

PHYSICAL AND CHEMICAL CHANGE ACTIVITY pdf

1: Lesson Chemical and Physical Changes Lab Stations | BetterLesson

This is a fun partner activity that I use as part of my Chemistry unit to get students thinking about the differences between physical and chemical changes. Each pair of students is given a set of cards with images and descriptions of either a physical change or a chemical change.

Macroscopic patterns are related to the nature of microscopic and atomic-level structure. Introduction and Connection to the NGSS and Common Core In this lesson, students go through a series of 12 quick lab stations in order to practice identifying reactions as chemical or physical changes. At each lab station, students not only identify the signs of a chemical change, but they also read reactant and product descriptions in order to identify changes in chemical and physical properties that occurred. Each station is quick, fun, and very specific to to standard MS-PS! Science and Engineering Practices: When students look for patterns in data to identify the signs of a chemical change based on their qualitative observations, they do just that! At each lab station, students use patterns in evidence to identify each reaction as chemical or physical. Students thus realize that patterns can be used to predict phenomena. Patterns Connecting to the Essential Question: What are you supposed to learn today? And, what evidence can show how the physical and chemical properties of the substances change? Explain to students that we will again be working with Skill CH. Have students turn to their unit plans and silently read the skill. After reading the skill, students rank their current level of mastery on a scale of 1 to 4 4 being mastery. Students in my room have already assessed themselves in the lesson prior to this; this would be an opportunity for the student to change their number if they felt their level of mastery had increased after the previous lesson. In my classroom, students frequently self-assess their level of understanding on each skill in the unit as we go. As you can see from the image below, this student ranks has continually updated his level of mastery on each skill as his learning has developed. Students in my class have already had an introduction to the differences between chemical and physical reactions. My students have already worked through the Skill CH. For a look at all the lessons that have led my students to this point and where we go from here check out the lessons in these units: Molecular Arrangement and Phase Changes: Focuses on Skills 1 - 4 of the Chemistry Unit Plan This unit is designed to answer the Essential Question, "How do particles combine into new substances? What evidence can show how the physical and chemical properties of the substances change? It particularly focuses on types of matter, physical properties, phase changes, and factors that affect physical properties. It stresses group discussion, discourse and utilizing text references when engaging in argument. Students utilize reading, writing, and speaking strategies in order to develop scientific literacy. Chemical Properties and Reactions: Focuses on Skills 4 - 6 of the Chemistry Unit Plan. This unit is also designed to answer the Essential Question, "How do particles combine into new substances? This unit focuses on chemical properties and chemical reactions. Students analyze evidence and property changes that allow them to distinguish between chemical and physical reactions. In addition, students investigate the Law of Conservation of Mass as they look at how bonds are broken and formed in chemical reactions. This unit is full of hands on labs and station rotations that will engage any middle school student in chemistry! Chemical reactions result in a change of properties! Let the students follow them. In the previous two lessons Chemical Reactions Un-Notes and Chemical Physical Group Challenge , students have been developing an understanding of the difference between a chemical and physical reaction. Before beginning the lab stations, review some of the important concepts with your students. What is the biggest different between a chemical and physical reaction? Students should respond with the idea that in a chemical reaction something new is produced. Bonds are broken and formed creating something new. However, a physical change does not produce a new substance. What are some pieces of evidence or signs that a chemical reaction may be occurring? Students should identify color change, temperature change, pH change, gas production and solid formation or precipitate. What is meant by "solid formation" or a "precipitate"? Students should identify that a precipitate is formed when two solutions are combined producing a new solid. What occurs to the properties of the reactants and products during a chemical reaction? It is important that students connect that the products in a chemical reaction will have new chemical and physical properties than the reactants. Some students think

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that the products will simply be a "mix" of the original properties rather than realizing the properties of the products are independent of the properties of the reactants. What occurs to the properties of the reactants in a physical reaction? Students should identify that the physical properties of the substances change during a physical reaction while the chemical properties do not change. Some students get the idea that only chemical reactions can change the properties of a substance; however, it is important that students realize that physical reactions change the properties of substances as well. After reviewing, talk through with the students how to complete the chart as they complete the lab stations. Take them through the steps they will complete at each lab station. Student Procedure for Each Lab Station: You will have 5 minutes to work through each station. A timer will be projected so that you can watch your time. You must be efficient! Honestly, for the first 2 lab rotations, the students are going to go over the allotted 5 minutes. Having the timer projected will keep them focused, though. After they get the routine, stations will move at 5 minutes per station. It is imperative that you read the procedures carefully at each lab station. Each station has a sign with the procedure along with a description of the properties of the substances involved in the reaction. Have students look at their Reactant and Product Property Description page and let them note that these descriptions are also included there. Before completing the procedure, identify 2 physical and 2 chemical properties noted in the property description page. I usually talk them through the first row because this can be challenging for middle school students. I have them read the description for Station 1 which states: Crackers are brown substances that crumbled when pressure is applied to them. Their surface is bumpy. Crackers are made up of lots of different chemicals that are made with ionic and covalent bonds. These chemicals break down when surrounded by stomach acid. I then have the students look in the right hand column at the list of chemical and physical properties. I ask them which of these properties were described here. Students may offer things such as color, texture, reactivity with acid and ionic bonds. Ask them to write 2 physical properties that were described in the first column and 2 chemical properties in the 2nd column. Emphasize that they cannot choose "random" properties at each station. They must pull the properties from the text! Read and follow the procedure and pay attention to any safety precautions listed. Make careful observations during the reaction. In the third column, determine whether you feel the reaction you observed was a chemical reaction, physical reaction, or both. In the last column "Evidence of a Chemical Change", if you choose physical reaction, there is no need to write anything. However, if the reaction is chemical or "both", you must include the evidence that lead you to that conclusion. The 5 signs of a chemical change are also included in the right column of the lab sheet. Remember to list all of the evidence you can! For some stations there will be three or four pieces of evidence that indicate it is a chemical reaction. It is important that you include them all! Clean up your station. Do not rotate until indicated by the teacher. Have students work in groups of 2 - 4. Assign each group a lab station to begin with. Put the timer on your projector or write the time on the board that students will be rotating to the next lab station.

2: 5 Hands-On Experiments to Teach Kids About Chemical Reactions | Owlcation

One is a physical change and the other is a chemical change." Without telling them which change took place in each scenario, I move on by providing them information about each kind. At the end of defining each type of change, I come back to our engage activity where students apply this new information to determine which paper went through a.

They will observe cream changing into butter, frozen concentrated juice changing from a liquid and the chemical change of cooking pancakes. They will become engaged and explore changes in matter lab stations. They will elaborate with looking at a variety of menus and producing their own Chemical Change Cafe.

Learning Goals Learning Goals This activity is designed for students to investigate, make observations and describe chemical and physical changes. The student will observe that heating and agitation of matter can cause chemical change. Students will understand chemical and physical change is part of everyday life.

Context for Use Context This activity will take at least 4 class periods. I will be teaching this activity to 2nd and 3rd graders. An electric frying pan will be needed along with pancake batter, cream to make into butter, jars, and the book *Pancakes, Pancakes!* You will need to talk about safety issues with the cream in jars. What to do to prevent them from breaking and if they break what to do? Safety with a hot griddle in the room needs to be addressed with the students. This activity will take place during our Unit on Matter. It can easily be tied in with our language arts curriculum.

General Chemistry Grade Level: Intermediate

Description and Teaching Materials

Day 1: Give each student a piece of paper and then ask students, "What can you do to change this piece of paper? Ask, "Is it still paper? What could I do? Strike a match, light the paper on fire, and let the students watch it burn. After it finished burning, ask, "Is it still paper? Station 7 graduated cylinder, clear plastic cups, cup of vinegar, and cup of milk

Changes that occurred in the stations were: Blowing up and popping a balloon; Station 4: Forming clay into different shapes

Chemical changes Station 2: Vinegar and baking soda reaction gas bubbles produced ; Station 3: Souring milk change in odor ; Station 5: Rusted steel wool change in color ; Station 6: Cream of tartar and water reaction change in temperature ; Station 7: Vinegar and milk reaction precipitate formed

Day 2: Explain differences between physical and chemical changes read from the article. Use Fryer model, Definition of chemical change, characteristics of chemical change, examples and non-examples of chemical change, Read *Pancakes, Pancakes* aloud. Read the book twice, once to enjoy and the next time to listen to examples of chemical and physical changes. Have them raise their hand when they hear an example. Have them tell you what kind of change it is and why. Elaborate with making butter out of cream with the students. Give each student a clean baby food jar and fill it half full with whipping cream, place two clean marbles in the cream. Have students predict what they think will happen. Have them notice any sound changes as the cream gets thicker. Caution them not to shake too hard or the jar may break. They will come up with ideas for their own "Chemical Change Only" menu the next day. Set up an electric griddle for adult use only to make pancakes. Place in groups and provide a box of just add water pancake mix, measuring cup, bowl and spoon or whisk and water and forks to eat the pancakes. On the menus the students will draw pictures of the batter before and after it is cooked and explain why cooking pancakes is a chemical change. Groups will come up to you with their prepared batter and observe changes as you cook the pancakes. Add your homemade butter and a little syrup. Evaluate with new menu ideas for their "Chemical Change Cafe". You can give them this list and they can decide which ones go on their menu or they can brainstorm ideas with the class or on their own. Examples of new menus ideas would be: Physical change items would be orange juice, strawberry smoothie, trail mix, orange-suckles, and fruit salad. You can list all these on a page and they can decide which ones would go on their menu. If they wanted to come up with any of their own they could as well. When the students smell items at the lab stations, demonstrate for students the safe way to smell any chemical by "wafting". Is turning cream into butter a chemical or physical change? Standards Standards Match 4.

3: Lesson Day 1 Physical Vs Chemical Changes | BetterLesson

These classroom activities are designed to complement the Physical and Chemical Changes topic on BrainPOP Jr. Paper Give each student one or two pieces of scrap paper, newsprint, or pages from old magazines.

Ask them for any observations. Then have them stir while slowly pouring in the borax solution this is a good 2 person job. Have them keep stirring until the solid forms completely. Ask for their observations. Did a chemical change occur? How do they know? The last thing to look for when trying to tell the difference between and chemical and physical reaction is the occurrence of a color change. Tell them you are going to add a different liquid to each of the 3 tubes of colored water and they have to decide if a chemical change happens or not. Have them take one dropper full of the vinegar and add it to one of the colored tubes. Cap and shake, or stir, the tube. Allow them to make any observations before repeating this process with the remaining 2 liquids and tubes. The bleach will produce a change in color indicating that a chemical change has occurred. And finally, here is an activity that can either be done as a demonstration or done by the kids on a smaller scale. It also shows an example of a reaction that is both exothermic gives off heat and produces a gas. Pour the peroxide into the bottles Have the kids place a few drops of food coloring into the bottles with the peroxide. Add a squirt of dishsoap and swirl the bottle to mix. In the cup, mix the water and yeast and stir for a few seconds to combine. Then have them pour the yeast into the bottle with the peroxide and watch what happens! Once the reaction has completed, they can feel the foam and observe the heat that was created. What did they observe? What are the clues that a chemical change occurred? And sometimes even higher online. The resulting reaction will be much bigger and more impressive, but should be done completely by an adult.

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4: Chapter Overview | Inquiry in Action

This physical and chemical changes activity is ridiculously easy and cheap but also engaging. All you need is a bag of pumpkin shaped marshmallows (to go with the fall theme, regular marshmallows would work if you do this at any other time.).

Students suggest to bend it, fold it, rip it, and shred it. As they share these suggestions, I carry out each idea so they can visually see the change that has taken place. Even though I changed the paper in a variety of ways, am I still left with paper? And it could be somewhat reversible. One idea is wetting it and another idea is burning it. Again, I carry out their idea; I wet the paper and place it next to the other pieces of paper I changed moments ago. Then I move on with the next idea, burning it. I say, "So, how many of you agree that burning the paper will change it?? Many hands raise and I hear a student say aloud, "are you really going to burn it? I tell them, they are not to do this at home and show them a pan of water that I am using to place the paper in immediately following the task. I light the small paper and let it burn for about 3 seconds and quickly place it in the pan of water. While I wait for it be completely cooled off, I ask the students, "What do you think you are going to see? I safely remove the burned paper from the pan of water. I hold it up and ask: What makes this change different from earlier? Did the shape, size, texture change? What about the color? But what about this burned paper? Can we do that? Why or Why not? Is there something new about this paper? I am leading them into recognizing the burned paper has new substance on it and when a new substance is created as a result of the changes made, it is a chemical change. Explain 15 minutes I explain to them, "we made changes to this paper, however, the changes we made are two different kinds. One is a physical change and the other is a chemical change. At the end of defining each type of change, I come back to our engage activity where students apply this new information to determine which paper went through a physical change and chemical change. Distinguishing Between Physical Change and Chemical Change Once we identify two kinds of changes in matter, physical and chemical, I move onto defining and explaining the differences. I provide them this information before so they are better prepared to identify changes as they investigate different interactions of matter at each station. We reflect on the changes we made to the paper and begin discussing properties to describe the changes made to the paper at the start of the lesson. As I review them, I ask my students to create a foldable in their interactive notebook to define each word. Connecting Vocabulary to Engage Activity After distinguishing these terms, I go back to the papers and ask them to think about the information about each kind of change we have discovered. We apply the information by re-examining the changes to the paper and discussing each term with our new knowledge. Through some discussions, we determine the paper that was bent, folded, ripped, etc. For the burned paper, we determine it went through a chemical change because we created a new substance on the paper which is irreversible. It serves as a reference when they have to conclude if the changes they observe at that station are physical and chemical.

5: Matter: Chemical & Physical

Physical and Chemical Changes Worksheet Name: _____ Fill in the blanks using the word bank: 1. In a chemical change, a new substance _____ formed.

6: Physical Change Activities | Middle School Chemistry Unit

Determine if each is a physical or chemical change.

7: Investigating Changes of State: Chemical and Physical Changes

This differs from a physical change, which is a substance changing physical forms but still retains its original properties. Sometimes when a mixture is made it can be hard for kids to tell if a chemical change has occurred.

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8: Physical and Chemical Changes Sorting Activity – Middle School Science Blog

something looks, but haven't made a new substance, a physical change (P) has occurred. If the substance has been changed into another substance, a chemical change (C) has occurred.

9: Physical and Chemical Changes | Worksheet | www.enganchecubano.com

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