

FireSmart™ BC Education Program

 **BRITISH COLUMBIA**
FireSmart™ (Grades 2–3)



Lesson Three

In this lesson students will use critical thinking and fire triangle science to suggest actions to build a safe campfire.



Lesson Question:

What important ideas from fire science can we use to help us build a safe campfire?

Lesson Challenge:

Create a picture that shows at least three actions that can help build a safe campfire.

Big Ideas

- Materials can be changed through physical and chemical processes. (Grade 2 Science)
- Thermal energy can be produced and transferred. (Grade 3 Science)

Suggested Materials

- Campfire Images (for display)
- Campfire Images—Teacher Notes
- Activity Sheet A: How Safe Is the Campfire? (at least two copies for each pair or small group)
- Activity Sheet B: My Safe Campfire Thoughtbook (one copy for each student)
- Fire Triangle (for display)
- Activity Sheet C: Judging Campfire Actions (at least one copy for each pair or small group)



Start the Thinking



1. Display Image 1 from Campfire Images. Alternatively, organize students into pairs or small groups and provide each group a copy of the image.
2. Provide each group with a copy of How Safe Is the Campfire? (Activity Sheet A). Ask groups to decide “How safe is the campfire?” by using details from the image. Draw the scale on the board and show how to rate the campfire by marking an “X” on the line.
3. Invite students to suggest actions that could help the people in the image build a safe fire. Consider recording students’ suggestions for use later in this lesson.
4. Introduce the lesson question and challenge and provide each student with a copy of My Safe Campfire Thoughtbook (Activity Sheet B). Explain that a Thoughtbook is a place to draw or write their ideas that can help answer the lesson question and complete the lesson challenge. Ask students to use words and/or pictures to show what steps and actions can help build a safe campfire. Assure the students that their ideas can be big or small and in words or in pictures, and that they will be able to change and add to their ideas during this lesson.

Grow the Thinking



1. Invite students to think more about fires by posing questions such as the following:
 - How are fires started?
 - What does fire need to burn?
 - How do fires grow or spread?

Note their ideas on the board or, alternatively, students could write ideas on sticky notes and post-and-put them on the board.

2. Display the Fire Triangle or draw a fire triangle on the board or chart paper and explain that fires need all three things to burn.
 - If time permits, consider demonstrating the three parts of the fire triangle using a small candle anchored in modelling clay inside a suitable glass jar with a lid. There are many versions of this demonstration online, but be sure to follow safe protocols and procedures, appropriate for the age and readiness of the students and your school’s and school board’s safety policies and procedures. Alternatively, consider showing students a video recording of the demonstration.
3. Guide students’ attention back to their responses to the questions from the beginning of this section. Ask students to sort their ideas into the corresponding part of the fire triangle that is displayed or on chart paper.



4. Ask students to revisit the image of the campfire from the beginning of the lesson. Prompt them to identify details from the image that would belong with each side of the triangle by posing questions such as the following:
 - What are some things that could be fuel?
 - Where might oxygen come from?
 - What could increase the amount of oxygen that gets to the fire?
 - What are some sources of heat that could start a fire?
5. Invite students to share their ideas with the class. As they do, ask them to suggest what might happen if one side of the fire triangle was removed or taken away. Explain that a fire needs all three sides of the triangle to burn, so taking away any one side of the triangle can help prevent or put out a fire.
6. Invite students to use their thinking to co-construct or share the criteria for safe actions when building a campfire. The criteria for safe actions when building a campfire include:
 - keeping away anything that can catch on fire and burn (fuel).
 - reducing or preventing air from getting to the fire (oxygen).
 - cooling down a fire to put it out (heat).

The criteria for unsafe actions when building a campfire include:

- things that can burn are too close to the fire (fuel).
 - air is allowed to get to the fire (oxygen).
 - materials around the fire are heated to a high temperature (heat).
7. Provide groups with a copy of Judging Campfire Actions (Activity Sheet C). Ask groups to rate the safety of each action using the criteria for safe actions. Invite students to share their ratings and thinking with the class.
 8. Guide groups to revisit Activity Sheet A and their rating of the campfire in Image 1. Ask groups to revisit their rating and suggestions for making the campfire safer: Would they change their rating? Would they change any reasons for their suggestions? Encourage groups to use information about the fire triangle and the criteria to guide their thinking.
 9. Display Images 2 and 3 from Campfire Images. Alternatively, organize students into pairs or small groups, and provide each group with a copy of the image. Provide each group with another copy of Activity Sheet A.
 10. Invite groups to rate the safety of the campfire in each image. Remind them to use the criteria to identify safe and unsafe examples from each image and suggest actions they could take to make the campfire safer.
 11. Invite students to return to their Thoughtbooks and use their learning to review and revise their initial ideas for actions that can help build a safe campfire. Encourage them to use the criteria to guide their thinking.

Reflect on the Thinking



1. To conclude the lesson, invite students to suggest what important ideas from fire science can be used to help us build a safe campfire. Encourage students to use the fire triangle to guide their thinking. Alternatively, show the image of the British Columbia Campfire Regulations and ask students to suggest which important ideas from fire science can be seen in the regulations.

The regulations can be found here:

<https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/wildfire-status/fire-bans-and-restrictions/8092-bcws-campfireregs-poster-2021-update-web.pdf>

2. Ask students to complete the drawings and descriptions of at least three actions that can help build a safe campfire. Remind students to show at least one action from each side of the fire triangle that people can take to build a safe campfire. Some students may find it helpful to start with an image of the fire triangle in the centre of their Thoughtbook page.



Activity Sheet A: How Safe Is the Campfire?

How safe is the campfire in the image?

Image



Very unsafe



Somewhat safe



Very Safe

**Details from image
that support the rating**

**What actions would make
the campfire safer?**

The criteria for safe actions when building a campfire include:

- ✓ keeping away anything that can catch on fire and burn (fuel).
- ✓ reducing or preventing air from getting to the fire (oxygen).
- ✓ cooling down a fire to put it out (heat).

Image handout: Campsite Image 01



Image handout: Campsite Image 02



Image handout - Teacher Notes

The image should include a young person, an adult family member, and various elements commonly found at a campsite randomly placed around the campsite (tent, brush, twigs, log, shovel, bucket of water, wind). Do not include the campfire for the "Start the Thinking" activity.



Image handout - Teacher Notes:

Campsite Image 01

Hazards:

- ✓ Stick (fuel) too close to fire
- ✓ No water bucket or shovel to put out fire



Image handout - Teacher Notes: Campsite Image 01 - Safer Solution

Actions to make safer:

- ✓ **Remove** fuel (stick)
- ✓ **Add** water bucket and shovel within reach



Image handout - Teacher Notes:

Campsite Image 02

Hazards:

- ✓ Bucket too far from fire
- ✓ No shovel
- ✓ Fire too close to trees (adds fuel)
- ✓ Sticks and logs too close to trees (adds fuel)
- ✓ No adult to carry out actions
- ✓ No rock barrier around fire (fuel)

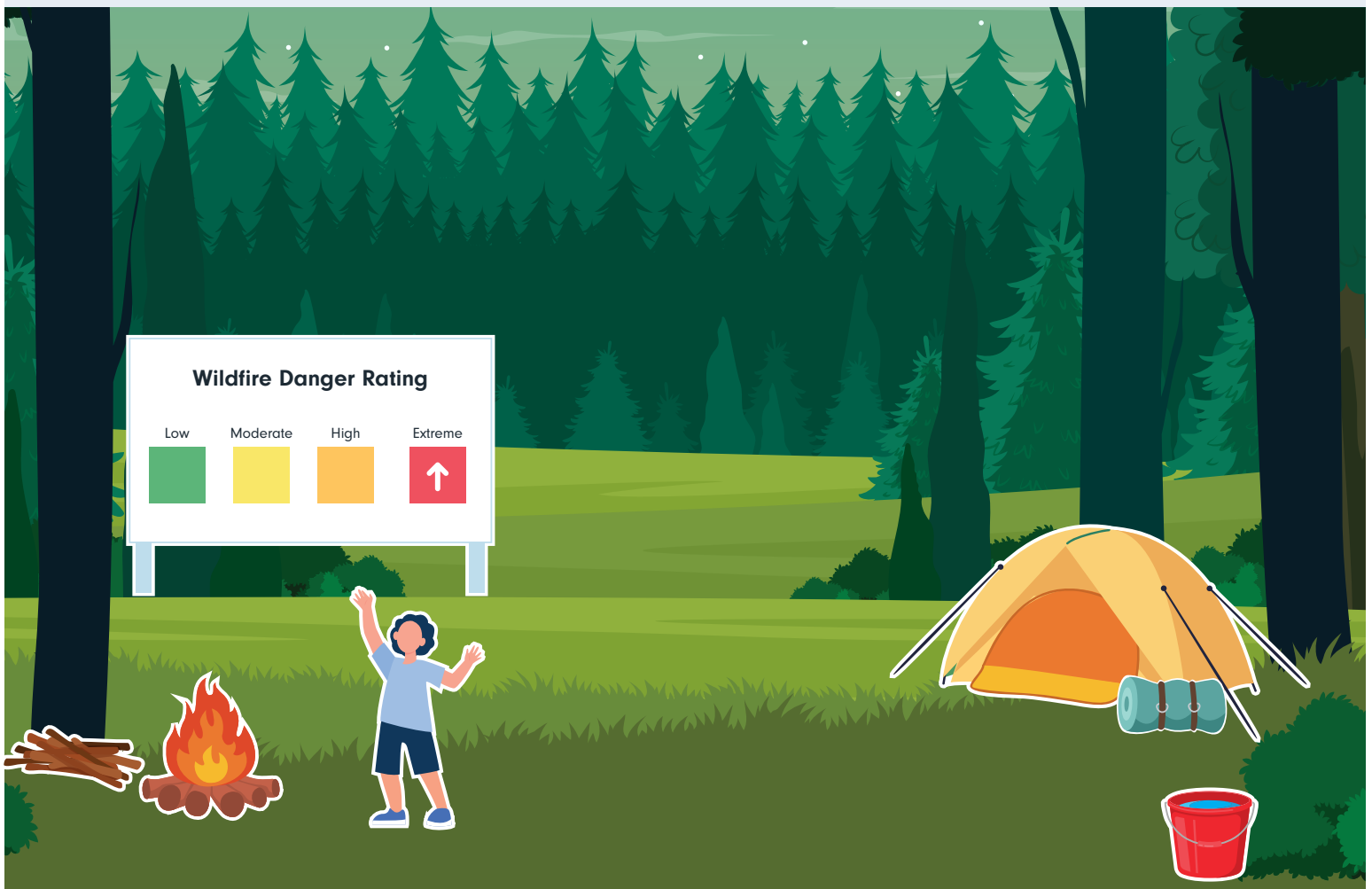
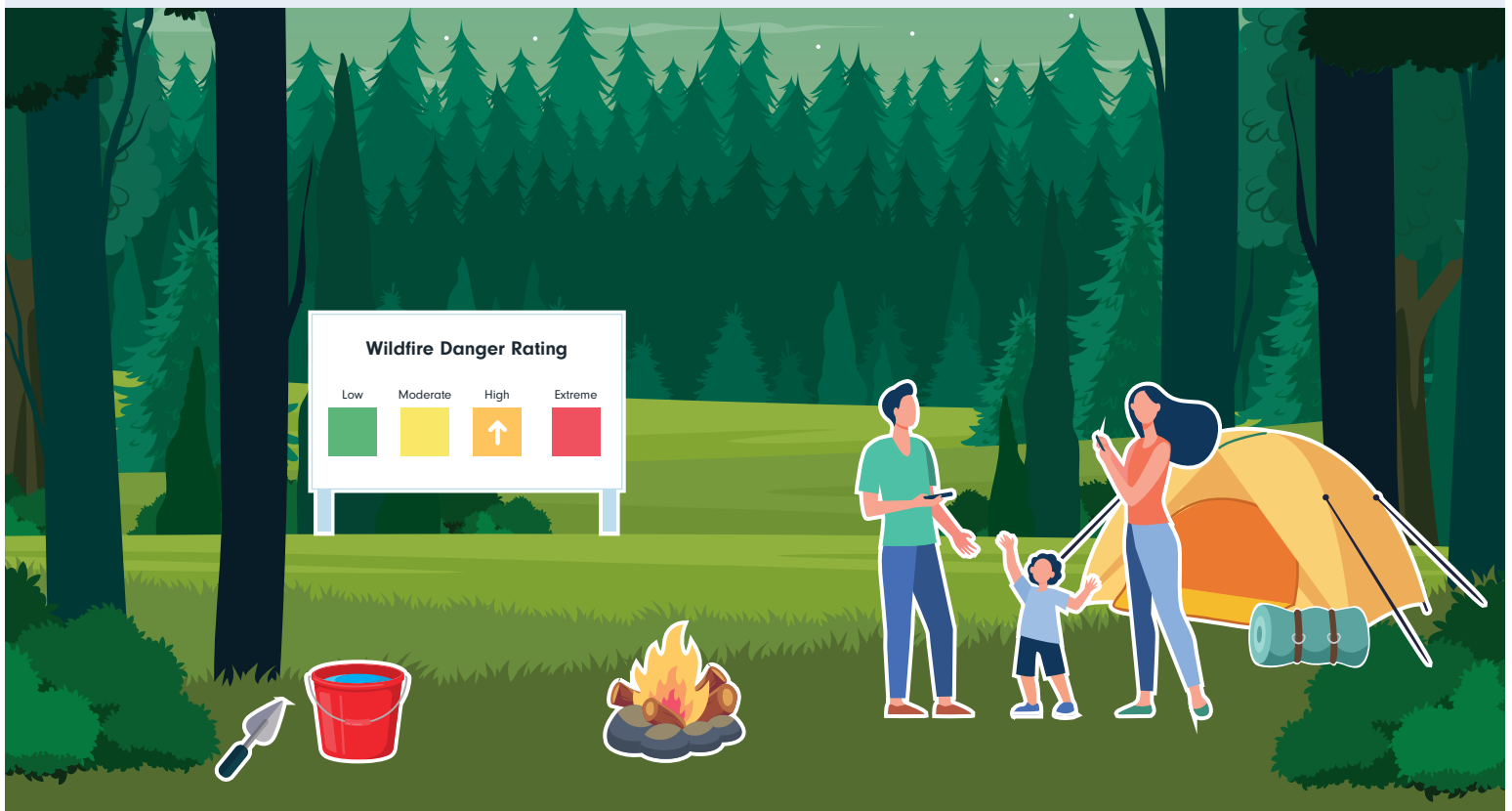


Image handout - Teacher Notes:

Campsite Image 02 - Safer Solution

Hazards:

- ✓ **Add** adult
- ✓ **Move** fire to open space away from trees (removes fuel to prevent fire from spreading)
- ✓ **Add** ring of rocks around fire (barrier from fuel to prevent fire from spreading)
- ✓ **Move** water bucket closer to fire (to remove heat and oxygen to put out fire)
- ✓ **Add** shovel (remove heat and oxygen to put out fire)
- ✓ **Move** large log and stick (remove fuel)



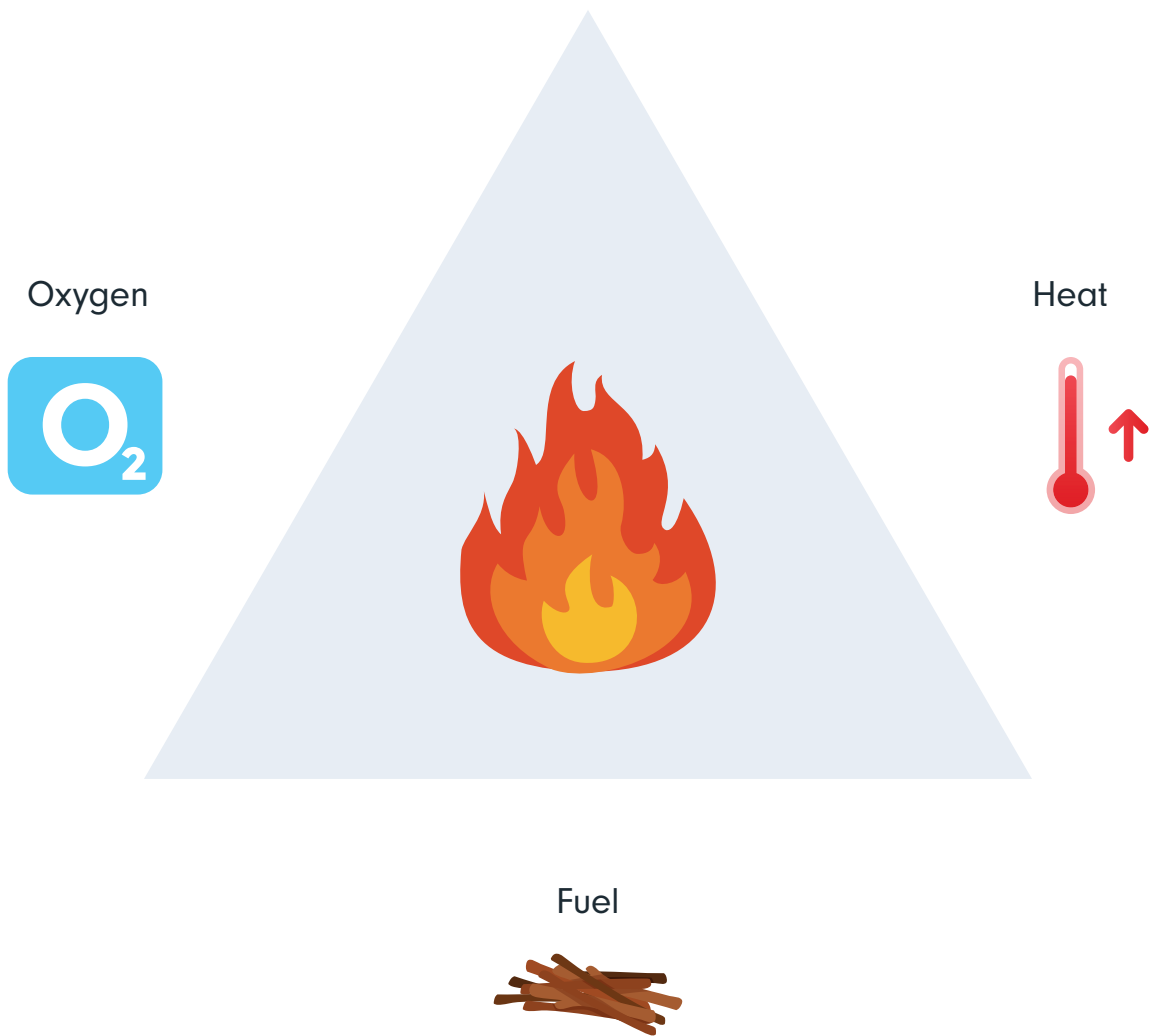
Activity Sheet B: My Safe Campfire Thoughtbook

Create a picture that shows **at least three actions** that can help build a safe campfire.



Image handout: Fire Triangle

A fire needs **all three things** to burn.



Activity Sheet C: Judging Campfire Actions

Action	Parts of the Fire Triangle (circle the part(s) affected by the action)	Unsafe or Safe?	Reason That Support Your Thinking
A large bucket of water is nearby to put out the campfire.	<div style="border: 1px solid black; border-radius: 15px; padding: 5px; text-align: center; margin-bottom: 5px;">Fuel</div> <hr/> <div style="border: 1px solid black; border-radius: 15px; padding: 5px; text-align: center; margin-bottom: 5px;">Oxygen</div> <hr/> <div style="border: 1px solid black; border-radius: 15px; padding: 5px; text-align: center;">Heat</div>	<input type="checkbox"/> Unsafe <input checked="" type="checkbox"/> Safe	<ul style="list-style-type: none"> • Water can cool the flames. • Water can cool and wet the surrounding land to make it harder to burn. • Water can cover the fire and prevent oxygen from reaching it.
The campfire is built under a large cedar tree.	<div style="border: 1px solid black; border-radius: 15px; padding: 5px; text-align: center; margin-bottom: 5px;">Fuel</div> <hr/> <div style="border: 1px solid black; border-radius: 15px; padding: 5px; text-align: center; margin-bottom: 5px;">Oxygen</div> <hr/> <div style="border: 1px solid black; border-radius: 15px; padding: 5px; text-align: center;">Heat</div>	<input checked="" type="checkbox"/> Unsafe <input type="checkbox"/> Safe	<ul style="list-style-type: none"> • Tree branches are fuel and can catch fire. • Flames can rise high and set branches on fire.
The match used to light the fire was put out in a bucket of sand.	<div style="border: 1px solid black; border-radius: 15px; padding: 5px; text-align: center; margin-bottom: 5px;">Fuel</div> <hr/> <div style="border: 1px solid black; border-radius: 15px; padding: 5px; text-align: center; margin-bottom: 5px;">Oxygen</div> <hr/> <div style="border: 1px solid black; border-radius: 15px; padding: 5px; text-align: center;">Heat</div>	<input type="checkbox"/> Unsafe <input type="checkbox"/> Safe	
It was a windy day and the family decided not to have a campfire.	<div style="border: 1px solid black; border-radius: 15px; padding: 5px; text-align: center; margin-bottom: 5px;">Fuel</div> <hr/> <div style="border: 1px solid black; border-radius: 15px; padding: 5px; text-align: center; margin-bottom: 5px;">Oxygen</div> <hr/> <div style="border: 1px solid black; border-radius: 15px; padding: 5px; text-align: center;">Heat</div>	<input type="checkbox"/> Unsafe <input type="checkbox"/> Safe	

Activity Sheet C: Judging Campfire Actions

Action	Parts of the Fire Triangle (circle the part(s) affected by the action)	Unsafe or Safe?	Reason That Support Your Thinking
The campfire was built inside a ring of rocks.	Fuel	<input type="checkbox"/>	
	Oxygen	Unsafe <input type="checkbox"/>	
	Heat	Safe <input type="checkbox"/>	
Extra sticks were kept next to the campfire.	Fuel	<input type="checkbox"/>	
	Oxygen	Unsafe <input type="checkbox"/>	
	Heat	Safe <input type="checkbox"/>	
A shovel was placed near the fire to cover the fire with dirt to put it out.	Fuel	<input type="checkbox"/>	
	Oxygen	Unsafe <input type="checkbox"/>	
	Heat	Safe <input type="checkbox"/>	
A family decided to build a very large campfire to provide lots of light and heat.	Fuel	<input type="checkbox"/>	
	Oxygen	Unsafe <input type="checkbox"/>	
	Heat	Safe <input type="checkbox"/>	

