LESSON PLAN
~Grade 4 Mathematics~

"What Type of Idling Vehicle Are You Today?"
~ A Single 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)

Activity ~ 5 min.
Randomly distribute one vehicle card per student (see Appendix 1).

Part 3 (Collecting Data)

Activity ~ 5 min.
Ask students which vehicle card they received. 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). For example:

Table title: Number of vehicles by vehicle type

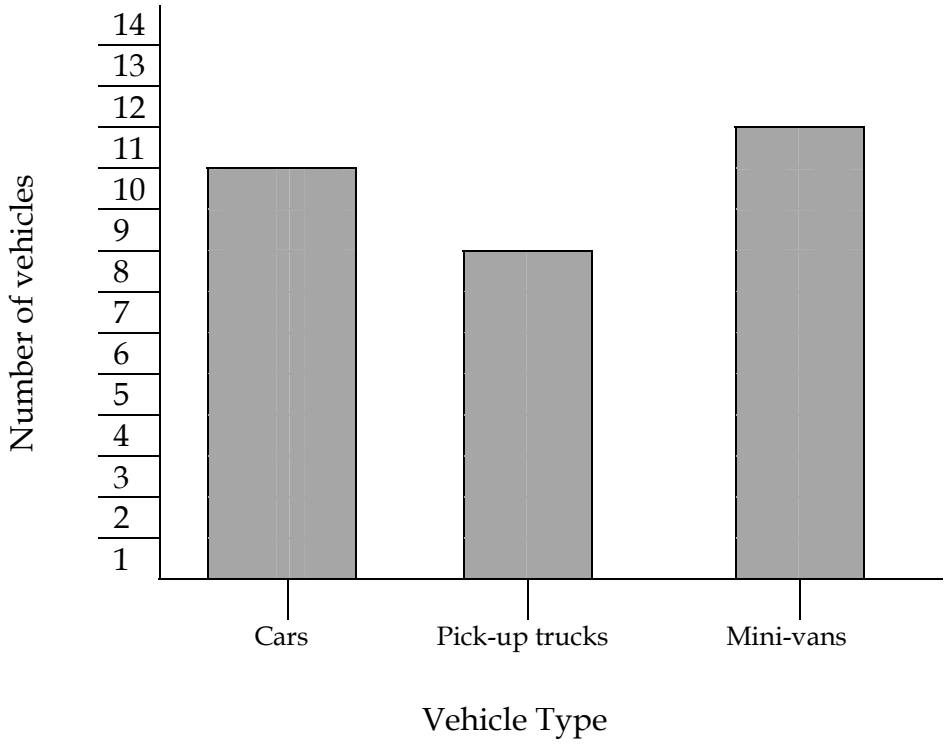
VEHICLE TYPE	NUMBER OF VEHICLES
Cars	**10**
Pick-up trucks	**8**
Mini-vans	**11**

Part 4 (Organizing Data)

Activity ~ 20 min.

Using their worksheet (see Appendix 2), ask students to create a bar graph based on the data displayed in the table. Students will 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), and create bars for each "vehicle type" category. For example:

Graph title: Number of vehicles by vehicle type



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**

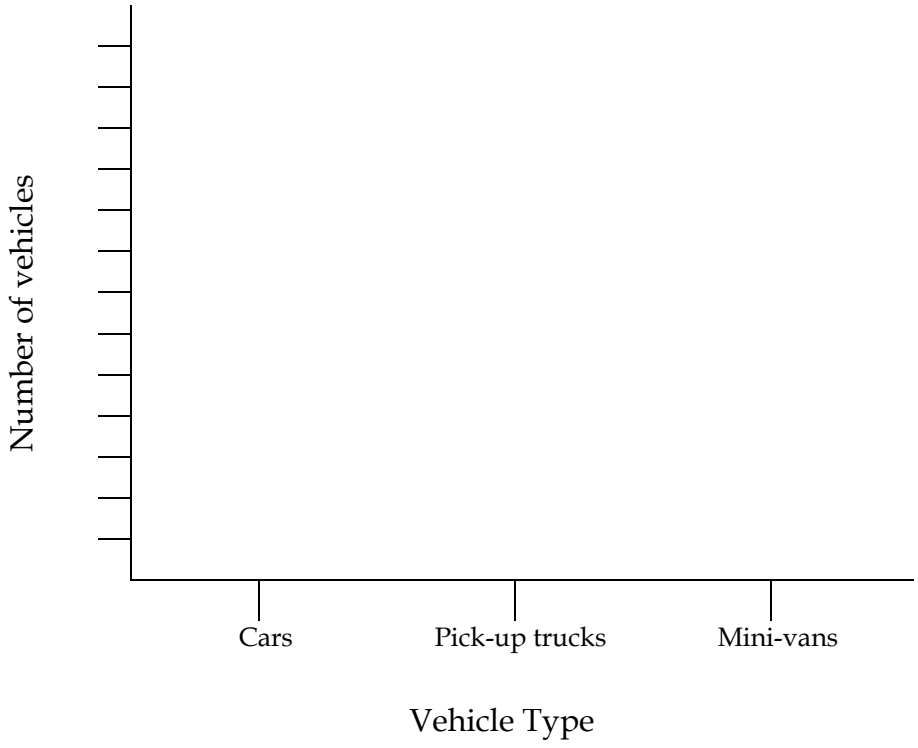
Appendix 2

Student Worksheet

Table title: Number of vehicles by vehicle type

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

Graph title: Number of vehicles by vehicle type



ASSESSMENT TOOL

What Type of Idling Vehicle Are You Today?
~ A Single 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 for each category in the table; listing unit #s on the y-axis of the graph; creating bars for each vehicle 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.