

Acid and Base Review Worksheet Answer Key

1. a. HClO₄ b. H₂SO₃ c. Ca(OH)₂ d. NH₃ e. Al(OH)₃
 f. HNO₃ g. H₃PO₄ h. HBr
2. See Notes
3. HF (aq) + Ca (s) → CaF₂ (aq) + H₂ (g)
4. See Notes
5. Should read ionization, not dissociation—HClO₄ (aq) + H₂O (l) → H₃O⁺ (aq) + ClO₄⁻ (aq)
6. See Notes—relates to degree of ionization
7. Fill in the table:

Acid or Base	pH	pOH	[H ⁺]	[OH ⁻]
Acid	4.5	9.5	3.16 x 10 ⁻⁵ M	3.16 x 10 ⁻¹⁰ M
Base	10.2	3.8	6.31 x 10 ⁻¹¹ M	1.58 x 10 ⁻⁴ M
Base	11.6	2.4	2.4 x 10 ⁻¹² M	4.2 x 10 ⁻³ m
Base	9.96	4.04	1.1 x 10 ⁻¹⁰	8.9 x 10 ⁻⁵ M

8. See Notes—relates to degree of ionization
9. H₃PO₄ (aq) + Be(OH)₂ → Be₃(PO₄)₂ (s) + H₂O (l)
10. A substance that acts as either an acid or a base; water
11.

$$3\text{NaOH} + \text{H}_3\text{PO}_4 \rightarrow \text{Na}_3\text{PO}_4 (\text{aq}) + 3\text{H}_2\text{O} (\text{l})$$

$$\text{LiOH} + \text{HNO}_3 \rightarrow \text{LiNO}_3 (\text{aq}) + \text{H}_2\text{O} (\text{l})$$

$$\text{Ca}(\text{OH})_2 + \text{HCl} \rightarrow \text{CaCl}_2 (\text{aq}) + \text{H}_2\text{O} (\text{l})$$
12. pH of KOH decreases, basicity decreases
13. NaOH
14. decreases
15. salt and water
16. 7.0
17. Find the pH of the following and classify them as acidic (A), basic (B), or neutral (N)

	pH	Classification
a) [H ⁺] = 2.5 x 10 ⁻⁹	8.60	Base
b) 3.5 x 10 ⁻⁶ M H ₃ P	4.98	Acid
c) [OH ⁻] = 9.8 x 10 ⁻¹¹	3.99	Acid
d) [H ⁺] = 1.0 x 10 ⁻⁷	7.00	Neutral
e) 6.0 x 10 ⁻³ M Ba(OH) ₂	12.01	Base
18. When it receives a hydrogen ion from an acid.
19. Complete and balance:

$$\text{Mg} + \text{HNO}_3 \rightarrow \text{Mg}(\text{NO}_3)_2 (\text{aq}) + \text{H}_2 (\text{g})$$

$$\text{Na} + \text{H}_2\text{SO}_4 \rightarrow \text{Na}_2\text{SO}_4 (\text{aq}) + \text{H}_2 (\text{g})$$
20. Use (A) to indicate an acid only, (B) to indicate a base only, and (C) to indicate both.

Turns litmus paper red	B	Is a good conductor	C
Has a pH of 3	A	Produced when sodium reacts with water	B
Tastes sour	A	Reacts with zinc to produce hydrogen	A
Feels slippery	B	Turns pink with phenolphthalein	B
Tastes bitter	B	React with carbonates to produce CO ₂	B