

LESSON PLAN
~Grade 4 Mathematics~

**“What Type of Idling Vehicle
Are You Today?”**

~ A Double Bar Graph ~

-created by Lynn Perreault, Ph.D. (for Idle-Free Windsor)

Date:	Time:
School:	Teacher:
Special Instructions:	

Ontario Curriculum Connection

By the end of Grade 4, students will:

Overall Expectation (Data Management and Probability):

- Collect and organize discrete primary data and display the data using charts and graphs, including stem-and-leaf plots and double bar graphs.

Specific Expectations (Collection and Organization of Data):

- Collect data by conducting a survey or an experiment to do with themselves, their environment, issues in their school or the community, or content from another subject, and record observations or measurements;
- Collect and organize discrete primary data and display the data in charts, tables, and graphs that have appropriate titles, labels, and scales that suit the range and distribution of the data, using a variety of tools.

MATERIALS & EQUIPMENT:

Vehicle Cards (Appendix 1), and Student Worksheets (Appendix 2).

Vocabulary:

Words & concepts your class may be learning

Idle or Idling: Inactive, not in use, not moving or in operation (e.g., an idling vehicle is one that has the engine running while parked).

Vehicle: A machine or object that helps us get from one place to another (e.g., car, minivan, or pick-up truck).

PROCEDURE

Part 1 (Vocabulary)

Topic Intro - Brainstorming, Connecting ideas (assess students' knowledge!) ~5 min.

Ask students:

What does "idle" or "idling" mean? How do you use it in a sentence?

What does "vehicle" mean? Can you name different types of vehicles?

Part 2 (Setup & Collecting Data)

Activity ~ 15 min.

Randomly distribute one vehicle card per student (see Appendix 1). Explain that two sets of observations will be made about the types of cars idling in front of the school: one for morning traffic, and another for afternoon traffic.

Ask students which vehicle card they received (i.e., representing morning traffic). First, ask how many students received the "Car" card. Second, ask how many students received the "Pick-up truck" card. Finally, ask how many students received the "Mini-van" card. By show of hands, count how many students there were in each of the three categories and record these numbers on the blackboard. If appropriate, a student may be in charge of counting the show of hands for each category, and another student may be in charge of recording these numbers on the blackboard. Students will then include the number of vehicles for each vehicle type on their worksheet (see Appendix 2).

Pick up all vehicle cards, and repeat this activity a second time (i.e., representing afternoon traffic). For example:

Table title: Number of vehicles by time of day and vehicle type

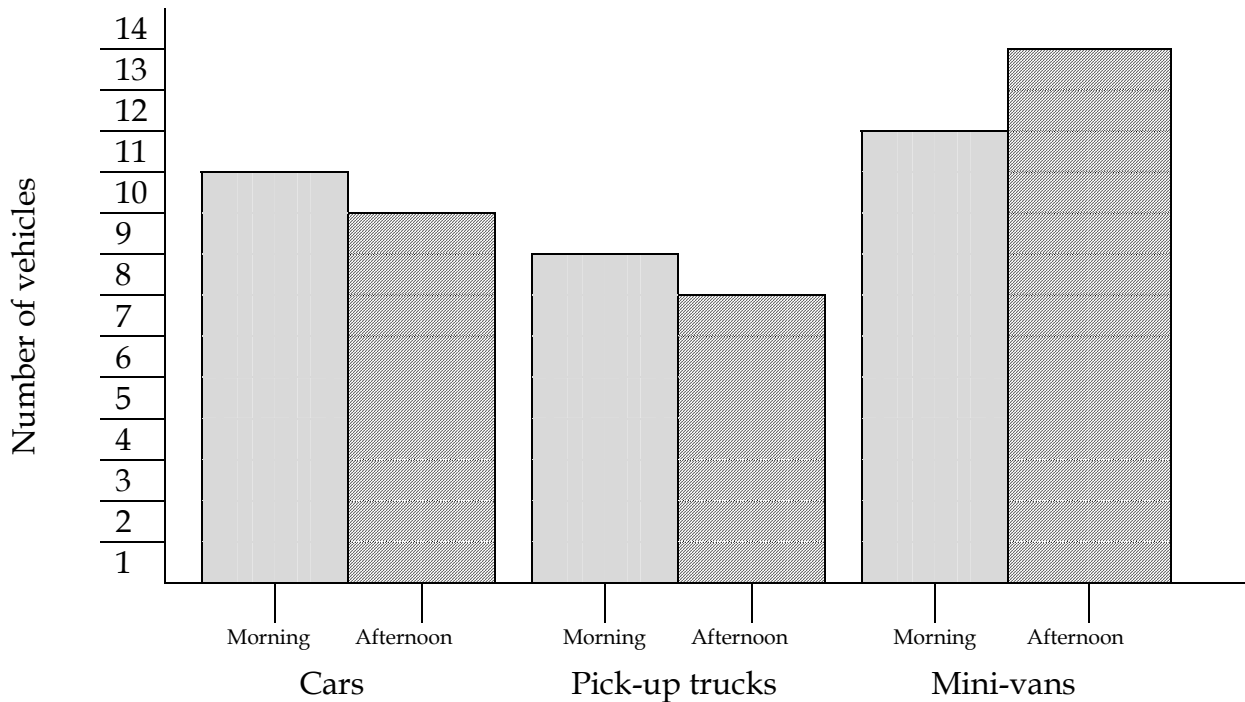
VEHICLE TYPE	NUMBER OF VEHICLES	
	Morning	Afternoon
Cars	10	9
Pick-up trucks	8	7
Mini-vans	11	13

Part 4 (Organizing Data)

Activity ~ 15 min.

Using their worksheet (see Appendix 2), ask students to create a double bar graph based on the data displayed in the table. Students will: (a) list the appropriate unit numbers on the y-axis (please note that the numbers displayed in the graph are misplaced due to word processor limitations); (b) list the correct vehicle types on the x-axis; and (c) create bars for each time of the day for each “vehicle type” category. For example:

Graph title: Number of vehicles by time of day and vehicle type



For more information about Windsor's anti-idling campaign, please visit www.idlefreewindsor.org or call 519-973-1156. (After May 1, 2007, please call the Citizens Environment Alliance at 519-973-1116.)

Appendix 1

VEHICLE CARDS

Car

Car

**Pick-up
truck**

**Pick-up
truck**

Mini-van

Mini-van

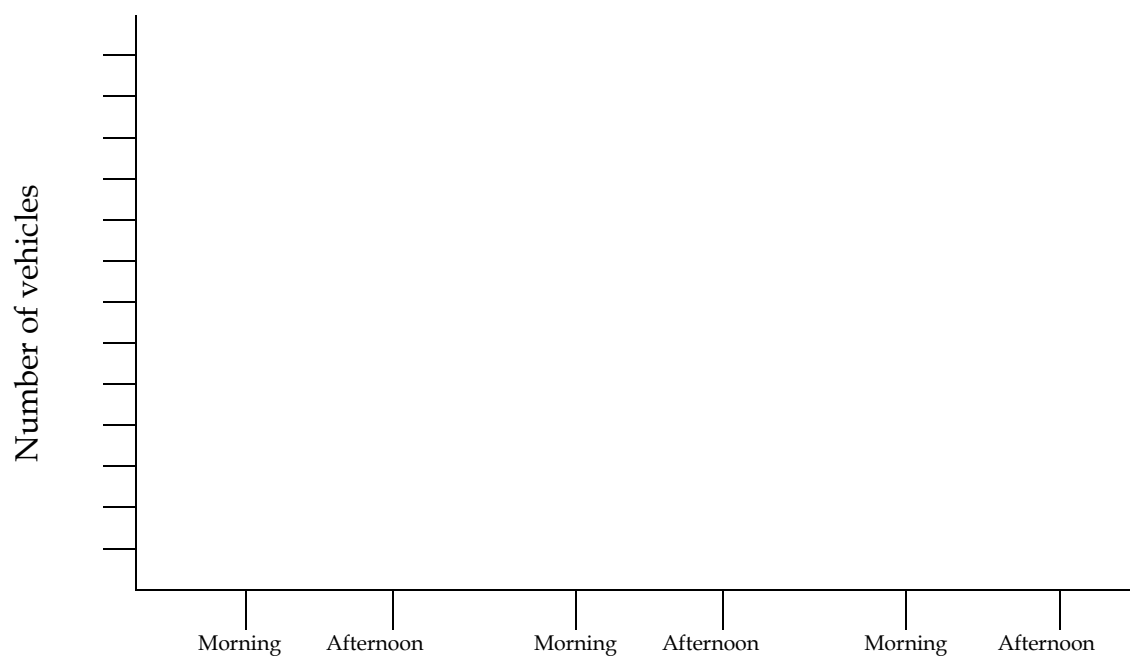
Appendix 2

Student Worksheet

Table title: Number of vehicles by time of day and vehicle type

VEHICLE TYPE	NUMBER OF VEHICLES	
	Morning	Afternoon
Cars		
Pick-up trucks		
Mini-vans		

Graph title: Number of vehicles by time of day and vehicle type



ASSESSMENT TOOL

What Type of Idling Vehicle Are You Today? ~ A Double Bar Graph ~

Teacher Name: _____

Student Name: _____

CATEGORY	4	3	2	1
Understanding of concepts	Demonstrates a thorough understanding of tables and graphs.	Demonstrates a general understanding of tables and graphs.	Demonstrates some understanding of tables and graphs.	Demonstrates a limited understanding of tables and graphs.
Requirements	All of the assigned requirements were met. (e.g., including the # of vehicles by time of day for each vehicle category in the table; listing unit #s on the y-axis of the graph; listing vehicle types on x-axis; creating bars for each vehicle type by time of day category on the graph).	Almost all of the requirements were met.	Most of the requirements were met, but several were not.	Many requirements were not met.
Application of procedures	Used procedures that included few, if any, minor errors or omissions in completing the table and graph.	Used procedures that included few errors and/or omissions in completing the table and graph.	Used procedures that included some errors and/or omissions in completing the table and graph.	Used procedures that included many errors and/or omissions in completing the table and graph.