <p>4) Fill in the missing symbols/names</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="width: 12.5%;">Name</th> <th style="width: 12.5%;">Copper</th> <th style="width: 12.5%;"></th> <th style="width: 12.5%;">Sodium</th> <th style="width: 12.5%;"></th> <th style="width: 12.5%;">Potassium</th> <th style="width: 12.5%;"></th> </tr> </thead> <tbody> <tr> <td>Symbol</td> <td></td> <td style="text-align: center;">C</td> <td></td> <td style="text-align: center;">Al</td> <td></td> <td style="text-align: center;">Pb</td> </tr> </tbody> </table> <p>5) Classify the following things as metals/non-metals: Copper, Iron, Hydrogen, Oxygen, Aluminium, Chlorine, Potassium, Lithium, Nitrogen, Argon.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="width: 50%;">Metals</th> <th style="width: 50%;">Non-Metals</th> </tr> </thead> <tbody> <tr> <td style="height: 40px;"></td> <td></td> </tr> </tbody> </table> <p>6) Label each part of the atom.</p> <div style="display: flex; justify-content: space-around; align-items: center;">  <div style="border: 1px solid black; padding: 5px;"> <p>Key Terms:</p> <p>Electron Proton Neutron Nucleus Shell</p> </div> </div> <p>7) Match the group to its name:</p> <table style="width: 100%; margin-left: auto; margin-right: auto;"> <tr> <td style="width: 50%;">Group 1</td> <td style="width: 50%;">Noble Gases</td> </tr> <tr> <td>Group 7</td> <td>Halogens</td> </tr> <tr> <td>Group 0</td> <td>Alkali Metals</td> </tr> </table>	Wood	Spreads to fill the shape of the container	Gas	Helium	Can flow	Solid	Milk	Keeps its original shape	Liquid	Elements	Compounds			Name	Copper		Sodium		Potassium		Symbol		C		Al		Pb	Metals	Non-Metals			Group 1	Noble Gases	Group 7	Halogens	Group 0	Alkali Metals
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Key Terms

Solid	Liquid	Gas	Atom	Period	Group	Metal	Non-Metal	Element
Compound	Mixture	Symbol	Formula	Property	Nucleus	Shell		
Energy	Level	Proton	Neutron	Electron	Melting	Solidifying	Freezing	
Condensing	Evaporating	Particles	Crystallisation	Distillation	Fractional Distillation			
Chromatography	Filtration	Solute	Solvent	Solution	Soluble	Insoluble		
	Isotope	Ion	Ionic Bonding	Metallic Bonding	Covalent Bonding			

