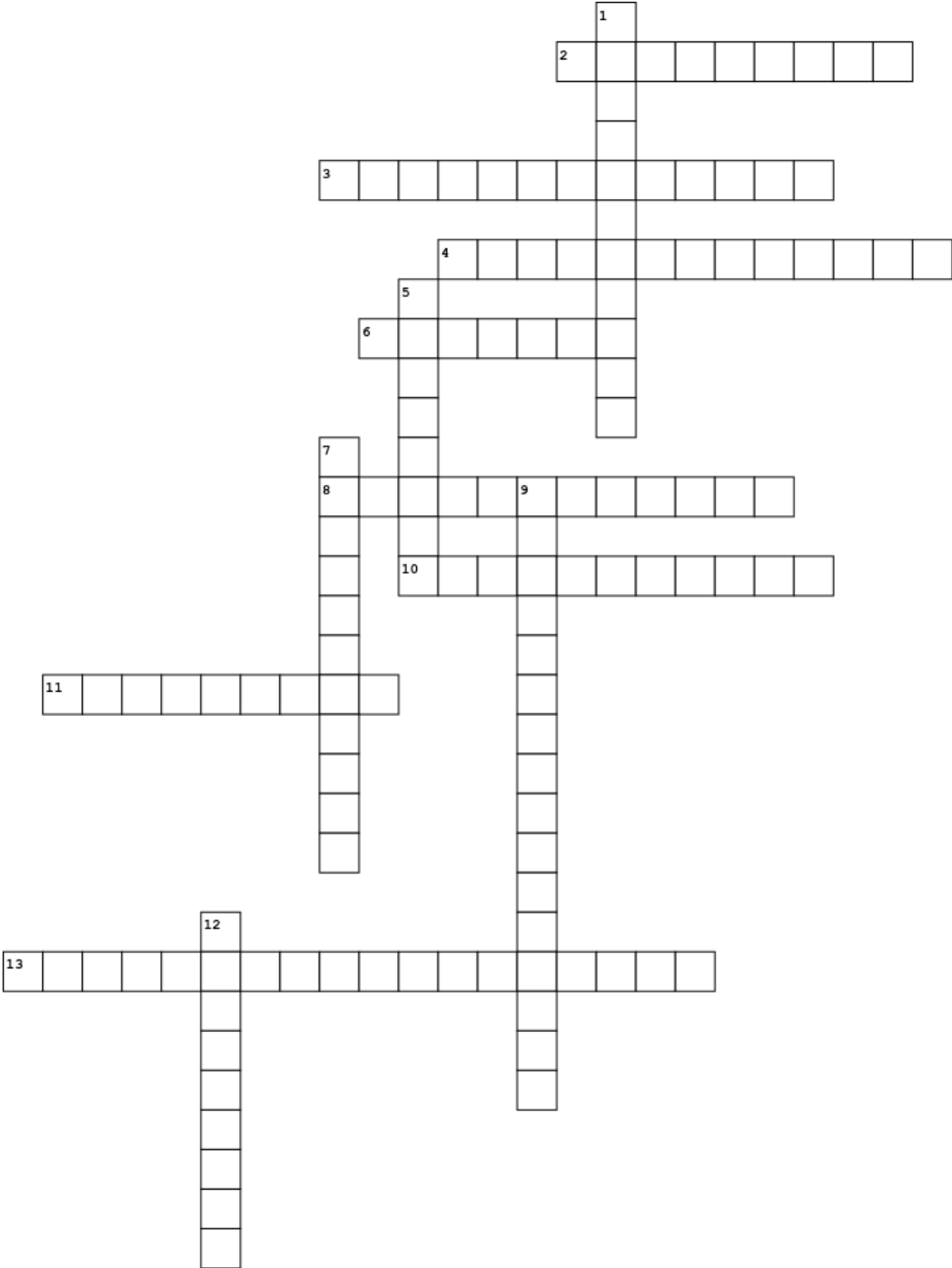


# Synthetic Materials and Natural Resources Lesson Plan

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## Introductory Activity



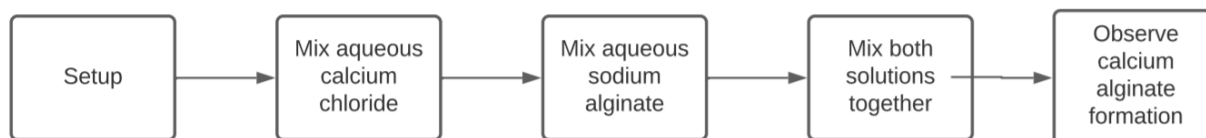
### Across

2. the combination of atoms of elements
3. CO<sub>2</sub>; the compound that enters the atmosphere when fossil fuels are burned
4. the human manipulation and processing of natural resources for economic gain
6. the long-term weather patterns of a given area
8. materials or substances with a finite supply are \_\_\_\_\_
10. A \_\_\_\_\_ object, process, or entity is one that actively reduces or removes waste and major ecological concerns to protect the environment
11. the process of reusing objects or materials for more than one purpose
13. objects and substances created through human synthesis rather than natural processes

### Down

1. result from natural gas in the Earth's crust; major contributor to excess carbon dioxide in the atmosphere when burned for commercial use
5. the smallest and simplest foundation of matter that cannot be decomposed further without complicated chemical processes
7. the living and nonliving components that make up a given geographical area; in a general ecological sense, the natural world around us
9. minerals and materials that occur naturally in nature and can be used for economic gain
12. materials or substances that can be replenished or resupplied in less time than it is being consumed

## General Demonstration Procedure

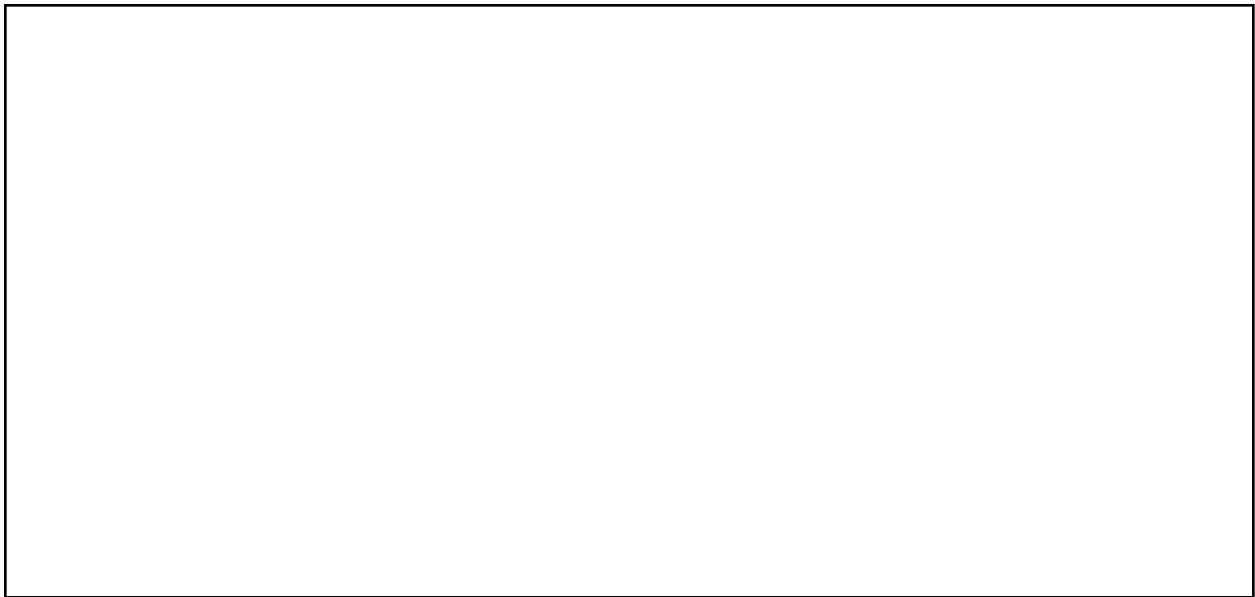


## Data Collection/Observation Notes

	Calcium chloride	Sodium alginate	Calcium alginate
<b>Starting amounts in pure form</b>	How much pure calcium chloride was used?	How much pure sodium alginate was used?	
<b>Starting observations</b>	What does the pure calcium chloride look like? What state is it in?	What does the pure sodium alginate look like? What state is it in?	
<b>Intermediate observations</b>	Record your observations as the calcium chloride becomes an aqueous solution. How long was it mixed for? Did it entirely dissolve?	Record your observations as the sodium alginate becomes an aqueous solution. How long was it mixed for? Did it entirely dissolve?	
<b>Final observations</b>			How quickly does the sodium alginate and calcium chloride react? What happens when they do? What state of matter does it now occupy?

	Calcium chloride	Sodium alginate	Calcium alginate
<b>Starting amounts in pure form</b>			
<b>Starting observations</b>			
<b>Intermediate observations</b>			
<b>Final observations</b>			

**Draw a picture of what the newly-formed calcium alginate looks like:**



### Concept Questions

1. Is calcium chloride a **synthetic** or **natural** material/resource?

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2. Is sodium alginate a **synthetic** or **natural** material/resource?

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3. Is calcium alginate a **synthetic** or **natural** material/resource?

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4. Why is calcium alginate considered a synthetic material?

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5. What happened to the two starting substances as they came together to form a synthetic substance (state change? Was there any bubbling, heating, etc.?)?

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6. Based on question 5, what does this tell us about the process of turning natural resources into synthetic materials?

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