FireSmart™ BC Education Program

BRITISH COLUMBIA FireSmart™ (Grades 2–3)

Lesson Five

In this lesson, students will think critically about the physical and chemical properties of building materials and design a home that is FireSmart and more resistant to wildfires.

Lesson Question:

What does a FireSmart home look like?

Lesson Challenge:

Create a design for a FireSmart home.

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

- **Activity Sheet A:** How FireSmart Is the Home? (at least one copy for each pair or small group)
- Home Scenarios—Teachers' Notes
- **Activity Sheet B:** My FireSmart Home Thoughtbook (one copy for each student)
- **Activity Sheet C:** Rating Types of Home Materials (at least one copy for each pair or small group)
- **Activity Sheet D:** How FireSmart Are the Materials? (at least one copy for each pair or small group)

Start the Thinking

1. Organize students into pairs or small groups and provide each group with a copy of How FireSmart Is the Home? (Activity Sheet A). Display and/or guide students' attention to the image of Home A.
2. Ask groups to carefully examine the details in the image. Invite them to look for any details or actions that might make a home FireSmart or more resistant to wildfires, and any details or actions that would not make a home FireSmart or more resistant to wildfires (a description of the details for the home can be found in Home Scenarios– Teachers' Notes). Prompt groups to note their observations at the bottom of the activity sheet.
3. Invite groups to share their observations with the class. As they share, guide their attention to the gauge on the activity sheet and the question "How FireSmart is the home?" Describe how they could show their response by drawing an arrow on the gauge. Remind groups to use the details they just recorded to guide their decision-making.
4. Encourage groups to share their decisions and thinking with the class. As they share, introduce the lesson question and challenge.
5. Provide each student with a copy of My FireSmart Home 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 create an initial drawing of a FireSmart or fire-resistant home on their Thoughtbook. Assure 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. Guide students' attention back to the image of Home A and invite them to suggest what material the roof and siding of the home are most likely made of. As students share their ideas, briefly explain that homes can be built from a variety of materials. Understanding how different materials behave differently in fire can help to make homes FireSmart and more resistant to fires.
2. Provide each group with a copy of Rating Types of Home Materials (Activity Sheet C). Direct groups to decide how each of the materials on the activity sheet will behave in a fire. Which materials will burn easily? Melt easily? Resist fire more easily? If students have learned about the properties of different materials or thermal energy, invite them to use this learning to support their decisions.
3. Invite groups to share their decisions and thinking with the class. As they share, ask them to rank the home materials in order from most to least FireSmart.

4. Have groups share their rankings and reasons with the class. As they share, co-construct or present the criteria for a FireSmart home. A home is FireSmart or more resistant to wildfires if:

   - it is made of FireSmart home materials (materials that do not burn or are not destroyed easily in fire);
   - fuel (material that burn easily) is kept away from the home; and
   - a source of water is available to put out fires.

5. Provide each group with a copy of How FireSmart Are the Materials? (Activity Sheet D). Ask groups to rank how FireSmart each part of the home is using the criteria for a FireSmart home and their knowledge of the properties of different materials (two examples have been included on the activity sheet).

6. Invite groups to share their ratings and thinking with the class. Be sure that students clearly understand which materials and actions are more FireSmart than others.

7. Guide each groups' attention back to Activity Sheet A and the image of Home A. Ask groups to revisit their rating of the home, this time using their understanding of materials and the criteria for a FireSmart home. Would they change their ranking? Would they change reasons for their thinking?

8. Ask groups to decide how FireSmart Homes B and C are. For each home, invite students to use the criteria to help them identify safe and unsafe examples. Note: the FireSmart magnetic boards and/or image cut-outs can be used to create other scenarios or to have students create scenarios.

9. Invite students to return to their Thoughtbooks and use their learning to review and revise their initial design for a FireSmart home. Encourage them to use the criteria to guide their thinking.

Reflect on the Thinking

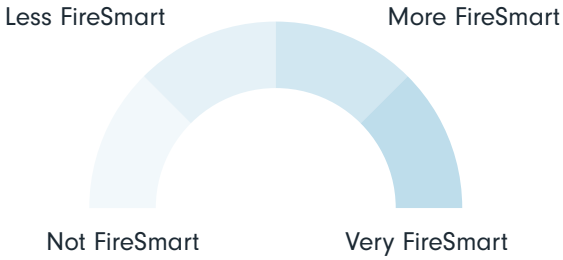
1. Have students complete their designs for a FireSmart home.

2. As an extension, encourage students to view one or all of the following videos that provide additional information about FireSmart homes:

   - How FireSmart is Your Home? Ember's Home Assessment: https://firesmartbc.ca/wp-content/uploads/2021/03/FireSmartBC_EmberKidsHomeAssess_FINAL-compressed.pdf
   - Slocan Valley Living with Fire Video—FireSmart Home Assessment (example at about 11:00 minutes): https://www.youtube.com/watch?v=udY77r66PDM&t=646s
   - Tips to FireSmart Your Home (infographic): https://firesmartbc.ca/wp-content/uploads/2020/12/05.08.21_FiresmartBC_TipsToFireSmartYourHome_Poster-compressed.pdf

Activity Sheet A:
How FireSmart Is the Home?

Carefully study the image of the home. Write down any details that might show FireSmart materials or actions, and any details that might show materials or actions that are **not** FireSmart. After looking carefully at the materials or actions, draw an arrow on the gauge to rate how FireSmart the home might be.

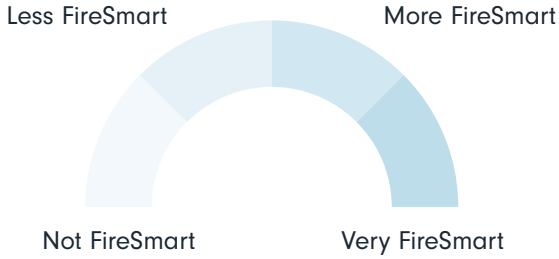
Home A	How FireSmart is the home?
	

Materials or actions that are FireSmart	Materials or actions that are not FireSmart

Activity Sheet A:
How FireSmart Is the Home?

Home B

How FireSmart is the home?



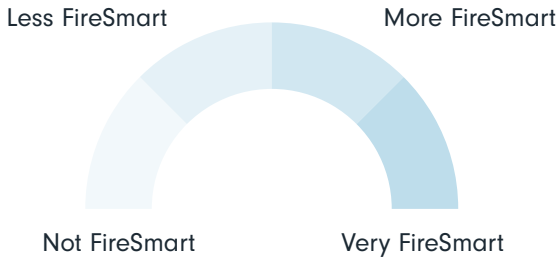
Materials or actions that are FireSmart

Materials or actions that are not FireSmart

Activity Sheet A:
How FireSmart Is the Home?

Home C

How FireSmart is the home?



Materials or actions that are FireSmart

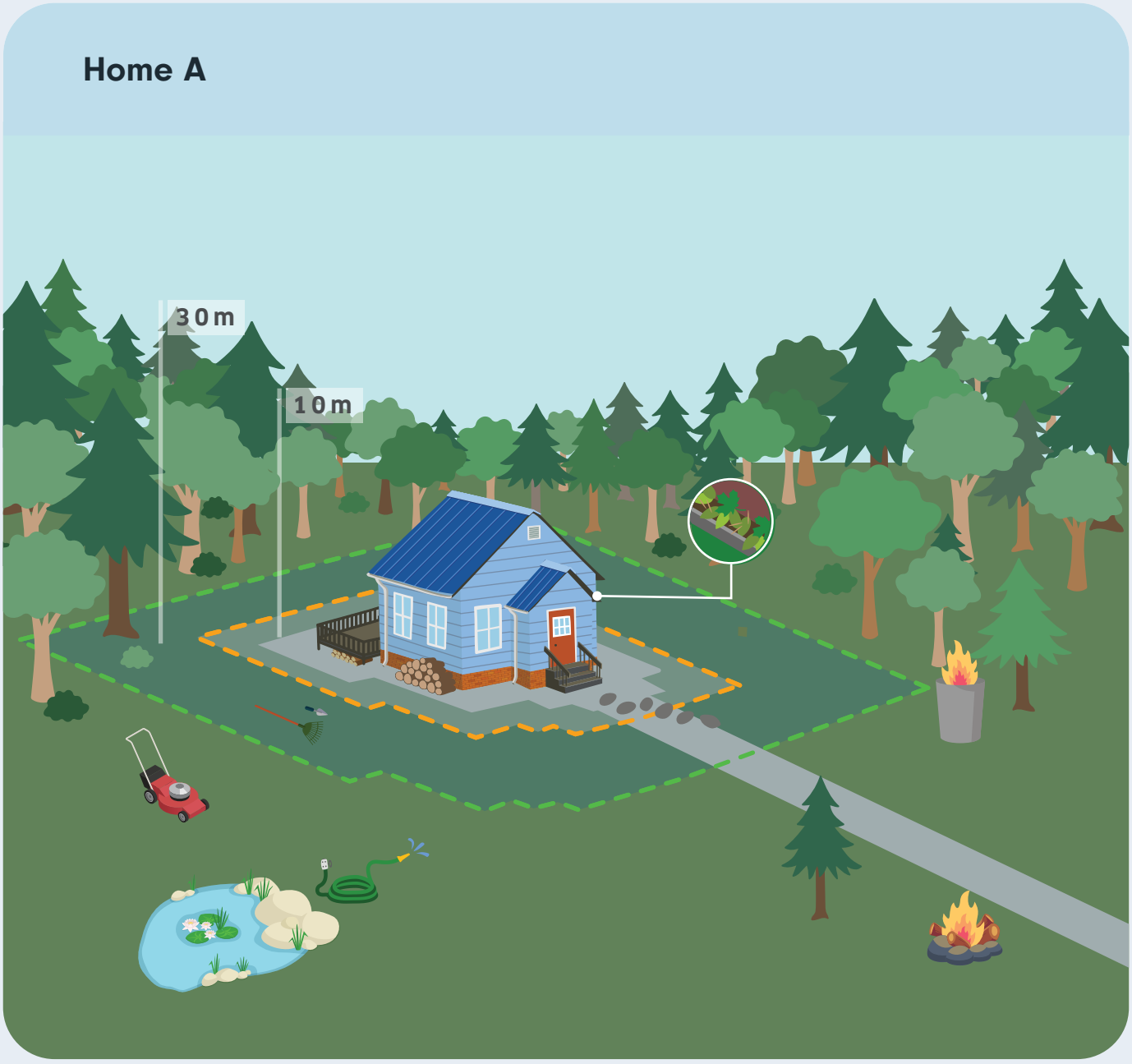
Materials or actions that are not FireSmart

Information Sheet:
Home Scenarios—Teachers' Notes

Note: For each of the following images, the teacher will need to explain the types of siding and roofing materials depicted based on colour. Students may use the same colours to indicate each materials in their own designs and diagrams.
Roof: blue = metal; red = clay/tile, black = asphalt shingles
Siding: blue = vinyl; brown = wood; white = stucco; orange = metal

Below each image are some possible FireSmart (+) vs NOT FireSmart (–) responses. The lesson will focus on those aspects most directly related to materials and how they would change chemically or physically when exposed to fires. Students may point out other FireSmart or not FireSmart aspects of the images too, or if you have access to magnetic boards, simply leave some elements out.

Information Sheet:
Home Scenarios—Teachers' Notes



Information Sheet: Home Scenarios—Teachers' Notes

Home A

+	–
• Metal roof—metal is not flammable (does not burn) • Brick ring around firepit—brick is not flammable; fire is far from home and trees (though best to have no firepit) • Lawnmower to keep grass cut short (long grass provides more fuel to burn) • Trees are planted far from home (indicated by the zone lines) • **Extras students may notice:** shovel and rake to keep area clean or scoop dirt to put out fire; water pump and hose near pond to put out fire	• Vinyl siding can melt and expose inside of home to fire • Open area under deck collects debris that can burn; deck material could be wood, which burns • Burn bin too close to trees that can burn • Eavestroughs are full of leaves that can burn (difficult to see in the picture, so teacher will need to point out that the picture of the magnifying glass is showing leaves in the eavestroughs) • Wood pile close to home (wood burns)

Information Sheet:
Home Scenarios—Teachers' Notes

Home B

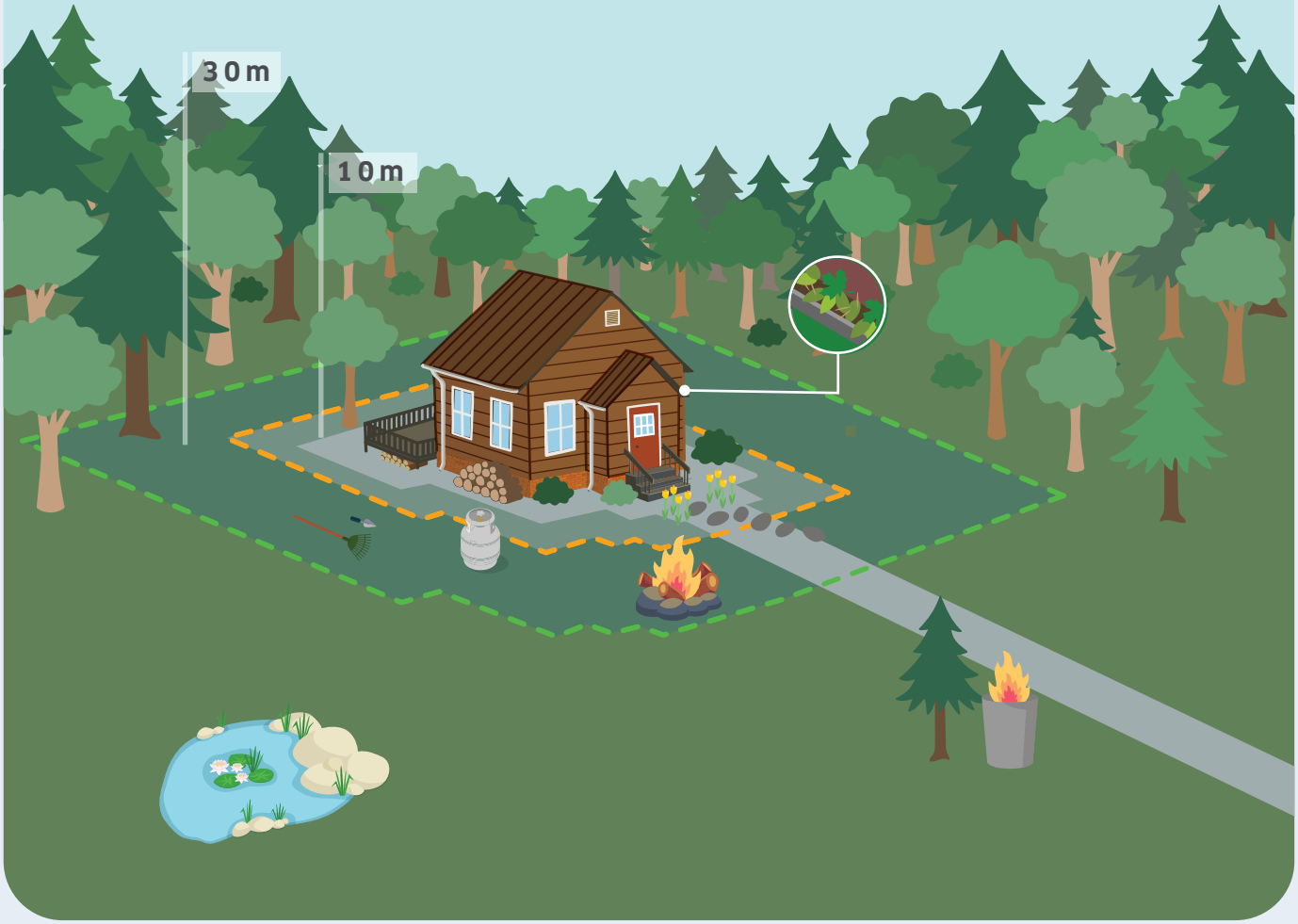
Information Sheet: Home Scenarios—Teachers' Notes

Home B

+	–
• Metal roof • Stucco siding • The picture shows eavesthroughs (gutters) full of leaves. • Firepit far from home and has brick ring • Closed-in deck • Lawnmower to keep grass cut • There's a tree within the 10m zone in the picture. • Brick between ground and siding	

Information Sheet:
Home Scenarios—Teachers' Notes

Home C



Information Sheet: Home Scenarios—Teachers' Notes

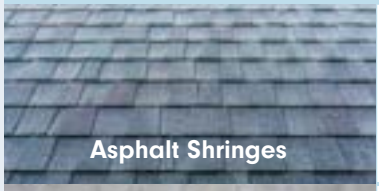
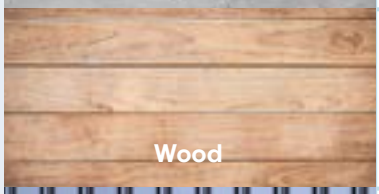
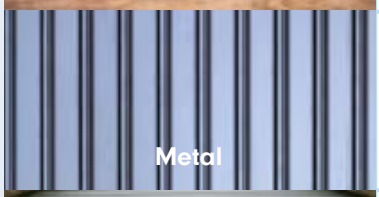
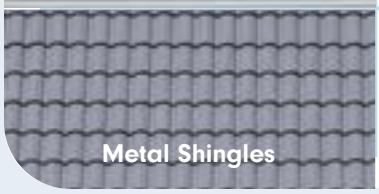
Home C

+	–
• Brick ring around firepit • Burn bin is metal and far from home	• Wood roof • Wood siding • Firepit too close to home • Open area under deck collects debris that can burn • Shrubs that can burn too close to home • Flammable propane tank too close to home • Flammable woodpile too close to home • Burn bin too close to trees that can burn • Eavestroughs are full of leaves that can burn

Activity Sheet B:
My FireSmart Home Thoughtbook

Key details of my FireSmart home:

Activity Sheet C:
Rating Types of Home Materials

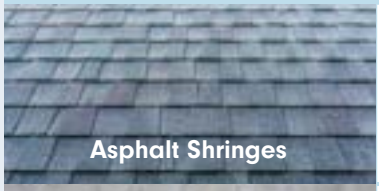
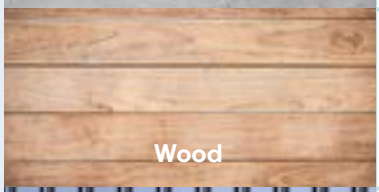
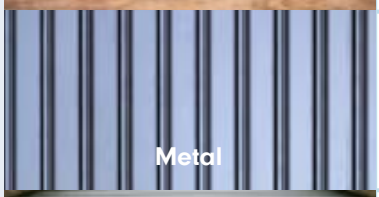
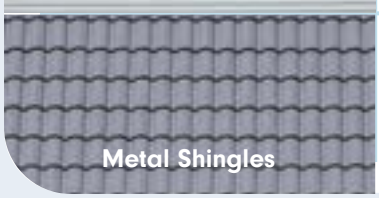
Type of Material	Rating	Reasons That Support the Rating
 Asphalt Shringes	☐ B ☐ M ☐ R	
 Cement Board	☐ B ☐ M ☐ R	
 Wood	☐ B ☐ M ☐ R	
 Metal	☐ B ☐ M ☐ R	
 Vinyl	☐ B ☐ M ☐ R	
 Metal Shingles	☐ B ☐ M ☐ R	

B = materials that will **BURN** easily in a fire

M = materials that will **MELT** easily in a fire

R = materials that can help **RESIST** fire

Activity Sheet C: Answer Sheet
Rating Types of Home Materials

Type of Material	Rating	Reasons That Support the Rating
 Asphalt Shringes	☐ B ☐ M ☑ R	• Asphalt shingles do not burn.
 Cement Board	☐ B ☐ M ☑ R	• Cement does not burn.
 Wood	☑ B ☐ M ☐ R	• Wood is destroyed by fire. • Wood turns to ashes.
 Metal	☐ B ☐ M ☑ R	• Metal can melt in very hot fires but, metal siding does not melt easily in the heat from most home fires. • Metal roofs do not burn.
 Vinyl	☐ B ☑ M ☐ R	• Vinyl melts easily in a fire. • Melted vinyl will allow fire to get to the inside of the home.
 Metal Shingles	☐ B ☐ M ☑ R	• Metal can melt in very hot fires but metal roofs do not melt easily in the heat from most home fires. • Metal roofs do not burn.

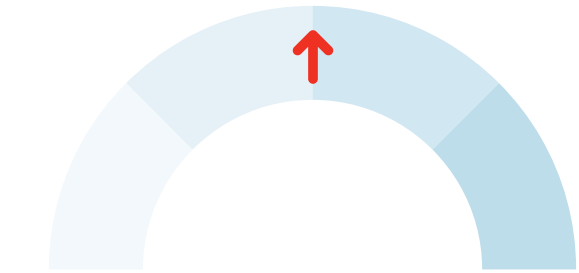
B = materials that will **BURN** easily in a fire
M = materials that will **MELT** easily in a fire
R = materials that can help **RESIST** fire

Activity Sheet D:
How FireSmart Are the Materials?

FireSmart homes are homes that do not burn easily (are resistant to fire)

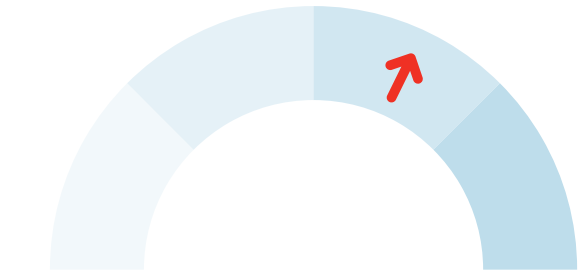
FireSmart materials are materials that do not burn easily (are more resistant to fire)

Fuel is anything that can catch fire and burn

Part of the Home	FireSmart Criteria (check criteria met)
 There are no trees or shrubs planted close to the home.	☐ FireSmart home materials are used. ☑ Fuel is kept far away from the home ☑ There is access to water to put out fires.
How FireSmart?	**Reasons for Your Thinking**
Less FireSmart — More FireSmart  Not FireSmart — Very FireSmart	• Trees are made of wood, which burns. • Trees are far away, so they can't pass fire to the home as easily.

Activity Sheet D:
How FireSmart Are the Materials?

Part of the Home	FireSmart Criteria (check criteria met)
 The firepit is made of a ring of cement bricks and placed far from the home.	☑ FireSmart home materials are used. ☑ Fuel is kept far away from the home ☐ There is access to water to put out fires.

How FireSmart?	Reasons for Your Thinking
Less FireSmart — More FireSmart  Not FireSmart — Very FireSmart	• Brick does not burn. It protects the surrounding area from the fire. • The firepit is placed far away from the home. • It would be best to have no firepit. A firepit still has burning wood.

Activity Sheet D:
How FireSmart Are the Materials?

Part of the Home	FireSmart Criteria (check criteria met)
 The deck is made of wood, and leaves have collected in the opening underneath.	☐ FireSmart home materials are used. ☐ Fuel is kept far away from the home ☐ There is access to water to put out fires.

How FireSmart?	Reasons for Your Thinking
Less FireSmart More FireSmart Not FireSmart Very FireSmart	

Activity Sheet D:
How FireSmart Are the Materials?

Part of the Home	FireSmart Criteria (check criteria met)
 The roof is made of metal and the eavestroughs are full of leaves.	☐ FireSmart home materials are used. ☐ Fuel is kept far away from the home ☐ There is access to water to put out fires.

How FireSmart?	Reasons for Your Thinking
Less FireSmart More FireSmart Not FireSmart Very FireSmart	

Activity Sheet D:
How FireSmart Are the Materials?

Part of the Home	FireSmart Criteria (check criteria met)
 The siding on the house is made of vinyl. There is brick between the siding and the ground.	☐ FireSmart home materials are used. ☐ Fuel is kept far away from the home ☐ There is access to water to put out fires.

How FireSmart?	Reasons for Your Thinking
Less FireSmart More FireSmart Not FireSmart Very FireSmart	

Activity Sheet D:
How FireSmart Are the Materials?

Part of the Home	FireSmart Criteria (check criteria met)
 The woodpile is located far from the firepit and close to the home.	☐ FireSmart home materials are used. ☐ Fuel is kept far away from the home ☐ There is access to water to put out fires.

How FireSmart?	Reasons for Your Thinking
Less FireSmart More FireSmart Not FireSmart Very FireSmart	

Activity Sheet D:
How FireSmart Are the Materials?

Part of the Home	FireSmart Criteria (check criteria met)
 A metal burn bin is used for burning leaves and debris. The bin is surrounded by trees	☐ FireSmart home materials are used. ☐ Fuel is kept far away from the home ☐ There is access to water to put out fires.

How FireSmart?	Reasons for Your Thinking
Less FireSmart More FireSmart Not FireSmart Very FireSmart	

Activity Sheet D:
How FireSmart Are the Materials?

Part of the Home	FireSmart Criteria (check criteria met)
 The driveway is wide and made of brick. It goes all the way up to the home	☐ FireSmart home materials are used. ☐ Fuel is kept far away from the home ☐ There is access to water to put out fires.

How FireSmart?	Reasons for Your Thinking
Less FireSmart More FireSmart Not FireSmart Very FireSmart	