

Name:

Date:

Class:

Air Quality and PM – 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)?
- 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? **Wildfires emit smoke and ash, which are particulate matter or PM for short, which is a primary type of air pollution.**
- What happens to the air when there is a wildfire? **Hazy, hard to see and difficult to breathe.**
- How do you think smoke from wildfires travels so far away? **Weather, especially wind blows PM.**

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

- Watch [Why is Coco Orange?](#) to learn about how air quality is measured.
- What does Coco say you should do when the air outside is not healthy? **Spend less time outdoors, limit activity levels outside, and play inside instead.**

1. As a class, look at the Air Quality Index chart.
 - What information does it tell? **Air Quality in relation to values 0-300, corresponding colors, and health risks at each level**
 - Which colors mean the air is healthy? **Green, yellow**
 - Which colors mean the air is unhealthy? **Orange, red, purple**

Air Quality Index (AQI) Values	Levels of Health Concern	Colors
<i>When the AQI is in this range:</i>	<i>...air quality conditions are:</i>	<i>...as symbolized by this color:</i>
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
301 to 500	Hazardous	Maroon

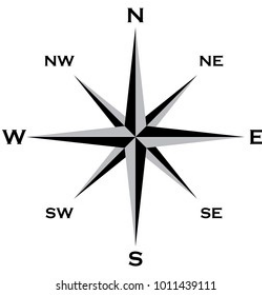
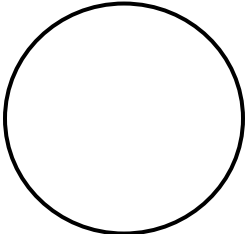
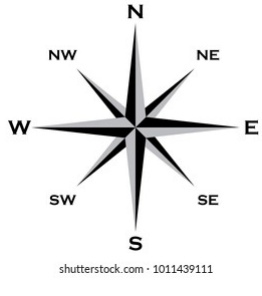
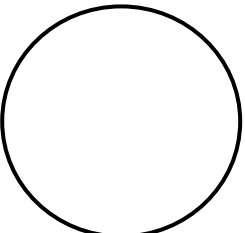
2. Use the AQI chart to help you complete the "What Color is Your Air" activity sheet for [grade K](#) or grades [1-2](#).

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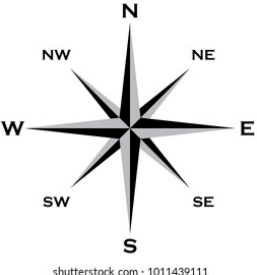
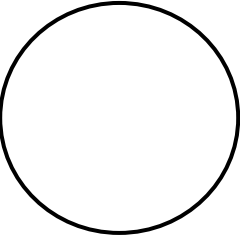
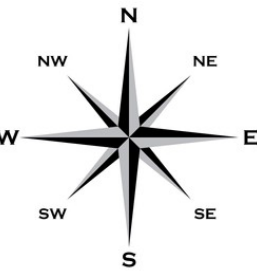
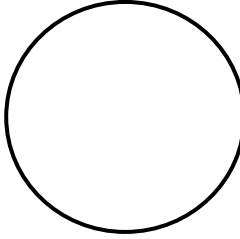
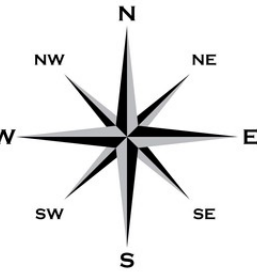
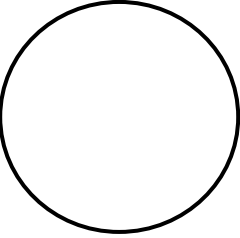
Answers vary on data collected.

2. Wind and PM Data Table: Collect data at your school!				
Date	Wind Direction	Wind Speed	PM 2.5 Level	Air Quality Color
Write down the date that you record data each day.	Use the Wind Streamer to observe which direction the wind is blowing from. Circle the wind direction on the compass.	Estimate the wind strength by observing trees, flags, etc. Check the box that matches how much the wind is blowing.	Write the PM 2.5 number from AirNow.gov	Color the circle to match the PM level. (green, yellow, orange, red, or purple)
Day: 1 Date:		<input type="checkbox"/> No Wind <input type="checkbox"/> Light Wind <input type="checkbox"/> Strong Wind	PM 2.5 level:	PM 2.5 Air Quality Color: 
Day: 2 Date:		<input type="checkbox"/> No Wind <input type="checkbox"/> Light Wind <input type="checkbox"/> Strong Wind	PM 2.5 level:	PM 2.5 Air Quality Color: 

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Date	Wind Direction	Wind Speed	PM 2.5 Level	Air Quality Color
Day: 3 Date:		<input type="checkbox"/> No Wind <input type="checkbox"/> Light Wind <input type="checkbox"/> Strong Wind	PM 2.5 level:	PM 2.5 Air Quality Color: 
Day: 4 Date:		<input type="checkbox"/> No Wind <input type="checkbox"/> Light Wind <input type="checkbox"/> Strong Wind	PM 2.5 level:	PM 2.5 Air Quality Color: 
Day: 5 Date:		<input type="checkbox"/> No Wind <input type="checkbox"/> Light Wind <input type="checkbox"/> Strong Wind	PM 2.5 level:	PM 2.5 Air Quality Color: 

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3. PM Catcher: Use a hand lens to count how many PM 10 particles are trapped.

PM 10 pieces are bigger than PM 2.5 pieces. PM 10 pieces are big enough to see but PM 2.5 are too small to see.

1. Place your PM Catcher in the space below (sticky side down for tape, sticky side up for Vaseline.)
2. Using a hand lens to view, look closely to see if it contains small pieces of PM 10.
3. Can you see PM 10 pieces? If yes, count how many pieces are on your PM Catcher.

Write the number of PM 10 pieces: _____

Answers vary by data collected.

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

Review the **Air Quality Index (AQI)** below and the **Wind and PM data table** where you recorded data in section 2 of the datasheet.

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Answers will vary according to data

- Look at your PM data table. Count the number of PM 2.5 air quality days for each AQI color:
 - Number of **green** days 😊: _____
 - Number of **yellow** days 😊: _____
 - Number of **orange** days 😞: _____
 - Number of **red** days 😞: _____
 - Number of **purple** days 😞: _____
- We're there more **good air quality** days or **bad air quality** days? Circle your results:
😊 **More clean, healthy air days** 😞 **More dirty, unhealthy air days**
- Circle the type of PM Catcher you made: **Tape** **Vaseline**
- Was PM on your PM Catcher? **No** **Yes, number of PM pieces: _____**

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

- What did you enjoy in learning about **Air Quality (AQ)**? **Answers vary**
- Explain what **PM** is in your own words. **PM are small pieces that are in the air and can be blown by the wind.**
- How do the **AQ colors** help us know how good or bad the air is? **Certain colors mean the air is healthy to breathe (green, yellow) and others mean the air is unhealthy to breathe (orange, red, purple).**
- What is one thing we should do when the **AQ is not healthy**? **Limit time outdoors playing, etc.**