



UNIT: H02-2 TITLE: The Fire Triangle: Oxygen

TYPE: Student Worksheet

Name:	Class/Period:	Date:
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Presentation: Complete this section of the worksheet as directed during the presentation.

Make a diagram of the fire triangle. Be sure to include labels.

Table 1: Physical & Chemical Changes

Change	Definition	Three examples
Physical		
Chemical		

Table 2: Balanced Chemical Equations for Photosynthesis and Cellular Respiration

Chemical Reaction	Balanced Chemical Equation
Photosynthesis	
Cellular Respiration	

State which scientific principle/law is demonstrated by a balanced chemical equation and then explain your response with complete sentences.

Describe in complete sentences how the chemical equation for cellular respiration could be modified to represent the combustion reaction?

Materials:

- Metal Tray
- 2 votive candles
- Plastic cup
- Stove lighter
- Fireplace matches (long)
- Spoon
- Small beaker
- Needle-nose pliers
- “White powder”
- “Clear liquid”



Procedure:

1. Read the prompts on page 3 to familiarize yourself with observations you should make during each trial. An area for taking notes is provided on page 4.
2. Place one votive candle on the metal tray and light it with the stove lighter. For the remainder of the activity, the fireplace matches will be lighted using this candle.
3. Place the second candle in the red plastic drinking glass.
4. Light a fireplace match from the burning candle on the metal tray and use it to light the candle in the container. This step proves that the candle in the red plastic glass can be lighted. If either candle is hard to light, you may need to scrape some wax from around the wick. Cut the blackened end of the fireplace match off with the needle-nose pliers so that it can be used again and again and again, etc.
5. Blow out the candle in the red plastic glass.
6. Carefully place 2 spoonfuls of the white powder around the base of the candle in the plastic glass.
7. Using a small beaker, pour 40 mL of the clear liquid onto the white powder (not on the candle!). Make every effort to keep the wick from getting “wet.”
8. Relight a fireplace match from the candle on the metal tray, and use it to relight the candle in the plastic cup.

9. You may repeat the experiment and use different techniques to light the candle in the container.
10. After your group has completed all necessary trials and cleaned your group's laboratory station, respond to the prompts on page 3.

1) Describe what the group observed when the liquid was poured onto the powder.

2) Did a chemical reaction occur when the liquid was poured onto the powder? Justify your answer.

3) Describe what you observed when you were relighting the candle in the plastic glass.

4) Describe the techniques you used to light the candle in the plastic glass. Explain how well each technique worked.

5) Use the Fire Triangle to explain your observations.

6) Using only the materials at your lab station, design a CO₂ fire extinguisher that will allow you to put out the votive candle in the metal tray. Test your fire extinguisher. Describe your

fire extinguisher and its effectiveness. Include a diagram of your group's CO₂ fire extinguisher (on page 4 if there is not enough space in this box).

Notes: