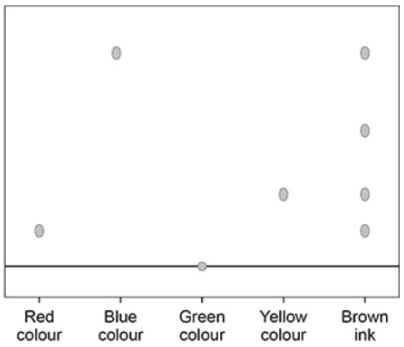
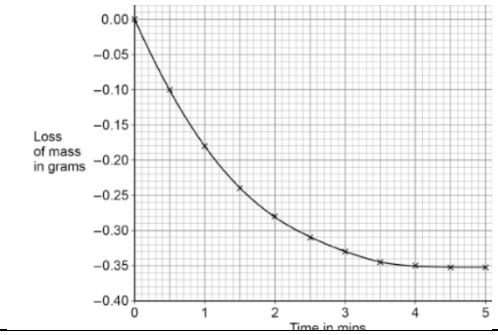
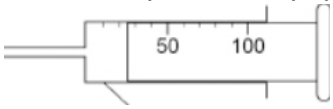
GCSE Chemistry – C8 Chemical Analysis Knowledge Organiser

	Knowledge	Answer
1	What is made of one type of atom?	Element
2	What is made of two or more different atoms chemically bonded?	Compound
3	What is made of two or more different atoms not chemically bonded?	Mixture
4	How can you test a substances purity?	Measure its melting point- it will be a fixed temperature
5	What is a mixture designed to make a useful product?	Formulation
6	What is chromatography used for?	To separate substances with different solubilities in the solvent
7	What is the mobile phase?	The phase that doesn't move
8	What is the stationary phase?	The phase that moves
9	How do you calculate Rf?	Rf = distance moved by substance/ distance moved by solvent
10	Why is the start line drawn in pencil?	Because this is insoluble so will not spread up the paper
11	Make 2 conclusions about the brown in 	It contains 4 substances It contains red, brown and yellow It doesn't contain green It contains another unknown substance Blue is the most soluble Red is the least soluble
12	What is the test for oxygen gas?	Relights a glowing splint
13	What is the test for carbon dioxide gas?	Turns limewater cloudy
14	What is the test for hydrogen gas?	Lit splint gives a squeaky pop
15	What is the test for chlorine gas?	Damp litmus paper is bleached
16	TRIPLE ONLY What ions cause a crimson flame?	Lithium ions (Li^+)
17	TRIPLE ONLY What ions cause a yellow flame?	Sodium ions (Na^+)

18	TRIPLE ONLY What ions cause a lilac flame?	Potassium ions (K^+)
19	TRIPLE ONLY What ions cause an orange-red flame?	Calcium ions (Ca^{2+})
20	TRIPLE ONLY What ions cause a green flame?	Copper ions (Cu^{2+})
21	TRIPLE ONLY why are some potassium ions difficult to see in a flame test?	The colour can be masked by the flame
22	TRIPLE ONLY What colour precipitates do calcium, aluminium and magnesium ions form when sodium hydroxide is added?	White precipitates
23	TRIPLE ONLY What colour precipitates do copper ions form when sodium hydroxide is added?	Blue precipitate
24	TRIPLE ONLY What colour precipitates do iron (II) ions form when sodium hydroxide is added?	Green precipitate
25	TRIPLE ONLY What colour precipitates do iron (III) ions form when sodium hydroxide is added?	Brown precipitate.
26	TRIPLE ONLY What is the test for chloride ions?	Silver nitrate solution in the presence of dilute nitric acid gives a white precipitate
27	TRIPLE ONLY What is the test for bromide ions?	Silver nitrate solution in the presence of dilute nitric acid gives a cream precipitate
28	TRIPLE ONLY What is the test for iodide ions?	Silver nitrate solution in the presence of dilute nitric acid gives a yellow precipitate
29	TRIPLE ONLY What is the test for sulphate ions?	Barium chloride + dilute hydrochloric acid gives a white precipitate
30	TRIPLE ONLY Give an advantage of instrumental analysis	Faster, more accurate, more sensitive

	Knowledge	Answer
1	What is the formula for a mean rate of reaction in terms of reactants?	Quantity of reactant used/time taken
2	What is the formula for a mean rate of reaction in terms of products?	Quantity of reactant product formed/time taken
3	How can you measure the quantity of a reactant or product?	In grams or in cm^3
4	What are the two possible units for rate of reaction?	g/s or cm^3/s (where s is seconds)
5	How could you measure the rate of reaction from a graph?	Draw a tangent to the curve and calculate the gradient.
6	Describe the rate of reaction in the following graph: 	The reaction starts fast (steep gradient), slows down, then stops at 4 minutes (horizontal)
7	Name the piece of equipment: 	Gas syringe
8	What is “collision theory”?	The theory that chemical reactions only occur when particles collide with sufficient energy
9	What five factors can affect the rate of reaction?	Temperature, surface area of a solid, concentration of reactants in solution, pressure of gases, catalyst
10	State the effect of increasing the surface area on the rate of a reaction	Increases the rate
11	Explain why increasing the surface area increases the rate of reaction	More particles are available to collide, there are therefore more frequent collisions between reactants
12	State the effect of increasing the concentration on the rate of reaction	Increases
13	Explain why increasing the concentration increases the rate of reaction	More concentrated means more particles in solution, therefore more frequent collisions between reactants
14	State the effect on increasing the pressure of a gas on the rate of reaction	Increases
15	Explain why increasing the pressure of a gas increases the rate of reaction	Higher pressure means the particles are closer together, therefore more frequent collisions between reactants

16	State the effect on temperature the pressure of a gas on the rate of reaction	Increases
17	Explain why increasing the temperature increases the rate of reaction	Higher temperature means the particles have more kinetic energy and move faster, therefore more frequent collisions between reactants
18	What is a catalyst	A substance that speeds up a reaction but remains chemically unchanged
19	Explain why using a catalyst increases the rate of reaction	Provides an alternative route of reaction with a lower activation energy
20	What is a reversible reaction?	A reaction which can go from reactants to products but also from products to reactants
21	What chemical symbol represents a reversible reaction?	
22	If a reaction is exothermic in the forward direction, what will it be in the reverse direction?	Endothermic
23	What is dynamic equilibrium?	The point in a reversible reaction when the forward and reverse reactions are occurring at the same rate
24	How is the amount of reactant changing at equilibrium?	It is not changing
25	How is the amount of product changing at equilibrium?	It is not changing
26	(HT) What is Le Chatelier's principle?	When a reaction at equilibrium is changed, it will seek to counteract that change
27	(HT) A reaction is exothermic in the forward direction. What will occur if the temperature is increased?	The backward reaction will increase as it is endothermic and will reduce the temperature
28	(HT) A reaction is at equilibrium when some product is removed. What will occur?	The forward reaction will increase as that will increase the amount of product
29	(HT) How does increasing the pressure affect equilibrium?	Favours the side with fewer gaseous molecules
30	(HT) How does adding a catalyst affect equilibrium?	No affect, just reaches equilibrium faster