Potions
WESO 2025

- We want to know who is here! Please introduce yourself in the chat: Name. School.
- Please mute your microphone to reduce background noise.
- We will leave time for Q & A. Please submit your questions via the Google form that will be shared in the chat.
- This presentation, along with the questions and answers, will be posted on the WESO website.

POTIONS
WESO 2025

Event Supervisor:
Anastasia Yocum

Goals for this event:

- Basic Chemistry Concepts
- Laboratory Skills
- Laboratory Safety
- Teamwork
- Fun

EVENT DETAILS

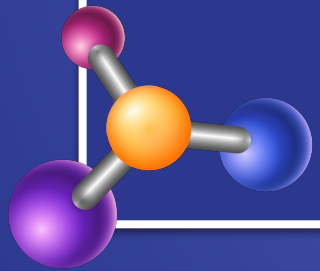
- GRADES: 4 & 5
- TEAM SIZE: 1-2 participants (per grade)
- DURATION: 40 minutes (grades 4,5)

The detailed event descriptions and study guides can be found at: https://wesoscience.org/events/

EVENT FORMAT – Overview

Two Components to this event :

1. The test will mostly be experiment-based, where teams will conduct simple experiments, make observations and answer questions. This will include questions on Environmental Science.
2. Relevant questions on basic chemistry concepts will be spread throughout the test.



REMEMBER - One test per team. They need to work together and collaborate on their answers!

Event Format

- Standard test section:
  - Multiple choice
  - Fill in the blank
  - True/False
  - Matching
  - Short answer

Event Format

Experimental section:

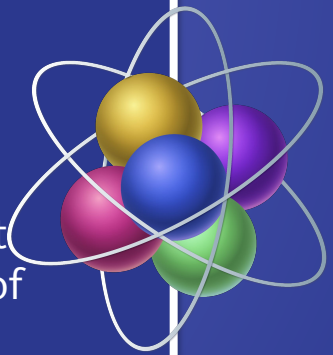
- Teams are given several small experiments, observations or tasks.
- All materials and detailed instructions will be provided.
- Teams will be asked questions (on paper) about the experiments and the concepts behind them.
- Most of this will be carried out at their team's work station but they may be asked to complete a portion at a practical skills area set up in the room.

Event Format

- Teams will be given one test packet which will have the questions for both sections in it. They are allowed to work in any order they wish, split it up (not recommended) or go back and forth.
- Answers will need to be placed on a separate answer sheet.
- Teams will be given 10 and 5 minute warnings.
- Teams need to come to the event wearing proper lab safety equipment (long pants, closed toe shoes, lab coats or long-sleeved shirts over their WESO T-shirts, long hair pulled back and gloves and goggles worn when doing the experimental portion).
- Teams will be expected to adhere to lab safety rules and clean up their work area as instructed.

SCORING

- Point value for each question will be clearly marked.
- Scoring will be based on the number of correct answers and how well the students follow lab safety and cleanup procedures.
- Completion time NOT considered in scoring.
- Teams will have points deducted if they do not practice proper lab safety rules, do not come wearing proper protective clothing and do not clean their work area properly.
- There will be several clearly marked tiebreaker questions at the end of the test which will only be graded in the event of a tie.



Example of clean-up procedure:

- Continue to wear your gloves and goggles during clean-up.
- Leave all liquids in the rack on your workbench.
- Discard all weigh boats, spatulas, transfer pipets, pH strips and bags into the garbage.
- Periodic tables and pH scales should remain at your workstation.
- Remove your gloves and discard in the garbage.
- Leave goggles at your workstation if you did not bring your own.
- Raise your hand when you are finished. Your test will be collected, your workstation will be inspected, and you will be dismissed.

EVENT CONCEPTS - Grades 4&5

- States of Matter: solid, liquid, gas
- Properties of solids, liquids, gases
- Transitions between phases: melting/freezing, evaporation/condensation, sublimation
- Law of Conservation of Matter/Mass
- Structure of matter: atoms, elements, molecules, compounds
- Basic atomic structure: Electrons, Protons, Neutrons, Nucleus
- Mixtures: Types of Mixtures (homogeneous, heterogeneous, solutions)
- Bohr Model

The study guide outlines the concepts and the level of comprehension expected.

EVENT CONCEPTS - Grades 4&5

- Periodic table of elements: (Do not memorize! Students will be given a table)
  - Basic organization and information represented, understand the rationale behind periods and groups
  - General Understanding of characteristics of the families
  - Basic elements: H, O, N, C, Al, Na, Cu, Cl, P, S, He, Ar
    - General Characteristics of these elements
- Acids and Bases, pH scale
- Physical vs. Chemical Properties and Changes
- Renewable vs non-renewable sources of energy
- Principles of the Clean Water Act
- Ink Chromatography

The study guide outlines the concepts and the level of comprehension expected.

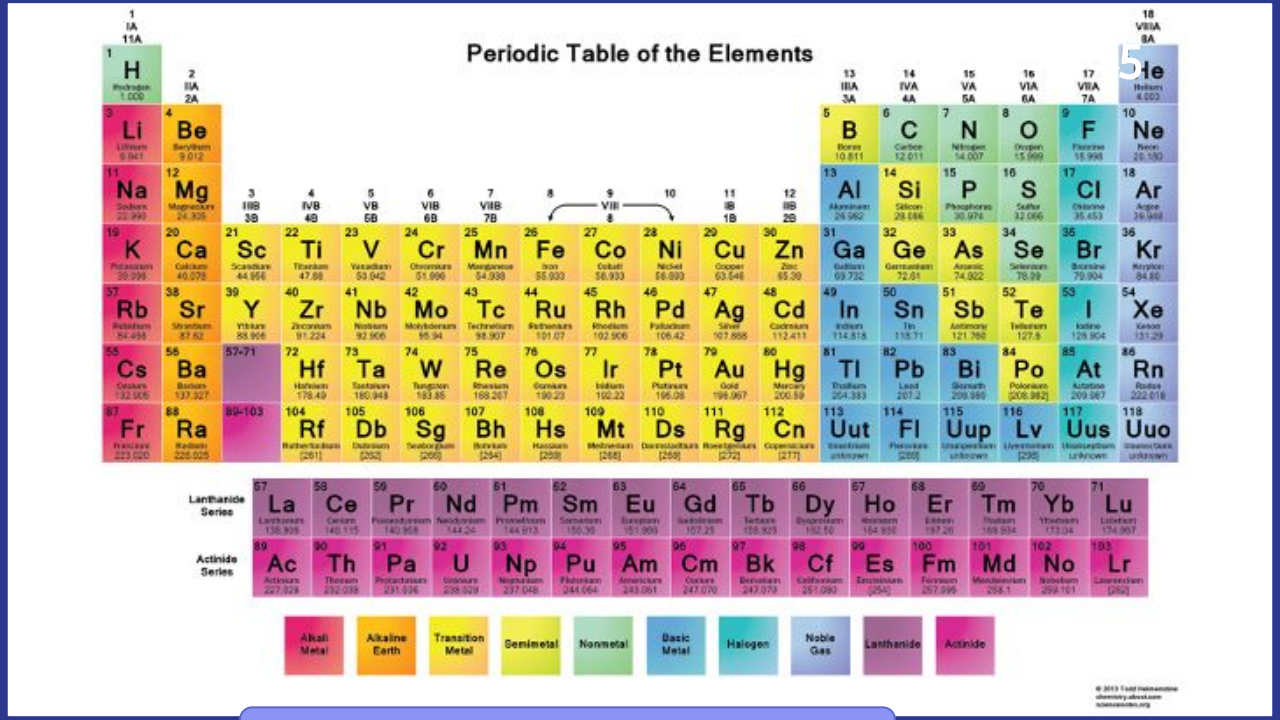
EVENT CONCEPTS – Grades 5 ONLY

Additional topics for 5th Grade Only

- Chemical reactions
- Ions (cations and anions) and Isotopes
- Chemical Bonding (ionic vs. covalent)
- Drawing a Bohr Model
- Periodic Trends:
  - Atomic Radius Trends
  - Metallic Character Trends
- Iodine Test

The study guide outlines the concepts and the level of comprehension expected.

Periodic Tables



https://wesoscience.org/events/

STUDY GUIDE

- The study guide is posted on the WESO website under events.
- Provides information regarding the level of comprehension expected.
- Identifies differences in required topics between the grades.
- They contain sample questions.
- The study guide is meant for coaches not students!

Basic Chemistry Lab Skills

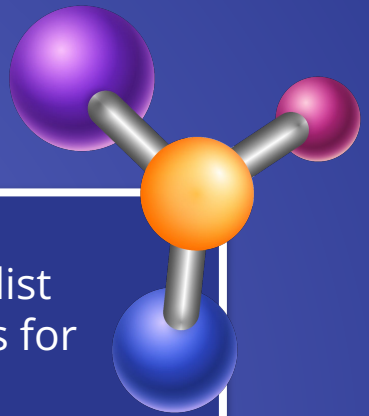
- Use of the metric system: liquids, weight
- Identification and appropriate use of glassware and all components of the Potions Kit provided to the school
- Weigh out powders using electronic balance.
- Measure liquid volumes using graduated cylinders.
- Pour liquids into narrow-mouthed containers.
- Use a pipet/dropper to measure and transfer small amounts of liquid.
- Filter solutions using funnel and paper filters.
- Record observations of powders by examining their physical or chemical properties.
- Record observations of liquids by examining their physical or chemical properties

See the detailed event descriptions for more detail and the additional skills required for grades 4&5

SAFETY RULES

- Do not experiment on your own – always have an adult nearby.
- Read and follow all directions for your activity and use materials carefully.
- Read all warning labels on all materials being used.
- Wear protective clothing (lab coats, long pants, close toed shoes, gloves, and safety goggles/glasses).
- Long hair must be pulled back.
- When finished, clean up and dispose of all materials properly.
- Wash your hands after the activity.
- Never taste or directly smell any reagents.
- Keep materials away from your eyes.
- Never use any lab containers for food storage.
- Never eat or drink while conducting an experiment.
- Never play around/near chemicals.

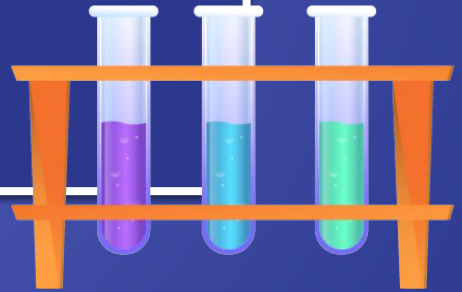
ADDITIONAL RESOURCES



- The detailed event description and study guide list many websites that will serve as good resources for content and activities.
- There are many additional resources online.
- Make sure you screen websites etc. to make sure the information does not go beyond the required curriculum for this event.

EVENT MATERIALS DISTRIBUTED BY WESO

- All schools have been provided with a Potions kit. Please contact your school's head coach in order to locate it.
- Full contents of the kit are listed in the event description.
- Some consumables are being replenished this year and will been given to your school's head coach.
- All necessary supplies will be provided by WESO for the competition day.
- The school is responsible for providing a balance for their coaching sessions.



GENERAL COACHING ADVICE

- Focus on the big picture.
- Keep it basic (We are not asking for the level of rigor required in a medical or research environment).
- Do not over coach your team.
- Do not answer questions with more information than requested.
- Focus on teamwork and problem solving.
- If you have a team composed of several strong willed individuals, assign a team leader.
- Make sure they support each other.
- Most importantly, make it fun!

COACHING THE EXPERIMENTAL SECTION

- Do as many hands-on activities that relate to the chemistry topics as possible.
- Give them step-by-step instructions and make sure they read them thoroughly before they start.
- Make sure your 2 students can work as a team and that they have a plan before they start.
- They will not be given additional supplies or reagents if they make a mistake.

SUGGESTIONS

HELIUM BALLOON

- States of matter
- Elements (He)
- Volume

CAN OF SODA

- Solutions
- Physical vs chemical change

MAKE KOOLAID

- Solutions
- Freeze it (states of matter and conservation of matter

Clean Water Act

- Filter muddy water through sand

Questions after tonight?

New for 2025!

WESO Discord Server

- Every WESO event will have its own channel
- Join the WESO server to submit your questions in the event chat
- Event supervisors or WESO board members will monitor the discussion and answer questions
- Event coaches can use the chat to exchange coaching ideas
- Go to wesoscience.org/events/ for details on how to join the WESO server and guidelines for its use

Discord

QUESTIONS NOW?

- Please submit your questions now using the Google form that was shared with you in the chat.
- We will answer live and post all questions and written answers to the website following the meeting.

Thank you for serving as an event coach and helping us bring back WESO to our community!