ACTIVITY 10

Applying Probabilistic Reasoning

CARD-BASED INVESTIGATION

ACTIVITY 10

Applying Probabilistic Reasoning

ACTIVITY SUMMARY

Using a fictional scenario, students investigate different risk factors related to wildfire ignitions from electric power lines. Students analyze various data and use probabilistic reasoning to recommend where and when a power shutoff is necessary.

ACTIVITY TYPE
CARD-BASED INVESTIGATION

NUMBER OF 40–50 MINUTE CLASS PERIODS
2

KEY CONCEPTS & PROCESS SKILLS

1. When there is scientific uncertainty in data, probabilistic reasoning is a method for determining the likelihood of different outcomes on which to base a decision.
2. Uncertainty in data is often a result of errors. Scientific errors can be random or systematic and can lead to conclusions that are less likely to be correct.
3. Confidence intervals, confidence levels, and error bars describe the uncertainty of data and the probability that data are accurate.

NEXT GENERATION SCIENCE STANDARDS (NGSS) CONNECTION:
Evaluate the impact of new data on a working explanation and/or model of a proposed process or system. (*Science and Engineering Practice; Analyzing and Interpreting Data*)

CONCEPTUAL TOOLS

MATERIALS & ADVANCE PREPARATION

FOR THE TEACHER

- VISUAL AID 10.1 "Scoring Guide, Analyzing and Interpreting Data (AID)"
- ITEM-SPECIFIC SCORING GUIDE: Activity 10, Build Understanding Item 2

FOR EACH GROUP OF FOUR STUDENTS

- CALCULATOR
- SET OF FIRE RISK CARDS (4 CARDS)

FOR EACH STUDENT

- STUDENT SHEET 10.1 "Determining Fire Risk"
- STUDENT SHEET 10.2 "Writing Frame: Evidence and Trade-Offs (E&T)" (OPTIONAL)
- SCORING GUIDE: Analyzing and Interpreting Data (AID) (OPTIONAL)

Prepare a set of four location signs (A, B, C, D) for the Walking Debate.

TEACHING NOTES

Suggestions for **discussion questions** are highlighted in gold.

Strategies for the **equitable inclusion of diverse students** are highlighted in mint.

GETTING STARTED (5 MIN)

1 **Introduce the concept of power shutoffs as an approach to reducing wildfire risk.**

- Read the Introduction, either as a class or individually. It revisits the idea of probabilistic models as a tool for managing the risk of wildfires. Let students know that they will act as advisors to a power company about where and when a power shutoff is necessary. Some topics in this unit may require particular care and sensitivity, depending on student's individual experiences. For example, you may have students who have experienced trauma or loss due to a wildfire.
- Depending on your location, students may have experienced power shutoffs due to wildfire risk. Have students who are willing, share their experiences. If you are not located in a region that has power shutoffs due to wildfire risk, you might ask students to think of a time when their power went out, maybe due to a bad storm, and share what that was like and what was difficult about being without power.

PROCEDURE SUPPORT (45 MIN)

2 **Present the fictional article found in Procedure Step 1.**

- Throughout the unit, students have been presented with fictional articles based on real-world events. The article presented in Procedure Step 1 can be shared with the class in multiple ways. Read the scenario aloud to the class or have individual students read it aloud while others follow along with the text (either as a whole class or in small groups).
- Reading aloud can better support comprehension for many students, including neurodiverse students and emerging multilingual learners who often have more highly developed listening and oral skills than reading comprehension skills. Alternatively, students can read the scenario independently.

3 Students examine the map in order to make initial predictions about wildfire risk.

- Hand out Student Sheet 10.1, "Determining Fire Risk," to each student. Initially, students will not have a complete set of data; instead, they will complete the table over the course of the activity by looking at the map and several Fire Risk cards. However, they will stop in Procedure Steps 3 and 9 to reflect on which locations have the highest fire risk based on the information they have gathered.
- In Procedure Step 2, students complete the first three rows of the table on the student sheet, using the map in Procedure Step 1 as a reference, before making a preliminary assessment of wildfire risk. You may want to remind students that the symbols use in Figure 10.1 are the same as those in the previous activity and that they represent trees and grasses. Students can answer Procedure Step 3 in their science notebooks.

Sample Student Response, Procedure Step 3

a Record your prediction in your science notebook and explain your reasoning.

At this point, I predict that Location D has the highest fire risk because it has a lot of grasses, and the power line runs through there. From my experience in the lab and with the model, this type of vegetation burns very easily.

b Determine how sure you are of your decision, using a scale of 0–100% where:

0% = there is no chance your prediction will be correct

50% = your prediction is just as likely to be wrong as it is to be correct

100% = you are absolutely sure that your prediction will be correct

I'm only about 60% sure because I don't really know much else about the locations yet, like their weather or wind patterns.

4 Support students as they analyze the Fire Risk cards.

Hand out a set of 4 Fire Risk cards to each group of 4. Circulate and assist groups as they examine data on each new Fire Risk card and record information on Student Sheet 10.1. Remind students to think about how each new piece of data might affect the risk for wildfire at each location. Specific support for each Fire Risk card is as follows:

Fire Risk 1: Vegetation Dryness by Location

Students examine information about dryness of vegetation at each location. Remind students to think back to their experiences in Activity 8 (burning various types of fuels) and Activity 9 (making predictions, using the Wildfire Model) to apply what they learned about different types of vegetation fuels when thinking about the wildfire risk for each location.

Fire Risk 2: Past Fire Data by Location

Students examine historical data about the frequency of fires in the region over the last 50 years. They are asked to calculate the percentage likelihood of a significant fire in any given year in each location based on the historical frequency of wildfires greater than 41 hectares (100 acres) in the last

50 years. They should divide the number of historical wildfires by the length of time they occurred (50 years) and multiply by 100 to get a percentage. Students may require additional support understanding that this calculation gives a likelihood because the average of fires per year doesn't always match the actual number of fires per year. We make a prediction using this number knowing that it probably won't match, but it gives an idea of how likely a fire could be.

Fire Risk 3: 8–Hour Forecasted Maximum Wind Speed in Each Location

Students need to use the information on this card along with Fire Risk Card 4 in order to estimate the size of a potential fire at each location based on the forecasted wind speed.

Fire Risk 4: Wildfire Size Relative to Maximum Wind Speed

Students examine a graph that shows the size of wildfires in the region relative to maximum wind speed. Students were introduced to the concept of error bars in Activity 6, but they may need additional support thinking about how the error bars in the graph could affect their conclusions about the data. Point out to students that the graph is unusual in that the *x*-axis provides data in both hectares and acres; this is because the scientific study was completed in acres (e.g., 0–100 acres) and has been converted to the metric unit of hectares.

Sample Student Response, Procedure Step 7

Examine the graph on Fire Risk 4: Wildfire Size Relative to Maximum Wind Speed and describe:

- any patterns you see in the graph.

  The graph shows that at higher maximum wind speeds, larger fires result.

- what conclusions you can make about the relationship between maximum wind speed and fire size.

  When it is windy, the wind contributes to spreading the fire, causing larger fires.

- what role the size of error bars plays in your conclusions about the data.

  The error bars are smaller for smaller-sized fires and larger for the larger fires. This makes me less sure about my conclusions about the larger-sized fires resulting at specific higher wind speeds.

Sample Student Response, Procedure Step 9

Based on all the data in Table 1 on your student sheet so far, revise your prediction about which location(s) has the highest risk for wildfire in the next 8 hours.

a Record your revised prediction in your science notebook and explain your reasoning.

I think that Location A is at highest risk for wildfire because it has the highest wind, is near a large park with mixed vegetation, is extremely dry, and the power lines run near one side of the park. If a fire ignited there, it could easily spread to the town.

b Determine how sure you are of your decision and compare how it has changed as you gathered more data. Use a scale of 0–100% where:

0% = there is no chance your prediction will be correct

50% = your prediction is just as likely to be wrong as it is to be correct

100% = you are absolutely sure that your prediction will be correct

I am about 85% sure in my prediction because Location A does not have the highest likelihood based on past fires. Also, I don't know the direction of the winds at that location, and I know from past activities that wind direction is an important factor.

c Share your revised prediction and reasoning with the rest of your group.

Student responses will vary.

d Work with your group to describe at least two sources of scientific uncertainty, including systematic errors or random errors, that could have affected the data or your predictions.

One source of uncertainty could be systematic error from the wind measurements used to make the forecast for each location. I'd want to check the instruments to make sure they were calibrated correctly. Readings that are lower than normal could result in underestimating the risk from the wind at each location.

Another source of uncertainty could be random error related to calculating the likelihood of a fire, using past data. There were not very many fires at each location over the past 50 years, so the calculation of the likelihood of having a fire in any given year might not be very accurate. It might be helpful to look at the data over more than 50 years so we could be more sure of the fire frequencies at each location.

5 Students consider the trade-offs of a power shutoff to each location in order to make a recommendation about where to shut off the power.

In Procedure Step 10, students consider additional factors beyond wildfire risk in making their recommendations. They consider the energy load of the power lines, the population size, and a vulnerability index described in Table 10.1 in the Student Book. Since these factors extend beyond the science but are part of decision-making, students will discuss their recommendations with their groups in Procedure Step 11. Students will then participate in a Walking Debate and respond to Build Understanding item 1 about evidence and trade-offs. A summary of the potential trade-offs at each location is included in the sample student response for Student Sheet 10.1 at the end of this activity.

6 Facilitate a discussion by using a Walking Debate in Procedure Step 12.

- Use the literacy strategy of a Walking Debate to encourage students to discuss their final recommendations for a power shutoff. See Appendix 1: Literacy Strategies at the end of the Teacher's Edition for more guidance and information on using the Walking Debate with your students.

- Post the four location signs (A, B, C, D) in four distinct areas of the room. Have students stand near the sign that represents their recommended location for a power shutoff. (If students have more than one recommended location, have them pick the one they think is most at risk.) If most students already agree on a particular location, you may want to assign some of them to the other locations to foster the skills of debate and evidence analysis.
- Within the groups that formed, have students discuss the reasons for their choices and have them appoint a spokesperson to report to the class. The spokesperson for each group will explain the reasons that members of the group chose that location.
- Once each group has presented its rationales, allow students to change their minds and move to another location.

SYNTHESIS OF IDEAS (20 MIN)

7 Students make a final recommendation.

- Build Understanding item 1 has students making their final recommendations for which location would be best for shutting off the power during an 8–hour period to reduce wildfire risk. Students support their recommendations with evidence and identify the trade-offs of their decisions.
- For students who need support organizing and writing their responses, you may wish to provide optional Student Sheet 10.2, "Writing Frame: Evidence and Trade-Offs" to compose their responses. Students could also use Student Sheet 10.2 only as a reference or as a checklist as they write their responses. A sample student response for this student sheet is shown at the end of this activity. For more information on a Writing Frame, see Appendix 1: Literacy Strategies.

8 Assess student growth, using Scoring Guide: Analyzing and Interpreting Data (AID) for Build Understanding item 2.

- Remind students of the Analyzing and Interpreting Data (AID) Scoring Guide. You may wish to project Visual Aid 10.1, "Scoring Guide: Analyzing and Interpreting Data (AID)," for your students to review each level and clarify your expectations.
- Do not share the item-specific version of the Scoring Guide (Item-Specific Scoring Guide: Activity 10, Build Understanding Item 2) with students as it provides specific information on how to respond to the question prompt.
- Remind students that you expect to see them demonstrate growth in their analysis and interpretation of data, and they may want to review their responses to the assessment in Activity 7 (Connections to Everyday Life item 5) and/or Activity 3 (Build Understanding item 2). Sample responses for Levels 1–4 are provided in the Build Understanding section that follows. Review these responses

to get an idea of what is expected for each level alongside the Item-Specific Scoring Guide. See Appendix 2: Assessment Resource at the end of the Teacher's Guide for more guidance and information on using the Scoring Guides and assessment system with your students.

- Depending on your students, you may want to have them provide feedback on one another's work for revision prior to turning in their work to you for scoring. Alternatively, consider having students turn in a rough draft to you for feedback and revision.

- To conclude the activity, evaluate whether your students are able to answer the Guiding Question, *How can you use probabilistic reasoning to reduce risk?* Use this as a chance to revisit and summarize the key concepts and process skills of the activity.

9 **Revisit the Unit Driving Question, *How do you address scientific uncertainty when investigating claims about air quality?***

- Over the course of the unit, students have been introduced to the complexity of modern air quality issues that can have important effects on human health and are affected by weather events such as wildfires. Have students share their responses to Connections to Everyday Life item 4.

- Have a class discussion about what students have learned about the sources of scientific uncertainty; methods to reduce scientific uncertainty; and the usefulness of probabilistic reasoning to make conclusions, predictions, and decisions even when you are not certain about something. Addressing scientific uncertainty when investigating claims about air quality involves a combination of rigorous scientific methods and an understanding of the complexities in environmental science. It helps to have accurate measurements, well-designed monitoring networks, and robust error analysis. These approaches are key to reducing uncertainty.

SAMPLE STUDENT RESPONSES

BUILD UNDERSTANDING

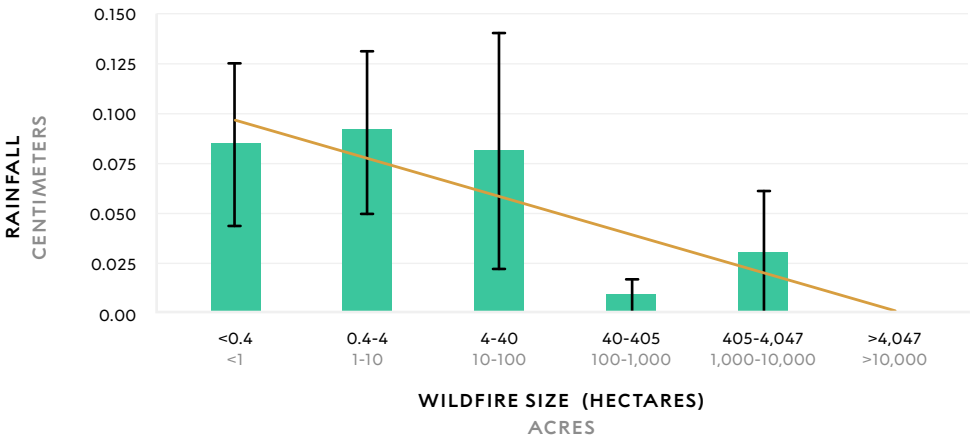
① **With the available data and under current conditions, in which location(s) do you recommend shutting off the power during the next 8 hours to reduce wildfire risk? Support your answer with evidence and identify the trade-offs of your decision.**

I recommend shutting off the power in Location A. It has forecasted wind gusts of 61 km/hr (36 mph) that could result in a possible fire of greater than 4,047 hectares (> 10,000 acres), which is the biggest in the range. It is an extremely dry area that is next to a large park with mixed vegetation, which would provide a lot of fuel for a wildfire. The trade-off of my decision is that the 4,672 people living in the area have a medium vulnerability index, and some may need power generation for medical needs.

② **Figure 10.2 shows the average size of wildfires in this region when there are different amounts of rainfall during the wildfire events. Explain what conclusions you can make based on the data in the graph. Be sure to include the following in your explanation:**

- **Describe what patterns you observe between wildfire size and rainfall.**
- **Explain what conclusions you can make about the relationship between wildfire size and rainfall.**
- **Explain at least two possible sources of scientific uncertainty, including scientific errors, that may have affected the data.**

FIGURE 10.2
Regional Wildfire Size During Different Rainfall Amounts



Level 4 response

The data shows that when there is more rain, wildfires are smaller but they do still occur. The larger wildfires occur when there is less rain. The data indicates that wildfires over 41 hectares (100 acres) are less likely when there is any rain, even less than 0.03 centimeters (0.01 inches). This likely means that there is a relationship between wildfire size and rainfall. If rain is falling, even a little bit, the fire will likely be smaller. If more than 0.03 centimeters of rainfall occurs, the fire is more likely to be under 41 hectares. One source of scientific uncertainty affecting the data is that there might be a lot of random error because the error bars are pretty big, which means the data points must have been really spread out. Another source of uncertainty is that I do not know anything else about the area, and there may be other factors that are affecting the wildfire size, like lots of dead trees and shrubs or a pattern of strong winds. However, I do know that wet materials (like trees and leaves) do not burn as easily.

Level 3 response

The data shows that when there is more rain, wildfires are smaller, but they do still occur, and that larger wildfires occur when there is less rain. This probably means that if rain is falling, the wildfires will be smaller. One source of scientific uncertainty affecting the data is that there could be other factors affecting wildfire size in that area, like there being lots of dead trees.

Level 2 response

The data shows that when there is more rain, wildfires are smaller. This is because rain gets everything wet. Something uncertain is that maybe something else happened to make the fires smaller.

Level 1 response

More rain means smaller wildfires because rain puts out fires. Uncertainty happens because maybe something else happened.

③ **The power company decides to install sensors along power lines that would result in an automatic shutoff if a tree branch touches a power line.**

a What would be a false positive in this situation?

A false positive would be when an automatic shutoff occurs even though a tree branch didn't touch the power line.

b What would be a false negative in this situation?

A false negative would be when an automatic shutoff did not occur even though a tree branch touched the line.

b Which would be a greater concern for community safety: a false positive or a false negative from the shutoff sensor? Explain your reasoning.

Even though a false negative might increase the risk of fire, tree branches don't always break a power line every time they touch one. So, I think it would be a bigger concern for the community to have a false positive, which triggers an unnecessary power shutoff. If power shutoffs are triggered for no reason, it would be very disruptive to the community to have their power going out all the time.

CONNECTIONS TO EVERYDAY LIFE

④ **Your friend says that since there is uncertainty in science, no one can really know anything in science. Explain why you agree or disagree with your friend. Support your answer with an example from this unit.**

I disagree because even though there is always going to be some uncertainty in scientific data or conclusions, scientists use methods to reduce uncertainty and consider the limitations of their data before they can make a conclusion. This was shown in Activity 3 when we reduced uncertainty by comparing data from different types of air sensors (PurpleAir and AirNow) before making final conclusions about a region's air quality.

REFERENCES

Reid, A., Fuhlendorf, S., & Weir, J. (2010). Weather variables affecting Oklahoma wildfires. *Rangeland Ecology & Management*. *69*(5), 599–603. https://www.researchgate.net/publication/258627094_Weather_Variables_Affecting_Oklahoma_Wildfires

Taylor, S., Setyawan, G., Cui, B., Zamzam, A., & Roald, L. A. (2023). *Managing wildfire risk and promoting equity through optimal configuration of networked microgrids*. e-Energy '23: Proceedings of the 14th ACM International Conference on Future Energy Systems, pages 189–199. https://dl.acm.org/doi/10.1145/3575813.3595196

Weir, J., Fuhlendorf, S., & Reid, A., (April 2017). *Wildfires in Oklahoma*. Oklahoma State University Extension. https://extension.okstate.edu/fact-sheets/wildfires-in-oklahoma.html

	LOCATION A	LOCATION B	LOCATION C	LOCATION D
Number of Power Lines				
Type and Amount of Vegetation				
Proximity of Power Lines to Vegetation				
Current Dryness Level				
Likelihood of Fire Each Year (%)				
Forecasted Maximum Wind Speed				
Size of Possible Fire Under Forecasted Maximum Wind Speed				
Trade-Offs of Power Shutoff				

	LOCATION A	LOCATION B	LOCATION C	LOCATION D
Number of Power Lines	*3*	*1*	*3*	*1*
Type and Amount of Vegetation	*mix of trees and grasses in large regional park*	*mostly trees and a few grasses in a forested area*	*few trees in an urban area*	*mostly grasses and a few trees in a grassland area*
Proximity of Power Lines to Vegetation	*a power line passes close to the edge of the park and near the town*	*power line is close to one edge of forest and near town*	*power lines are not close to vegetation*	*power line runs through the middle of the brush areas*
Current Dryness Level	*extremely dry*	*moderately dry*	*moderately dry*	*moderately dry*
Likelihood of Fire Each Year (%)	*14%*	*6%*	*2%*	*24%*
Forecasted Maximum Wind Speed	*61 km/hr (38 mph)*	*43 km/hr (27 mph)*	*35 km/hr (22 mph)*	*55 km/hr (34 mph)*
Size of Possible Fire Under Forecasted Maximum Wind Speed	*> 4,047 hectares (> 10,000 acres)*	*41–405 hectares (100–1,000 acres)*	*< 0.4 hectares (< 1 acre)*	*405–4,047 hectares (1,000–10,000 acres)*
Trade-Offs of Power Shutoff	*The people here use the most power and have medium vulnerability. So if they lose power, many of them may be negatively affected by it.*	*People here are the least vulnerable, have a smaller population, and use the least amount of energy. Few may experience negative effects of a power shutoff..*	*A power shutoff here would affect the most people who use a medium amount of power. However, the vulnerability index is low, so they won't have as many negative effects.*	*This area has the smallest population, and they don't use a lot of energy. But they have the highest vulnerability, so many people here may experience negative effects of the shutoff.*

There is a lot of discussion about the issue of

My decision is that

My decision is based on the following evidence:

First,

Second,

Third,

The trade-off(s)

People who disagree with my decision might say that

There is a lot of discussion about the issue of

which power line to shut off to reduce wildfire risk.

My decision is that

I recommend shutting off the power to Location D.

My decision is based on the following evidence:

First,

it has power lines running through an area with lots of grasses and trees that are moderately dry.

Second,

it has a 24% fire risk, the highest of any of the 4 locations.

Third,

the size of a potential fire, given forecasted wind conditions, is large (405–4,047 hectares / 1,000–10,000 acres).

The trade-off(s)

are that the location has a population with the highest vulnerability, so the population here may experience negative effects of the shutoff.

People who disagree with my decision might say that

this location has a small population, so they can easily be relocated for safety.

VISUAL AID 10.1 | SCORING GUIDE: ANALYZING AND INTERPRETING DATA (AID)

WHEN TO USE THIS SCORING GUIDE:

This Scoring Guide is used when students analyze and interpret data that they have collected or that has been provided to them.

WHAT TO LOOK FOR:

- Response describes patterns and trends in data.
- Response interprets patterns and trends to describe possible causal relationships.

LEVEL	GENERAL DESCRIPTION
Level 4 **Complete and correct**	The student analyzes the data with appropriate tools, techniques, and reasoning. The student identifies and describes patterns in the data and interprets them completely and correctly to identify and describe relationships. When appropriate, the student: • makes distinctions between causation and correlation. • states how biases and errors may affect interpretation of the data. • states how study design impacts data interpretation.
Level 3 **Almost there**	The student analyzes the data with appropriate tools, techniques, and reasoning. The student identifies and describes patterns in the data BUT incorrectly and/or incompletely interprets them to identify and describe relationships.

LEVEL	GENERAL DESCRIPTION
Level 2 **On the way**	The student analyzes the data with appropriate tools, techniques, and reasoning. The student identifies and describes, BUT does not interpret, patterns and relationships.
Level 1 **Getting started**	The student attempts to analyze the data BUT does not use appropriate tools, techniques and/or reasoning to identify and describe patterns and relationships.
Level 0 **Missing or off task**	The student's analysis is missing, illegible, or irrelevant to the goal of the investigation.
X	The student had no opportunity to respond.

ITEM-SPECIFIC SCORING GUIDE | ACTIVITY 10, BUILD UNDERSTANDING ITEM 2

WHEN TO USE THIS SCORING GUIDE:

This Scoring Guide is used when students analyze and interpret data that they have collected or that has been provided to them.

WHAT TO LOOK FOR:

- Response describes patterns and trends in data.
- Response interprets patterns and trends to describe possible causal relationships.

LEVEL	GENERAL DESCRIPTION	ITEM-SPECIFIC DESCRIPTION
Level 4 **Complete and correct**	The student analyzes the data with appropriate tools, techniques, and reasoning. The student identifies and describes patterns in the data and interprets them completely and correctly to identify and describe relationships. When appropriate, the student: • makes distinctions between causation and correlation. • states how biases and errors may affect interpretation of the data. • states how study design impacts data interpretation.	The student response: • gives detailed, accurate descriptions of patterns in the data. • thoroughly describes a plausible conclusion from the data. • provides at least two possible sources of scientific uncertainty with a thorough explanation of reasoning, including the limitations of the available data.

LEVEL	GENERAL DESCRIPTION	ITEM-SPECIFIC DESCRIPTION
Level 3 **Almost there**	The student analyzes the data with appropriate tools, techniques, and reasoning. The student identifies and describes patterns in the data BUT incorrectly and/or incompletely interprets them to identify and describe relationships.	The student response: • accurately describes patterns in the data. The student response may have minor errors or limited responses to: • describing a plausible conclusion from the data. • providing a possible source of scientific uncertainty with an explanation of reasoning, including the limitations of the available data.
Level 2 **On the way**	The student analyzes the data with appropriate tools, techniques, and reasoning. The student identifies and describes, BUT does not interpret, patterns and relationships.	The student response: • describes patterns in the data. The student response may have errors or limited responses/reasoning to: • describing a conclusion from the data. • providing a possible source of scientific uncertainty with an explanation of reasoning and/or data limitations.

LEVEL	GENERAL DESCRIPTION	ITEM-SPECIFIC DESCRIPTION
Level 1 **Getting started**	The student attempts to analyze the data BUT does not use appropriate tools, techniques, and/or reasoning to identify and describe patterns and relationships.	The student response: • describes patterns in the data, may be general, or contain errors. The student response may have significant errors or very limited responses/reasoning to: • describing a conclusion from the data. • providing a possible source of scientific uncertainty with an explanation of reasoning and/or data limitations
Level 0 **Missing or off task**	The student's analysis is missing, illegible, or irrelevant to the goal of the investigation.	
X	The student had no opportunity to respond.	

FIRE RISK 1

Vegetation Dryness by Location

	LOCATION A	LOCATION B	LOCATION C	LOCATION D
Current Dryness Levels	extremely dry	moderately dry	moderately dry	moderately dry

FIRE RISK 2

Past Fire Data by Location

	LOCATION A	LOCATION B	LOCATION C	LOCATION D
Number of fires > 41 hectares (100 acres) in the last 50 years	7	3	1	12

FIRE RISK 3

8-Hour Forecasted Maximum Wind Speed in Each Location

	LOCATION A	LOCATION B	LOCATION C	LOCATION D
Forecasted Maximum Wind Speed	61 km/hr (38 mph)	43 km/hr (27 mph)	35 km/hr (22 mph)	55 km/hr (34 mph)

FIRE RISK 4

Wildfire Size Relative to Maximum Wind Speed

Researchers at a nearby university have graphed the size of wildfires in the region relative to maximum wind speed.