

# Unit 3- Lesson 5

Chemistry 0

March 2021, L. Tracey Gao



## Last week's homework

1. Accidents often result from:
  - A. an indifferent attitude
  - B. failure to follow instructions
  - C. making mistakes
  - D. failure to use common sense
  - E. all of the above



## Last week's homework

2. General guidelines for preventing accidents include:
  - A. never play tricks or indulge in horseplay in the chemical laboratory
  - B. follow all safety instructions carefully
  - C. become familiar with the hazards of the chemicals to be used
  - D. know where the safety equipment is
  - E. become familiar with the hazards of equipment to be used
  - F. all of the above



## Last week's homework

3. Cleaning glassware can be a safety issue
  - a) when using soap and water
  - b) when broken glassware is present
  - c) when using strong oxidants
  - d) always



## Last week's homework

4. Whose responsibility is it to be aware of chemical hazards?
  - a) the student, but only after being informed by a teacher
  - b) only the teacher
  - c) anyone involved in work in a laboratory

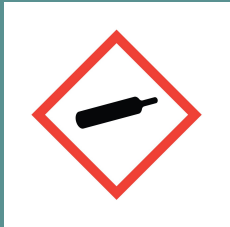


## Last week's homework

5. What does SDS stand for?
  - a) Safety and Data Sheets
  - b) Security and Data Sheets
  - c) Safety and Density Sheets
  - d) Safety and Dada Sheets

## Last week's homework

6. What do these symbols stand for?





# Chemistry in Middle School Science Competitions

- **OBJECTIVES:**
  - Stimulate young people to achieve excellence in chemistry
  - Encourage students learning in chemistry for their intellectual development
  - Motivate students and inspire them to love STEM



# Chemistry in Middle School Science Competitions



**You Be The Chemist Challenge® is a collaborative, multilevel student science competition that celebrates the science of chemistry and elevates STEM careers. 5th-8th grade students are eligible to compete in teams of four (4). All students must be from the same school/organization.**

<https://www.chemed.org/programs/challenge/>

## Challenge Question Examples

- Peter buys a bottle of milk and a bottle of honey as described in the table below. Which statement is true of the mass of the milk that Peter bought?

Drink	Density	Carton volume
Milk	1.0 kg/L	2.0 L
Honey	1.4 kg/L	1.0 L

- A. It is two times the mass of the honey that he bought
- B. It is 0.6 kg more than the mass of the honey that he bought
- C. It is half the mass of the honey that he bought
- D. It is 0.4 kg less than the mass of the honey that he bought



## Challenge Question Examples

- Lotions are often stored in glass bottles to protect them from UV light. A cosmetic chemist is testing what color glass best protects a lotion. What should be his control group?
  - A. Lotion in a clear glass bottle
  - B. Lotion in a plastic bottle
  - C. Water in a clear glass bottle
  - D. Water in a plastic bottle

# Chemistry in Middle School Science Competitions



<https://nationalsciencebee.com/>

**The National Science Bee now consists of Varsity, Junior Varsity, Middle School, and Elementary School Divisions. There are Regional Qualifying, Regional Finals and National Championships. It is a science-themed, buzzer-based academic quiz competition for individual students from Elementary School through High School.**



## Challenge Question Examples

- Which element has atomic number 2 and is thus the second lightest element by atomic mass?
  - A) Iron
  - B) Helium
  - C) Uranium
  - D) Gold



# Challenge Question Examples

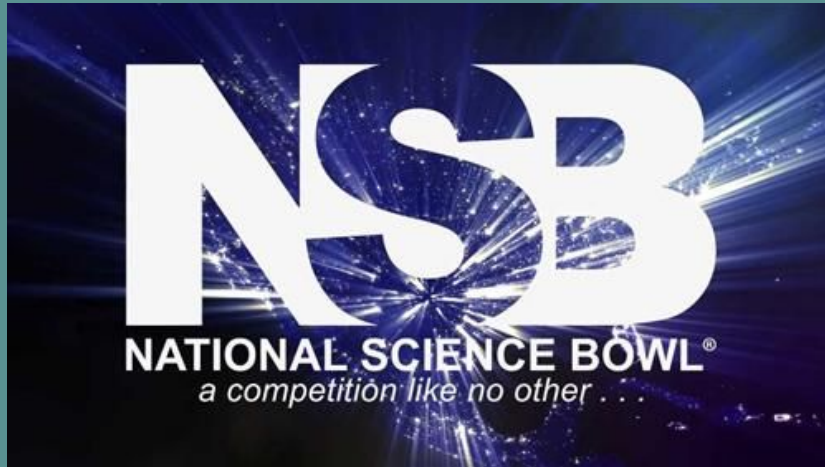
- Which of these elements is a liquid at room temperature?
  - A) Mercury
  - B) Silver
  - C) Nitrogen
  - D) Carbon



# Challenge Question Examples

- Different forms of the same element which differ in their number of neutrons are called what?
  - A) Ions
  - B) Isotopes
  - C) Protons
  - D) Quarks

# Chemistry in Middle School Science Competitions



<https://science.osti.gov/wdts/nsb>

**National Science Bowl® (NSB) is a highly competitive science education and academic event among teams of high school and middle school students who compete in a fast-paced verbal forum to solve technical problems and answer questions in all branches of science and math. Each team is composed of four students, one alternate student, and a coach. Regional and national events encourage student involvement in math and science activities of importance to the Department of Energy and the Nation.**





# Challenge Question Examples

- What group of elements have a shiny luster and are good conductors of heat and electricity?
- Identify all of the following three statements that are true of matter:
  - 1) Atoms contain mostly empty space;
  - 2) All atoms must contain at least one neutron;
  - 3) Two atoms of the same element may contain different numbers of neutrons



## Challenge Question Examples

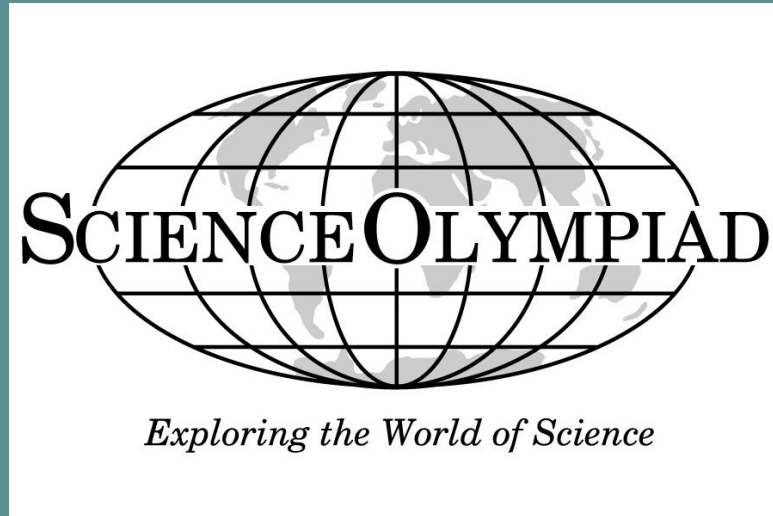
- Which of the following explains the size of a chloride ion compared to that of a chlorine atom?
  - A) Chloride ion is smaller because it has fewer electrons
  - B) Chloride ion is smaller because it has more electrons
  - C) Chloride ion is larger because it has fewer electrons
  - D) Chloride ion is larger because it has more electrons



# Challenge Question Examples

- Which of the following is a mixture?
  - A) Pure gold
  - B) Distilled water
  - C) Carbon dioxide
  - D) Air

# Chemistry in Middle School Science Competitions



Chem Lab  
Forensic Science

<https://www.soinc.org/>