

Lesson Title	Entering Local Groundhog Data in an Excel Spreadsheet
Grade Level	4 <sup>th</sup> grade
Content Area	Computer skills, Science
Time Allotment	One 40-minute lesson.
NJ Core Curriculum Content Standards for Language Arts Literacy, Computer Education, and Science	3.4 Active Listening and Listening Comprehension, 3.5.B. Visual and Verbal Messages, 8.1.A. Basic Computer Skills and Tools, 8.2.A. Nature and Impact of Technology, 5.4.A. Science and Technology, 5.1.A. Scientific Processes.
Objective	A majority of the children will be able to create a simple chart in Excel using data we have collected during this unit.
Background Information	<p>Although we live in an urban neighborhood, our local park has a number of groundhogs living in it. The lack of predators has made them bold and they may be seen at any time during the day. This would be part of a unit on local groundhogs. At the start of the unit we will look at websites, which contain information and audio and video clips about groundhogs.</p> <p><b>(Hinterland Who's Who: <a href="http://www.hww.ca/hww2.asp?id=109">http://www.hww.ca/hww2.asp?id=109</a></b></p> <p><b>Groundhogs at Hog Haven:</b>  <a href="http://www.hoghaven.com/sounds/ghs1c.wav">http://www.hoghaven.com/sounds/ghs1c.wav</a></p> <p><b>University of Michigan Museum of Zoology:</b>  <a href="http://animaldiversity.ummz.umich.edu/site/accounts/information/Marmota_monax.html">http://animaldiversity.ummz.umich.edu/site/accounts/information/Marmota_monax.html</a>)</p> <p>The students will answer a few questions (listed below) about groundhogs and prepare for a debate later in the week. Next, we will look in the field and conduct quadrats to search for and identify groundhog dens. Finally, we will create a bar chart with our findings.</p>
Materials	Excel software and computers
Instructional Procedure	<p>Introduction:</p> <p>Now that we've finished learning about groundhogs and surveying their habitat, we will create a spreadsheet that visually represents our conclusion that groundhogs prefer to settle on higher ground. I would like you to open up Excel by clicking on the green E icon. I would like you to leave cell A1 blank and then type Quadrat 1 in cell A2, then Quadrat 2 in A3, Quadrat 3 in A4, Quadrat 4 in A5, Quadrat 5 in A6. Now we're going to make titles for our teams. In B2 type Team 1, in B3 type Team 2, B4 Team 3, B5 Team 4, B6 Team 5. Now we will enter the data we collected. Team 1's data:</p> <p>Quadrat1, 0  Quadrat2, 0  Quadrat3, 0  Quadrat4, 3  Quadra 5, 2</p>

	<p>Please enter the other teams' data in the appropriate cells.</p> <p>Now I would like you to highlight the cells A6-F6.</p> <p>Click on Insert, then chart. Another name for chart is graph. They are used interchangeably. Select bar chart. A chart is already highlighted by default. We will use that one. Keep clicking next until you get Finish. Click on Finish and we're done. By default, the chart will appear as an object in sheet 1. We will accept this default as well. When the chart appears on your sheet, move it underneath your data by clicking on the chart and dragging it.</p>
Assessment	80% of the students will be able to create a bar graph.
Connection to other areas	This unit offers connections to literacy, listening and writing skills, computer, math, and science content areas.
Extension	Students should be able to create a line graph on their own.

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Name: \_\_\_\_\_

### **Part I**

Answer the following questions based on the information found at any of the three websites:

<b>Questions:</b>	<b>Answer Key:</b>
<b>Other names for the groundhog</b>	Eastern marmot or woodchuck
<b>What is its species name</b>	Marmota Monax
<b>What are its predators</b>	foxes, coyotes, cougar, great horned owls, domestic dogs
<b>What is its average life span in the wild</b>	up to six years
<b>What is one theory why groundhogs do not survive hibernation</b>	disease
<b>Why is the length of time spent hibernating a factor in groundhog survival</b>	the later they emerge from hibernation, the more likely they are to be malnourished. They will also have less time to put on weight for the next period of hibernation
<b>Are they carnivores or herbivores</b>	Herbivores
<b>What is unusual about the groundhogs' teeth</b>	they are constantly growing and need to be ground down by chewing
<b>What is the groundhogs average gestation period</b>	30 days
<b>What is the average length and weight of a groundhog</b>	Length: 18-26 in. Weight: 6-11 lbs.

### **Part II**

Collect data for debate.

Scenario:

Park workers were found to be dropping concrete down groundhog holes. Local residents complained and the dumping has ceased for now. The workers contend that the holes make it difficult to carry out their duties.

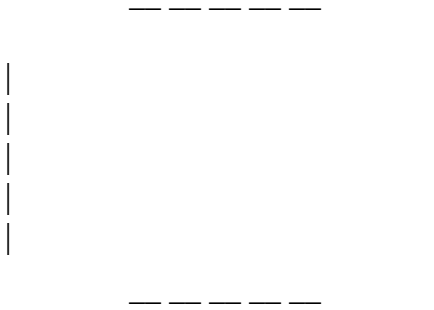
Should they be removed or euthanized? List at least 3 reasons why or why not. Use supporting data from websites provided and one other source such as magazine articles or books. (Items will be put on reserve by teacher at the local library)

## In the Field:

Our purpose is to count groundhog holes. Try to identify spy holes or bolt holes (they are usually smaller) as well as the main entrance to the den. There are pictures on the website of these.

Break up area into quadrats 10 meters by 10 meters and search each area carefully. The groundhogs live in a specific area of about 1/2 an acre in the 167 acre park. According to the research, they prefer to build dens on higher ground. We will test this by surveying. There will be 5 teams of 5 students each. Each group will survey 5 10 X 10 square meter quadrats. Quadrat 1 starts on the lowest ground and quadrat 5 is on the highest ground. If the research is correct, we should find more holes in the higher quadrats. In total we will cover 2500 meters.

Poles are two meters long each, have one person start and then three people move 5 pole lengths away to make a square.



Count each hole in each quadrat. Write down your findings.

For Example:

### Team 1

Quadrat 1:

No holes

Quadrat 2:

No holes

Quadrat 3:

No holes

Quadrat 4:

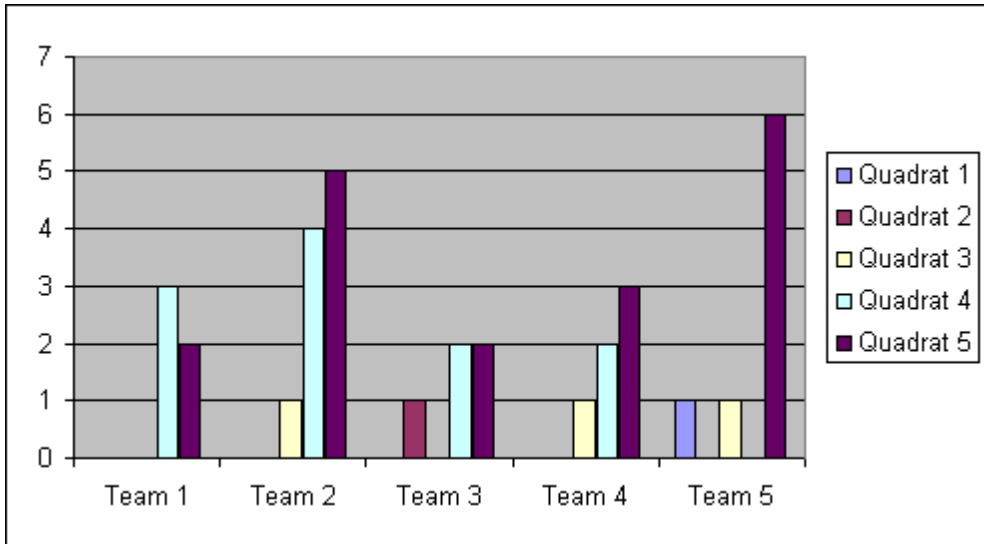
3 holes

Quadrat 5:

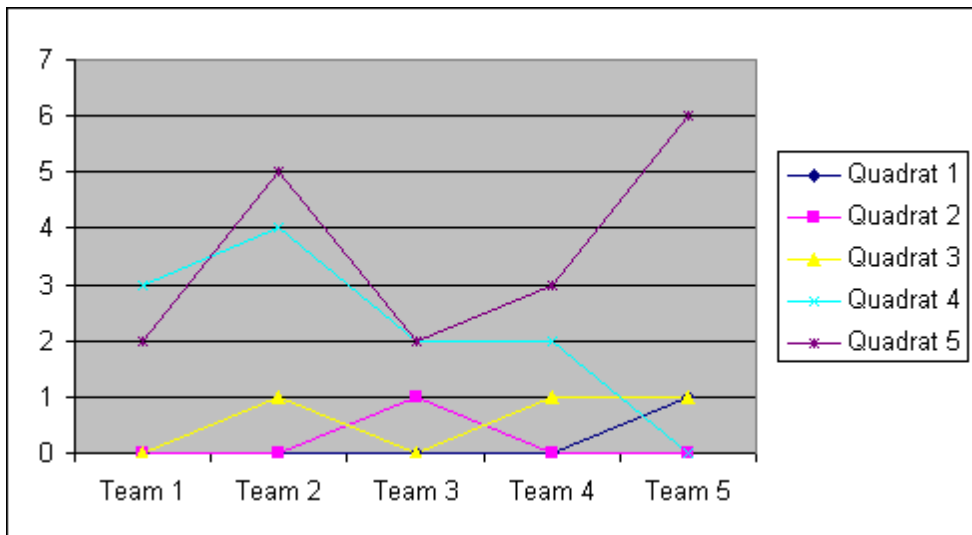
2 holes

Chart Sample:

	Team 1	Team 2	Team 3	Team 4	Team 5
Quadrat 1	0	0	0	0	1
Quadrat 2	0	0	1	0	0
Quadrat 3	0	1	0	1	1
Quadrat 4	3	4	2	2	0
Quadrat 5	2	5	2	3	6



Bar Graph



Line Graph