

Science 10: Chemical Reactions Unit Review Suggestions

Please note that you are responsible for all material that has been discussed or assigned within this unit. The exam will consist of, but is not limited to, the material and topics listed below. Use the topics below as a place to start your studying!

1. Use your periodic table to help you fill in the chart below.

	Symbol	Atomic Number	Atomic Mass	Protons	Neutrons	Total Electrons in the Atom	Valence Electrons	Ion Symbol & Charge
(a)	Mg	12	24	12	12	12	2	Mg ⁺²
(b)	Ar	18	40	18	22	18	8	n/a
(c)	I	53	127	53	74	53	7	I ⁻¹
(d)	S	16	32	16	16	16	6	S ⁻²

2. Why don't elements like (b) in Question 1 form ions?

They already have 8 valence electrons and are stable.

3. Distinguish between covalent and ionic bonds.

Sharing of electrons between non-metals } transfer of electrons from a metal to a nonmetal

4. Identify if the bond type is ionic or covalent in:

(a) Li₂O
ionic

(b) NaOH
ionic

(c) CO₂
covalent

(d) Br₂
covalent

5. (a) Identify the diatomic molecule in Question 4: Br₂

(b) List the remaining six diatomic elements: H₂, N₂, O₂, F₂, Cl₂, I₂

6. Name the following compounds:

(a) CaCl₂ calcium chloride

(b) N₂O₄ dinitrogen tetroxide

(c) NaNO₃ sodium nitrate

(d) PCl₅ phosphorus pentachloride

7. Write the chemical formula for:

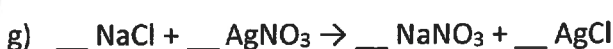
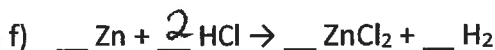
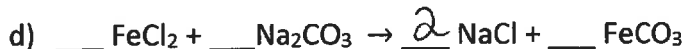
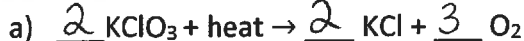
(a) potassium fluoride KF

(b) magnesium hydroxide Mg(OH)₂

(c) diphosphorous trioxide P₂O₃

(d) nitrogen tribromide NBr₃

8. Balance:



balanced!

9. Identify the type of chemical reactions in 8.

(a) decomposition

(b) synthesis

(c) combustion

(d) double displacement

(e) single displacement

(f) single displacement

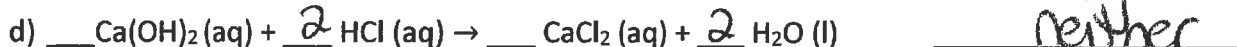
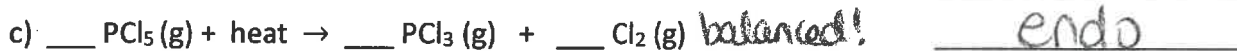
(g) double displacement

10. The Law of Conservation of Mass states: matter is neither created nor destroyed; meaning the mass of the reactants must be equal to the mass of the products.

11. Distinguish between endothermic and exothermic reactions.

heat (thermal energy) is taken in from the environment } heat is released to the environment

12. Balance and classify each reaction as endothermic, exothermic, or neither.



13. (a) What are organic compounds and why are they important?

molecules that contain carbon; they are responsible for the fuel we use, food we eat, medicine, body functions, etc.

(b) What elements are present in hydrocarbon molecules? hydrogen & carbon

14. List four ways we can speed up the rate of chemical reaction.

- increase concentration
- increase surface area
- add a catalyst
- increase temperature

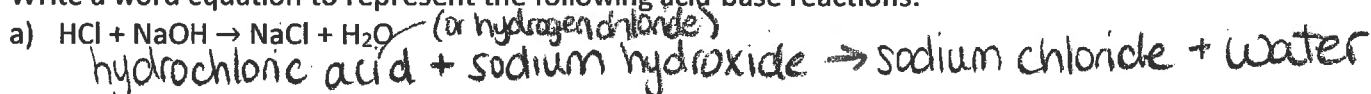
15. Distinguish between catalysts and enzymes.

catalysts help reactions happen more quickly; enzymes are specialized biological catalysts that control the rate of reaction in living things

16. Distinguish between acids and bases.

release H^+ ions pH < 7 sour, corrosive } release OH^- ions pH > 7 bitter, slippery, corrosive

17. Write a word equation to represent the following acid-base reactions:



18. (a) When an equally strong acid and base are combined, the products are always

water + salt

(b) What is the name for this special type of double displacement reaction? neutralization

(c) The pH of the resulting solution is 7. ← neutral ☺

19. Use your understanding of pH and indicators to complete the chart below.

pH	Acidic, Basic or Neutral?	What colour does blue litmus paper turn?	What colour does red litmus paper turn?	What colour does phenolphthalein turn?
3	acidic	red	stays red	clear
7	neutral	purple	purple	clear
9	basic	stays blue	blue	pink

20. Go back over your previous in-class assignments and practice, practice, practice!