

Activity

Episode 3
18th February 2014

Fire Investigators

Key Learning

Students will develop a deeper understanding of the mechanics of fire and the causes of bushfires. They will learn about types of evidence and how evidence is used to develop explanations of events.

The Australian Curriculum

Geography / Geographical Knowledge and Understanding

The impact of bushfires or floods on environments and communities and how people can respond ([ACHGK030](#))(year 5)



Science as Human Endeavour/Nature and development of science

Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena ([ACSHE081](#)) (year 5)



Science as Human Endeavour/Nature and development of science

Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena ([ACSHE098](#)) (year 6)



Science and Understanding/ Earth and Space Science

Sudden geological changes of extreme weather conditions can affect Earth's surface ([ACSSU096](#)) (year 6)



Science as Human Endeavour/ Use and influence of science

Scientific knowledge is used to inform personal and community decisions ([ACSHE220](#)) (year 6)



Discussion Questions

1. What do bushfire investigators do?
2. What's the first step to investigating a bushfire?
3. Name three things that can start a bushfire.
4. What do you think a piece of physical evidence could be in a bushfire investigation?
5. Why do you think physical evidence is important?
6. What is a witness?
7. Why is it important to use physical evidence as well as talk to witnesses?
8. Why do you think physical evidence could be hard to find after a bushfire?
9. Why is it important to investigate the cause of bushfires?
10. What was one change made as a result of investigations into the 2009 Black Saturday bushfires in Victoria?

Activities

Fire Investigation Glossary

Discuss some of the fire investigation terms used in the story. As a class, ask students to share what they know about each term and compile a glossary.

Witnesses

Physical Evidence

Clues

Ignition

Indicator

Process of Elimination

Trial and Error

Area of Origin

Suspiciously

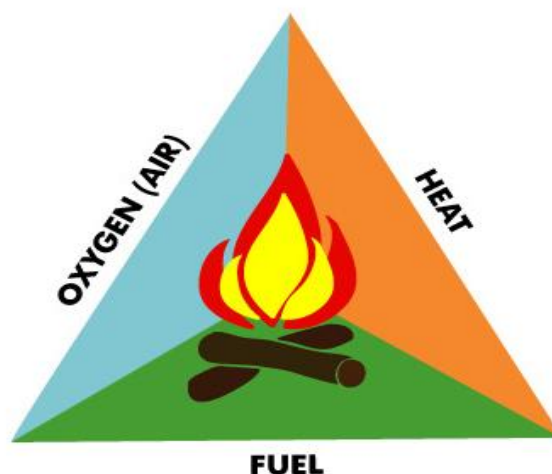
The Fire Triangle

For a fire to thrive and spread it requires three things:

- fuel for the fire to burn
- air for the fire to breathe
- heat for the fire to continue burning.

The first two parts of the triangle are present whenever fuel is in open air. The amount of heat needed to start the fire depends on the kind of fuel.

Remove any side of the Fire Triangle and the fire will go out.



The Fire Triangle

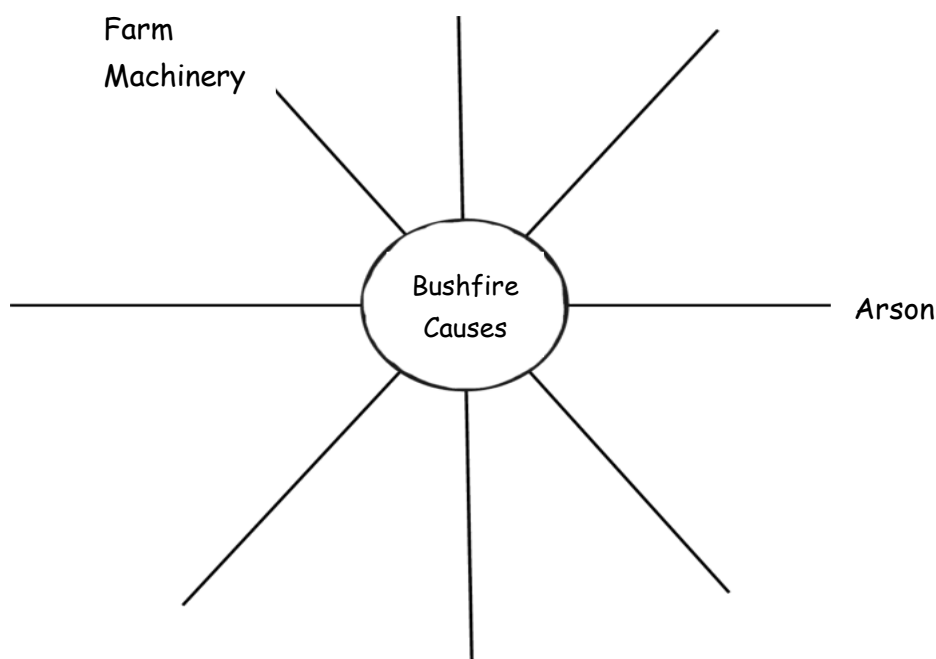
Discuss each of the different situations where fire is produced in reference to the fire triangle. In each case two sides of the fire triangle are provided. Think about what the third side could be.

Fire	Oxygen	Fuel	Heat
1. A match is struck on the side of the box	<i>air</i>		<i>friction of the match against the box.</i>
2. A candle is lit with a match	<i>air</i>	<i>the candle's wick</i>	
3. A haystack is struck by lightning	<i>air</i>	<i>the hay</i>	
4. A welding spark lands in a pile of cleaning rags	<i>air</i>	<i>the rags, cleaning chemicals on the rags</i>	
5. A car drives through long grass	<i>air</i>		<i>sparks from the car's exhaust</i>
6. Sun shines through a magnifying glass onto dry grass	<i>Air</i>		<i>heat from the sun focussed by the magnifying glass</i>
7. A gas burning stove is turned on	<i>Air</i>		<i>a spark</i>

Answers: 1. Fuel = wood, chemicals on the end of the match, 2. Heat = fire on the match, 3. Heat = the lightning, 4. Heat = the welding spark, 5. Fuel = the grass, 6. Fuel = the grass, 7. Fuel = gas

Bushfire causes mind map

As a class, brainstorm a list of possible bushfire causes. Consider working on a class mind map to visually outline information – the words 'bushfire causes' will be placed in the centre, to which associated ideas, words and concepts are added. Some examples are given below:

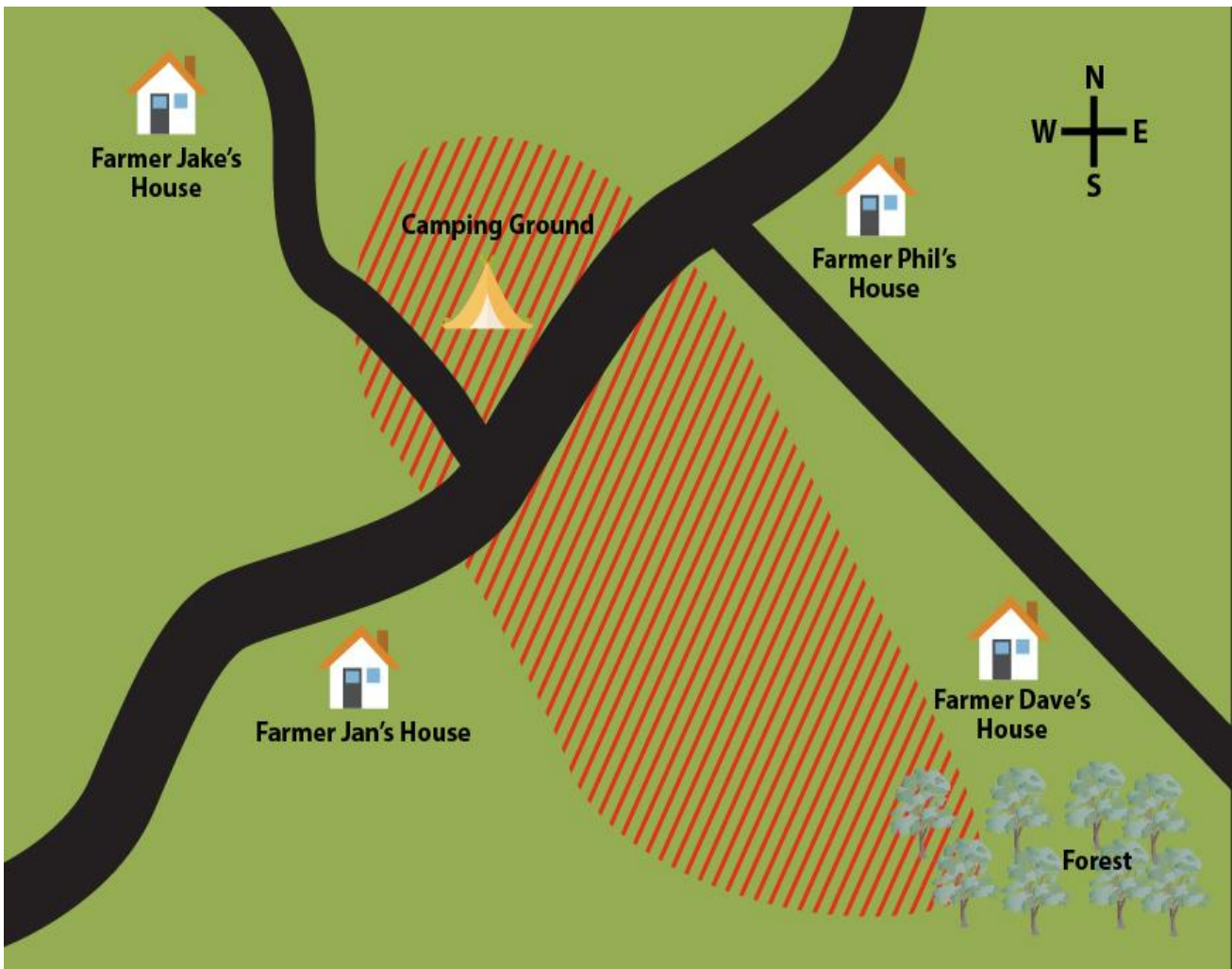


Assessing the evidence

Ask students to play the role of fire investigator for a made-up bushfire scenario by analysing the evidence given below:

Be a Fire Investigator:

A bushfire has burned around 20 hectares of farmland in Victoria. Luckily CFA crews managed to put it out before any homes were damaged but it was a close call! Now it's your job as a fire investigator to find out what caused the blaze. Look at each piece of evidence carefully and see if you can figure out where and how the fire started.





Clue 1: Weather

You visit the Bureau of Meteorology to find out what the weather was doing before and during the fire.

You find out that there were some storms and lightning the night before the fire.

The next day it was very hot and windy. The wind was blowing in a **North-Westerly** direction



Clue 2: Interview with Farmer Jake

Farmer Jake lives to the north west of the fire zone.

Jake: "I remember seeing some people at the campground the night before the fire. They might have been cooking something on the fire"



Clue 3: Interview with Farmer Jan

Farmer Jan lives on the western side of the fire zone.

Jan: "The day before the fire I lent my welding equipment to my friend Farmer Dave down the road. He said he was going to fix the shed."



Clue 4: Interview with Farmer Phil

Farmer Phil lives on the north eastern side of the fire zone.

Dave: "I did borrow some welding gear from Jan. I was going to fix the shed but then I saw that it was a catastrophic fire day. You should never weld when it's hot and windy!"



Clue 5: Interview with Farmer Dave

Farmer Dave lives at the South Eastern side of the fire zone.

Dave: "I remember hearing a really loud bang, like an explosion, in the middle of the night before the fire. It was pretty early in the morning when I smelt the smoke"



Clue 6: Campfire remains:

At the camping ground you find remains of a campfire.

The fire is in a patch of sand with no trees or grass nearby. The area around it doesn't seem to be burnt.



Clue 6: Damaged tree:

Inside the fire zone at the South Eastern end you find a tree that seems to have been split down the middle.

The trees to the North West are burnt but the ones in the forest to the South East aren't.

After examining the evidence carefully, what do you think the best explanation is for how the fire started? Give reasons for your answer.

Share your ideas with the class and discuss how you used the evidence to reach a conclusion.

Related Research Links

ABC Emergency – Current ABC Emergency Coverage
<http://www.abc.net.au/news/emergency/>

ABC Emergency – Get Ready & Survive: Plan for an Emergency
<http://www.abc.net.au/news/emergency/plan-for-an-emergency/>

Government of South Australia – Emergency plans and kits
<http://www.sa.gov.au/subject/Emergency,+safety+and+infrastructure/Emergency/Earthquakes/Before+an+earthquake/Emergency+plans+and+kits>

CFS – Fun Stuff

http://www.cfs.sa.gov.au/site/prepare_act_survive_2012/reference/fun_stuff.jsp

CFA Kids and Schools

<http://www.cfa.vic.gov.au/kids-schools/>

Geoscience Australia – Bushfire Basics

<http://www.ga.gov.au/hazards/bushfire/bushfire-basics.html>

Australian Attorney General's Office – Emergency Management for Schools

<http://www.em.gov.au/sites/schools/Getthefacts/Bushfires/Pages/default.aspx>

ABC Splash – Climate and Bushfires in Australia

<http://splash.abc.net.au/media/-/m/30033/climate-and-bushfires-in-australia>

Behind the News – Bushfire Plan

<http://www.abc.net.au/btn/story/s3880224.htm>

Behind the News – Spring Fires

<http://www.abc.net.au/btn/story/s3875965.htm>

Behind the News – Bushfire Disaster

<http://www.abc.net.au/btn/story/s2488554.htm>

Behind the News – Disaster Response

<http://www.abc.net.au/btn/story/s1655134.htm>

Behind the News – Forensic Science

<http://www.abc.net.au/btn/story/s3576831.htm>