**Solutions Chapter 16**

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**See** [**https://www.learningctronline.com/courses**](https://www.learningctronline.com/courses) **for Materials and Resources.**

**Topics:**

1. Solutions

**Objectives:**

1. Define & calculate concentration in terms of mass, volume, & molarity, and molality.
2. Describe the relationship of the molality of a solute in solution and the solution’s depressed freezing point or elevated boiling point. Calculate freezing point depression & boiling point elevation.
3. *Describe how the structure of water accounts for its polarity.*
4. *Explain why water has unique properties including high surface tension, high boiling point, high specific heat, and peculiar density as a solid.*
5. *Describe the unique role of water as the “universal solvent”.*
6. *Identify factors affecting solubility and the rate at which a substances dissolve.*
7. *Define solubility and differentiate between unsaturated, saturated and supersaturated solutions.*

TAKE NOTE

1. Notes / Study Guide
2. Homework (Text or Alternate Worksheets)
3. Lab Colligative Properties Simulation
4. Lab: Colligative Properties (Ice Cream!)
5. Chapter 15-16 Test
6. Class Song: Know the Lord. He is the Light! (At Last You’ll See the Light)
7. Week 24 Devotional (<https://www.learningctronline.com/devotional>)

**Text**: Chapter 16: Solutions pp. 528-539; 542-544

Read the assigned pages in the text. Skip the omitted pages.

**Class Notes: PowerPoint or PDF**

**Notes/Study Guide:** Fill in the Chapter 16 worksheet to understand the class notes.

**Homework**: TEXT

(1) Answer the KEYED **"Lesson Check"** questions at the end of each of the chapter.

(2) Answer the **"Sample problems"** found in the "Sample Problem" boxes throughout the chapter. An answer KEY is provided for you to use to self-correct your homework problems.

* Put your answers into complete thoughts in a Word document. Do NOT just put the answer, but write a phrase or sentence that you can study from for your tests. Save your work in a WORD document and SAVE into your HOMEWORK folder in the Chemistry folder on the desktop.
* Assignments will be “spot checked” during class or submitted via email.

**Alternate Homework**:

1. Solubility of Solids Graph (last week)
2. Molarity & Dilutions
3. Molality

HONORS (research a practical application for Solutions / Colligative Properties) … [no less than 1 hour, no more than 2 hours]

**Lab**: Colligative Properties Simulation

* Perform the **"**Colligative Properties Simulation**"** experiment using the **Video** and worksheet.

[Colligative Properties Simulations](http://screencast-o-matic.com/watch/cbeYD16CUP) (3:38)

* Answers are provided at the end of the document for guidance. Do NOT copy and paste these answers, but write using your own words.
* Save the document into your LAB folder in the Chemistry folder on your desktop.

**Lab**: Colligative Properties (ICE CREAM)

Perform the **"**Colligative Properties Ice Cream**"** experiment using the worksheet.

ENJOY!

**TEST:** Water & Solutions

1) the academic integrity policy

* Tests must be completed **WITHOUT** referring to books, notes, the internet, people, or any outside resources.
* Students **MAY** use the approved Periodic Tables, approved Reference Tables, or approved equation (formula) sheet (provided by the teacher) along with calculators and scratch paper.
* A guardian should be proctoring the test. Proctoring means to monitor the following:

2) The test is composed of 20 multiple choice questions and some written problems.

* The **multiple-choice test must be taken "in one sitting"**, meaning that once you start the test, you must complete it without interruption. (40 minutes)
* Take a short break (5-10 minutes)
* The **written portion of the test must be taken "in one sitting"**, meaning that once you start the test, you must complete it without interruption. (30 minutes)

3) There is a **70-minute time limit** on this test. Please have the proctor write the time taken at the top of your answer sheet with their signature or initials.

4) Proctors should NOT be reading the test or engaging students during the test.

5) Do NOT use RED font. Black font is best.

Supplemental Resources (Optional)

1. Salts & Solubility Simulation (PHET) [Salts & Solubility (PHET simulation)](http://somup.com/cbeooEROk) (7:49)
2. Vocabulary Crossword (Water & Solutions)
3. Chapter 15 Study Guide Pearson
4. Chapter 16 Study Guide Pearson

[Colligative Properties: FP Depression & BP Elevation](http://screencast-o-matic.com/watch/cberbh65pT) (4:17)

[Pure Heart & Good Conscience 2 Timothy 1:5; Speak to Me, Lord](http://somup.com/cYhFFHjyH1) (3:09)