

NGSS.CH07.SM: Acids, Bases and Salts (ages 9+) - include Research and Task Cards Standards

Research Cards Standards

Grade 5

NGSS 5-PS1-3 – Structure and Properties of Matter

Summary: Materials can be identified by measurable properties.

Focus Area: Classify acids, bases, and neutral substances.

Students will:

- Use indicators like litmus to test solutions.
- Differentiate substances by pH values.

NGSS 5-PS1-4 – Chemical Reactions

Summary: Mixing substances may result in new substances.

Focus Area: Explore neutralization as a chemical change.

Students will:

- Use examples of neutralization ($\text{HCl} + \text{NaOH} \rightarrow \text{NaCl} + \text{H}_2\text{O}$).
- Explain evidence that salts are new substances.

Grade 6

NGSS MS-PS1-2 – Structure and Properties of Matter

Summary: Analyze properties before and after interactions to determine chemical change.

Focus Area: Use acids and bases as examples of reactive substances.

Students will:

- Compare strong vs weak acids/bases by degree of ionization.
- Explain how acid-base interactions change chemical properties.

NGSS MS-PS1-5 – Chemical Reactions

Summary: Atoms are conserved during chemical reactions.

Focus Area: Represent neutralization with balanced equations.

Students will:

- Write and interpret equations showing conservation of matter.
- Model ions combining to form water and salts.

Task Cards Standards

Grade 5

NGSS 5-PS1-3 – Structure and Properties of Matter

Summary: Identify materials by their observable and measurable properties.

Focus Area: Classify acids, bases, and neutral solutions with indicators.

Students will:

- Identify household acids and bases.
- Use pH values to categorize strong and weak solutions.

NGSS 5-PS1-4 – Chemical Reactions

Summary: Evidence of new substances from interactions.

Focus Area: Explore neutralization and salt formation.

Students will:

- Conduct tests with acids and bases.
- Record evidence of salts forming during reactions.

Grade 6

NGSS MS-PS1-2 – Structure and Properties of Matter

Summary: Data reveal when chemical changes occur.

Focus Area: Compare properties of acids, bases, and salts before and after reactions.

Students will:

- Test litmus and pH before and after mixing.
- Conclude that neutralization is a chemical change.

NGSS MS-PS1-5 – Chemical Reactions

Summary: Atoms rearrange but are conserved.

Focus Area: Balanced equations for acid-base reactions.

Students will:

- Model conservation in acid + base $\rightarrow$ salt + water.
- Apply particle-level reasoning to explain new substances.