

The Air That I Breathe

4th Grade: Teacher's Guide/Workbook

Lesson 6: Who's Driving Around Our Block



Lesson One: The Air that I Breathe

Lesson Two: Neighborhood Walk

Lesson Three/Four: Assessing the Air

Lesson Five: What's Your Carbon Footprint?

→ Lesson Six: Who is Driving Around Our Block?

Lesson Seven: Asthma Free School Zone: No Idling

Lesson Eight/Nine: Making Changes:

Public Service Announcements

Average Vehicle Occupancy: Who's Driving Around Our Block?

Some BIG IDEAS:

Average Vehicle Occupancy (AVO) shows how many people there are in each neighborhood car and can give you an idea of whether or not people are carpooling. The higher the AVO, the better your neighborhood is doing at sharing their rides. To calculate AVO, your students will count 30 cars that pass by and record the number of people in each of the cars they count.

Some Background Information

- Each person who carools takes another car off the road
- Carpooling keeps pollutants out of our air
- By using the HOV lane (High Occupancy Vehicle lane), carpoolers save time and reduce traffic. They can only use these lanes if they have 2 or more passengers
- U.S. drivers wasted 4.2 billion hours sitting in traffic in 2005
- Through sharing a ride, you'll spend time with other people
- According to the American Automobile Association, it costs an average of 26.2 cents per mile to drive a car. Carpooling saves money.

(Source: The Clean Air Campaign, "Carpooling"; Green Living Tips, "Carpooling for the Planet")

Before you pass out the workbook:

- Before you do this exercise, you will want to scout out a place to count cars. You might want to choose a spot that was on your Neighborhood Walk last session for consistency. It takes very little time for 30 cars to pass, so don't worry about this element of the location.
- Have a class discussion about the benefits of carpooling. Ask the class: what are the benefits, and in particular, how does it help with Carbon Footprint? How does sharing our ride also help us to share the street?
- Pair up the students in good teams. It might be easiest to assign one of the students to fill out the grid with the information while the other student watches the cars and reports the number of occupants.

Supplies you will need for this lesson:



- The AVO worksheet
- A clipboard for each pair of students
- Pencils and a calculator if you choose to work on the average number of occupants

THE HOW-TO FOR AVO:

1. Put students with partners and explain to them that they will be calculating Average Vehicle Occupancy to find out if people are carpooling. Ask the students why carpooling would reduce air pollution.
2. Once outside, students stand with their partner on a sidewalk with a good view of the street.
3. Ask students to do their best to record how many occupants are in each of the next 30 vehicles that go by. Be sure to write the specific vehicle type in the chart. For example: "car, one person," or, "SUV, four people." It is not possible for the students to record every single car they see. What's important is that they have 30 accurate recordings. Because of this, no two data sheets will look alike.
4. Once they have their 30 readings, have the students look at their sheets and find the mode. In most cases, the dominant number will be "one." If this is the case, have the students put this number at the top. If you want a bigger math challenge, have partners add up the total number of people counted in the vehicles, and divide that number by the total number of vehicles counted (30 total vehicles). You may want to bring calculators with you to get the accurate average quickly.
5. Help the students connect the information. How many people are in cars in the neighborhood? Is that a good use of space and energy? Knowing what you know about carbon footprint, what are the ways that these vehicles could be used more efficiently?

The students should agree on their strategy for data collection. It takes a couple of minutes for them to settle into this exercise, but after that, it should go very well.

Don't record the AVO for buses or any public transit including "dollar vans." You can include taxis.

Average Vehicle Occupancy (AVO) Who's Driving Around Our Block?

For each vehicle that drives by, write the type of vehicle (car, SUV, van, truck, taxi) and the number of occupants inside.

	Vehicle Type	Number of Occupants		Vehicle Type	Number of Occupants
1			16		
2			17		
3			18		
4			19		
5			20		
6			21		
7			22		
8			23		
9			24		
10			25		
11			26		
12			27		
13			28		
14			29		
15			30		

Calculate the AVO:

- Find the most common number or mode.
- For a bigger challenge, add up the total number of occupants and divide by 30.

Your Block's AVO:

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Workbook Pages

Average Vehicle Occupancy (AVO)

Who's Driving Around Our Block?

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