

## Answers with explanations

	Physical Change	Chemical Change	Explanation
1. ice melting	√		This is a physical change because H <sub>2</sub> O is changing from a solid state to a liquid state. The H <sub>2</sub> O molecule remains the same, just in a different state of matter.
2. cutting a pineapple into pieces	√		This is a physical change. The molecules that make up the pineapple are not being changed—just their size is being changed.
3. adding vinegar to baking soda		√	This is a chemical change because a new substance is being produced—the carbon dioxide gas and atoms are being rearranged.
4. a piece of rusting metal		√	This is a chemical change because the iron in the nail is being changed into a new substance: rust.
5. a campfire		√	This is an example of a chemical change because the burning wood is being changed into new substances: smoke and ash.
6. crumbling a piece of paper	√		This is an example of a physical change because the paper molecules are the same. The appearance of the paper is the only thing changing.
7. sour milk		√	This is an example of a chemical change because the atoms of the milk have been rearranged to form a new substance: sour milk. You cannot do anything to the milk to get rid of the sour part.
8. shattering a drinking glass	√		This is an example of a physical change because the actual pieces of glass are not being changed. They are just being broken into smaller pieces.
9. dissolving sugar in water	√		This is a physical change because there is NO new substance being formed. When you mix sugar with water, you simply get sugar water.
10. burning paper		√	This is an example of a chemical change because two new substances are formed: smoke and ash.
11. boiling water	√		This is an example of a physical change because the H <sub>2</sub> O is changing to another state of matter (liquid to gas). No new substance is formed. The molecules of water are just spaced out more.
12. burning a match		√	This is an example of a chemical change. The match head changes into ash and smoke and you cannot use the match again.

## Answers

1. What are the physical properties of the baking soda?

*White, odorless, solid, crystalline solid.*

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2. What are the physical properties of the vinegar?

*Clear liquid, characteristic smell, acidic taste.*

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3. What happened inside the water bottle when you added the baking soda to the vinegar? What did you see in the bottle?

*Foam and bubbles began to appear. The bubbles indicate that a gas is being formed.*

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4. Did anything happen to the balloon? If so, what do you think caused it?

*As the gas formed, it had nowhere to go so it went up and into the balloon, making it inflate.*

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5. What type of change occurred inside the bottle when you added the baking soda to the vinegar?

*A chemical change.*

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6. Fill in the definitions in the vocabulary box below.

<b>Vocabulary</b>	
<b>matter</b>	anything that takes up space and has mass
<b>mass</b>	the amount of stuff in a substance
<b>property</b>	how an object looks, feels, or acts
<b>qualitative</b>	a property of matter that can be observed and generally cannot be measured with a numerical result
<b>quantitative</b>	a property of matter that can be measured numerically
<b>physical change</b>	a physical change is a change in a state of matter or appearance
<b>chemical change</b>	a chemical change is a change that results in a new substance(s) being formed