

**Science Knowledge Organiser**

**Year: 7**

**Term: Au1**

**Topic: The particle model 1 (3 states) (C.1)**

1	In which state do the particles have strong bonds between them?	Solid
2	In which state do the particles have no bonds between them?	Gas
3	How do the particles move in a solid?	Vibrate
4	How do the particles move in a liquid?	Slide over each other
5	How do the particles move in a gas?	Quick and random
6	In which state gas diffusion NOT happen?	Solid
7	In which state can particles NOT be compressed?	Solid and Liquid
8	In which state do particles stay in a fixed position?	Solid
9	What is the boiling point of water?	100°C
10	What is the melting point of water?	0°C

**Topic: The particle model 2 (changes of state) (C.2)**

1	What is the name for a solid turning into a liquid?	Melting
2	What is the name for a liquid turning into a gas?	Boiling
3	What is the name for a gas turning into a liquid?	Condensation
4	What is the name for a liquid turning into a solid?	Freezing
5	What is the name for a gas turning into a solid?	Sublimation
6	What is the name given to the process of a liquid turning into a gas at the surface of the liquid?	Evaporation
7	Define "boiling point"	The temperature at which a liquid turns into a gas
8	Define "diffusion"	The movement of particles from a high concentration to a low concentration
9	Define "osmosis"	The movement of water particles from a dilute to a concentrated solution through a partially permeable membrane
10	Define "active transport"	The movement of particles from a low concentration to a high concentration using energy

**Topic: The particle model 3 (extension only) (C.3)**

1	Define "Brownian motion"	The random movement of particles in a fluid
2	Which states does Brownian motion occur in?	Liquids and gases
3	State an advantages of using the particle model	Allows you to predict the behaviour of a substance
4	State two disadvantages of using the particle model	Assumes all particles are spheres, doesn't show the bonds between atoms
5	What happens to particles during expansion?	Particles vibrate more so move further apart
6	What happens to particles during contraction?	Particles vibrate less so move closer together
7	Why are solids more dense than gases?	More particles in a given volume
8	What happens to the pressure of a gas when it is heated?	Pressure increases
9	Which state is the least dense?	Gas
10	Which state is the most dense?	Solid

**Topic: Elements, compounds and mixtures (C.4)**

1	Define "atom"	The smallest part of an element that exists
2	Define molecule	A group of atoms bonded together
3	What are substances made of only one TYPE of atom called?	Elements
4	What are substances made of two or more types of atoms NOT chemically bonded together called?	Mixtures
5	What are substances made of two or more types of atoms chemically BONDED together called?	Compounds
6	What is the formula for water?	H <sub>2</sub> O
7	What is the formula for Methane?	CH <sub>4</sub>
8	What is the formula for carbon dioxide?	CO <sub>2</sub>
9	What is the word for an element that always exists as two atoms bonded together? (extension only)	Diatomic
10	Which elements exist diatomically? (extension only)	Oxygen, hydrogen, nitrogen and all of group 7

<b>Topic:</b>		<b>Planning an investigation (S.2)</b>
1	Which term means "the variable that you investigate (change) in an experiment"	Independent variable
2	Which term means "the variable that you measure in an experiment"	Dependent variable
3	Which term means "the variable that you keep the same in an experiment"?	Controlled variable
4	Define "hypothesis"	A testable explanation for a scientific idea
5	Define "prediction"	What you think will happen in an experiment
6	What is a method?	A list of instructions for an experiment
7	How do you ensure results are valid?	Only change one variable
8	Which 3 steps do you take to check whether your results were repeatable?	1) Repeat your experiment 3 times, 2) remove anomalies, 3) calculate a mean
9	By comparing your results with someone who has done a similar experiment, what do you prove?	That your results are reproducible
10	Which key term means "a result that doesn't fit the pattern"?	Anomaly
<b>Topic:</b>		<b>Collecting data (S.3)</b>
1	Which key term means "the smallest interval on a measuring instrument"?	Resolution
2	Which key term means "very little spread around the mean"?	Precise
3	How do you increase the precision of a piece of equipment?	Use equipment with a smaller resolution
4	How do you increase the precision of your results?	Repeat readings several times
5	Which key term means "close to the true value"?	Accurate
6	Does using digital equipment improve accuracy or precision?	Accuracy
7	Which variable goes into the left hand column of a results table?	Independent variable
8	Which variable goes into the right hand column of a results table?	Dependent variable
9	Which two things must you always include at the top of a results table?	Headings and units
10	Which key term means "the distance between the mean and the highest/lowest value recorded"?	Uncertainty
<b>Topic:</b>		<b>Presenting data (S.4)</b>
1	Which type of graph do you use to represent discrete data (data in groups)?	Bar graph
2	Which two types of graph can you use to represent data when both variables are continuous?	Scatter graph or line graph
3	What is the difference between a scatter and line graph?	Scatter graph has a line of best fit (not dot to dot line)
4	Which type of graph is used to show which proportion of a data set is represented by one variable?	Pie chart
5	What is the line called that shows the general patten of a graph?	Line of best fit
6	What does SCULPTS stand for?	Scale, Choice of Graph, Units, Labels, Points, Title, Straight lines/smooth curve
7	When both variables increase, how do we describe the relationship?	Positive correlation
8	When one variable increase and the other decreases how do we describe the relationship?	Negative correlation
9	How do you know if two variables are directly proportional? (extension only)	Straight line through origin
10	Which term means "as one variable doubles, the other variable halves"? (extension only)	Inversely proportional
<b>Topic:</b>		<b>Evaluating data (S.5)</b>
1	Define "anomaly"	A result that doesn't fit the pattern
2	Which term means "repeating the investigation using the same method and equipment and getting the same results"?	Repeatable
3	Which term means "another person repeating the experiment getting the same results"?	Reproducible
4	What is meant by "peer review"?	Research being checked by another scientist
5	Which term means an experimenter affecting the outcome of an investigation to favour their point of view?	Bias
6	Which term means that a piece of equipment hasn't been calibrated (set) to zero before taking the measurement?	Zero error
7	Which term means "errors that are present but can't be corrected"?	Random error
8	Which two steps can reduce random errors?	Repeat measurements and calculate a mean
9	Which type of error causes results to be incorrect by the same amount each time?	Systematic error

	10	Which two things can cause systematic errors?	Technique or equipment used	
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