

Part A: Physical vs. Chemical?

1. What is the difference between physical and chemical changes?
2. Lists examples for physical and chemical changes shown in the video.
3. True or False? Physical changes can always be reversed to turn the substances back into their original state.
4. What are signs of a chemical change?
 - A _____ substance is formed
 - May absorb or release _____
 - May change _____, produce an _____, create _____, release _____, or produce _____.
 - Usually cannot be _____
5. Circle all the examples you think are chemical changes.

A. Smashing a piggy bank	F. Ice melting into water
B. Fireworks	G. Cabbage juice mixed with substances to make it change colors
C. Mentos in Diet Coke	H. Sugar dissolving in coffee
D. Cutting your hair	I. Hammering metal to flatten it
E. Sodium with water	

Part B: Rocket Reactions

1. Identify each change below as either physical or chemical.

____ Breaking a tablet into smaller pieces	____ The tablet dissolving in water
____ Ripping the package to get the tablet out	____ The citric acid reacting with the bicarbonate to produce CO ₂ gas
2. What variables would be involved in an Alka Seltzer reaction?

Experiment A: Tablet Size - Complete the experiment following your teacher's directions. Record your data and observations in the table as you complete the experiment.

Trial	Tablet Size	Water (mL)	Reaction Rating ☆☆☆☆☆	Observations
1		25 ml		
2		25 ml		
3		25 ml		
4		25 ml		

Experiment B: Amount of Water - Complete the experiment following your teacher's directions. Record your data and observations in the table as you complete the experiment.

Trial	Tablet Size	Water (mL)	Reaction Rating ☆☆☆☆☆	Observations
1	1/2			
2	1/2			
3	1/2			
4	1/2			

Experiment C: Rocket Challenge – Which combination of tablet size and the amount of water will result in the best reaction (the lid traveling the furthest)?

Make a prediction: Which amount of water will result in the best “reaction”? *I think _____ of water and _____ of a tablet will result in the canister traveling the furthest distance, because: _____*

Results: Complete the experiment following your teacher's directions. Record your data and observations in the chart below.

Trial	Tablet Size	Water (mL)	Reaction Rating ☆☆☆☆☆	Observations
Challenge				

Conclusion

1. What combinations resulted in the highest rating?
2. Was your prediction correct? Why or why not?

Going Further: How would these variables affect the reaction? Take a guess and then develop an experiment to test your hypothesis.

Water temperature – cold vs. hot →

Surface area – whole vs. crushed →

Part C: Your Turn - Working with 2 to 3 of your classmates, explore the schoolyard to find examples of physical and chemical changes. Use your smart phone, tablet, or other device to take pictures or record videos of the changes. Create a video with at least 3 examples for each type of change along with explanations – either written or included as narration. The video should be between 1-2 minutes in length. Share the video with your teacher when you are finished.