

Solutions and Mechanical Mixtures

5E Lesson

The 5E model is a scientifically proven method to improve student engagement and learning in your classroom

- ✓ Engagement
- ✓ Exploration
- ✓ Explanation
- ✓ Elaborate
- ✓ Evaluate



Complete Teacher Instructions

Solutions and Mechanical Mixtures 5E Lesson

Grades 7-10	Solutions and Mechanical Mixtures	Ongoing Lesson
Lesson Objective: Students will learn about: - Pure substances and mixtures - Types of mixtures - Homogeneous mixtures - Heterogeneous mixtures - Solutions - Mechanical mixtures - Solubility - Saturation - Separation techniques		
Possible Student Misconceptions: - All solutions are liquids - Homogeneous mixtures and solutions are the same thing - All liquids can mix with all other liquids - Dissolved substances disappear - Solute is absorbed by the solvent - Pure substances can be recognized on visual observation alone - Compounds are mixtures - A mixture and a solution are the same thing		
Materials: 1 device (smartphone, Chromebook, laptop, tablet, or computer) per 3 students - A means of projecting a PowerPoint presentation - Internet access - General classroom objects		
Teacher Notes: - All videos can be accessed directly from the PowerPoint. To retrieve them, click on the video icon while in slideshow mode and it will automatically open for you. If it doesn't, right-click on the image and click Edit Hyperlink or something similar. - I've created a video walkthrough if needed. It can be accessed here - https://youtu.be/oCIKIP9SaDQ - I don't believe in long lessons. If you feel your students are losing their focus, stop the PowerPoint and give them a 5-minute break. If you'd like to see more of my video collection here - http://www.teachwithfergy.com/videos		

Solutions and Mechanical Mixtures – 5E

Engagement Phase Your students will watch the video 'Homemade Rock Candy' and discuss, using the questions found in the file – Engagement – Homemade Rock Candy Video . Teacher Notes: - The video is about two minutes long. - You may want to pause a few times and use the questions to prompt discussion.	Duration: 10 min Teacher Role: Lead and facilitate discussion
Exploration Phase Exploration – Lab Station Activity - In groups of 2-3, have your students complete Exploration – Lab Station Activity. Once they're done, they will submit their passport to you. Teacher Notes: - The complete instructions for my Lab Station activity can be found in the START HERE – Instructions file.	Duration: 20 min Teacher Role: Facilitate and observe
Explanation Phase PowerPoint Lesson - The lesson is found in the folder – Explanation – Lesson - This lesson is designed to be completed over one day - There are multiple embedded videos and plenty of opportunity to engage, interact and check for your students' understanding throughout the lesson - The lesson covers the following topics: - Pure Substances and Mixtures - Types of Mixtures - Homogeneous vs Heterogeneous - Homogeneous Mixtures - Solutions - Solubility - Saturation - Heterogeneous Mixtures - Mechanical Mixtures - Separating Mixtures Teacher Notes: - All videos can be accessed directly from the PowerPoint. To retrieve them, click on the video icon while in slideshow mode and it will automatically open for you. If they don't open, right-click the image and select Edit Hyperlink or something similar.	Duration: 40 min Teacher Role: Facilitate and observe

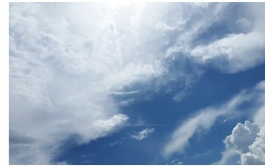
- I've created a video walkthrough if needed. It can be accessed here - https://youtu.be/oCIKIP9SaDQ - I have also enclosed a .PDF version of both the teacher and student versions. - I have created two versions of the lesson: one for upper middle school to high school students, and a simpler version for middle schoolers or older students with lower developed learning levels. Choose the version you think best fits your students.	
Elaborate Phase Elaborate – Scavenger Hunt Your students will complete – Elaborate – Scavenger Hunt . This activity will require your students to move beyond what was covered directly in the lesson and allow them to further develop their understanding. Teacher Notes: - Students will work individually or in small groups - Students will need one device per group	Duration: 1 hour Teacher Role – Facilitate learning and keep students focused Goal ☐ Students use their newly obtained knowledge to propose solutions and extend their learning to new situations
Evaluate Phase Quiz Have your students complete - Evaluate – Solutions and Mechanical Mixtures Quiz Teacher Notes: - It's sometimes best to have the students peer evaluate - Placing students in small groups and having them exchange papers to mark will accomplish two things 1) Provide immediate feedback on the questions they just completed 2) Significantly reduce your marking time - Peer evaluation is not needed, only suggested when appropriate	Duration: 30 min Teacher Role – Distribute and collect evaluation Goal ☐ Students are given the opportunity to demonstrate their understanding and evaluate their own progress

Each phase is clearly described

A Complete Lesson

Homogeneous Mixtures

- Uniform
- Same properties throughout
- Cannot see individual components
- Examples
 - Olive oil
 - Honey
 - Air

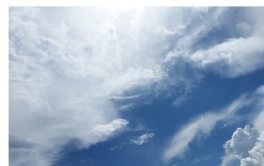


← Make sure your students are on track

Student copies with blanks
Videos embedded right into
your slideshow

Homogeneous Mixtures

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Separating Mixtures



- Crystallization
 - Causing solute to crystallize out of solution
 - Cooling so that solute solidifies
 - Adding seed substance onto which solute can aggregate



Interactive and Engaging Activities

Device-Based Scavenger Hunt Solutions and Mechanical Mixtures



Includes

- 5 Unique Locations
- Online form submission
- Answer Key

Works on all smartphones, tablets, Chromebooks, and laptops

- **100% Digital**
- Simulations
- Quizzes
- Videos
- Games
- and more



Solutions and Mechanical Mixtures Lab Station Activity



7 Lab Station Activities to get your kids out of their seats and engaged in their learning

Get away from tired practices and unengaged students



Provide a Scientifically-Proven means of instruction



Incorporate Technology and Increase Collaboration

