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Air Quality and Weather Connections Datasheet Answer Key

How can we know how clean and healthy the air is?

Together, we are going to find out:

- How can we measure how clean (healthy) the air is that we breathe?
- Does the air carry particulate matter (PM)?
- What should we do when the air is dirty (unhealthy)?

1. Let's figure out how air quality is measured and why it's important to know.

First, watch the Wildfires in the West Cause Air Pollution. Do a think-pair-share on what you observed:

- Why do wildfires cause air pollution?
- What happens to the air when there is a wildfire?
- How do you think smoke from wildfire travels so far away?

The **Air Quality Index**, or **AQI** for short, is a rating system that tells us how healthy the air outside is.

- Watch Be Smoke Ready: Know the Colors of the Air Quality Index (AQI) to learn about how air quality is measured.
- What should you do when the air outside is not healthy?

1. As a class, look at the Air Quality Index chart.
   - What information does it tell?
   - Which colors mean the air is healthy?
   - Which colors mean the air is unhealthy?

Air Quality Index (AQI) Values	Levels of Health Concern	Colors
When the AQI is in this range:	*...air quality conditions are:*	*...as symbolized by this color:*
0 to 50	Good	Green
51 to 100	Moderate	Yellow
101 to 150	Unhealthy for Sensitive Groups	Orange
151 to 200	Unhealthy	Red
201 to 300	Very Unhealthy	Purple

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2. Use the AQI chart to help you complete the “What Color is Your Air” activity sheet for grades 3-5.

Results vary by data collected.

2. Weather and Air Quality Data Table: Collect data at your school!					
Date	**Weather Conditions & PM 2.5 and Ozone Levels**				**Air Quality Action Day?**
Day 1 Date:	Wind direction:	□ Clear sky □ Slightly hazy sky □ Very hazy sky	PM level:	PM color:	Yes
	Wind speed:	Temperature:	Ozone level:	Ozone color:	No
Day 2 Date:	Wind direction:	□ Clear sky □ Slightly hazy sky □ Very hazy sky	PM level:	PM color:	Yes

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	Wind speed:	Temperature:	Ozone level:	Ozone color:	
					No

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Results vary by data collected.

Date	Weather Conditions & PM 2.5 and Ozone Levels				Air Quality Action Day?
Day 3 Date:	Wind direction:	□ Clear sky □ Slightly hazy sky □ Very hazy sky	PM level:	PM color:	Yes
	Wind speed:	Temperature:	Ozone level:	Ozone color:	No
Day 4 Date:	Wind direction:	□ Clear sky □ Slightly hazy sky □ Very hazy sky	PM level:	PM color:	Yes
	Wind speed:	Temperature:	Ozone level:	Ozone color:	No
Day 5 Date:	Wind direction:	□ Clear sky □ Slightly hazy sky □ Very hazy sky	PM level:	PM color:	Yes

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	Wind speed:	Temperature:	Ozone level:	Ozone color:	No

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Results vary by data collected.

3. PM Collector: When done collecting PM data, place this grid face down over the sticky side of the PM Collector. **Use a hand lens to count how many PM pieces are trapped in each square of the PM Collector. Record the number of pieces in section 4 of the datasheet.**	
1	**2**
3	**4**

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4. Let's analyze our PM 2.5 data and PM Catcher results.

Review the **Air Quality data table** in section 2 where you recorded PM 2.5 and ozone data.

Answers vary by data collected.

1. Count the number of **PM 2.5 air quality** days for each AQI colors:

- Number of **green** days □:_____ Total good PM air quality days: _____
- Number of **yellow** days □:_____
- Number of **orange** days □:_____ Total bad PM air quality days: _____
- Number of **red** days □:_____
- Number of **purpl**e days □:_____

2. Count the number of **ozone air quality** days for each AQI colors:

- Number of **green** days □:_____ Total good ozone air quality days: _____
- Number of **yellow** days □:_____
- Number of **orange** days □:_____ Total bad PM air quality days: _____
- Number of **red** days □:_____
- Number of **purpl**e days □:_____

3. Adding PM and ozone data together, we're there more **good air quality** days or **bad air quality** days overall? Circle your results:

□ **More clean, healthy air days** □ **More dirty, unhealthy air days**

4. Record your **PM Collector data**:

- Total number of PM pieces in square 1: _____
- Total number of PM pieces in square 2: _____
- Total number of PM pieces in square 3: _____
- Total number of PM pieces in square 4: _____
- Average number of PM pieces (add totals 1 through 4 and divide by 4): _____

Class Reflection: Share your thoughts on the following questions as a class:

- What is one thing you enjoyed in learning about **Air Quality**?
- In your words, explain the connection between **haze and PM**? More haze means higher PM.

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- Do you think the **wind affects the amount of PM** in the air? Yes, wind moves PM in the air. High winds can push PM out of an area. Low winds can make PM build up in an area.
- We collected data for a short time. Do you think **air quality** changes over a longer time?

Yes, air quality changes over time depending on changes in natural and human-made PM sources. Natural sources include wildfire smoke, volcanoes, dust storms, etc. and human-made sources include vehicle exhaust, fireplace smoke, factory exhaust, burning fossil fuels for energy, etc. These sources change depending on natural and human actions.