

Grade 7

DATA MANAGEMENT AND PROBABILITY: ORGANIZING DATA

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Play the **Data Picking Game** <http://www.bbc.co.uk/education/mathsfile/shockwave/games/datapick.html> first. You may also go to www.wiredmath.ca for the link.

Categorical Data: Data that can be sorted by type or quality, rather than by measured or counted values. E.g. eye colour and favourite food.

Discrete Data: Data that can include only certain numerical values (often whole numbers) within the range of data. Discrete data usually represent things that can be counted. E.g. the number of times a word is used or the number of students absent. A discrete graph is made up of a series of separate points.

Continuous Data: Data that can include any numerical value that is represented on a number line and that falls within the range of the data, including decimals and fractions. E.g. time, height and mass.

Continuous Graph: A graph that consists of an unbroken line. All points on the graph represent actual values.

1. Identify the type of data as categorical, discrete or continuous.
 - a. Number of misspelled words.
 - b. Colour of hair.
 - c. Height of three-year-old children.
 - d. Distance between your home and school.
 - e. Average rainfall in Kitchener area.
 - f. Driving speed.
 - g. Number of students in a school.
 - h. Number of bacteria in a water sample.
 - i. Favourite TV show.
2. Grade 7 students took a math test. Their results are recorded at the right.
 - a. Construct a frequency table with intervals of 5.
 - b. How many students took the math test?
 - c. Display the data on a bar graph.
 - d. How did most of the students do on the math test?
 - e. Joanne had 68 on her math test. How does her result compare to the other students?
 - f. Could you use a pictograph to display the data? Why or why not?



Grade 7 Math Test

38 68 65 73 77 75 77 98
93 88 85 81 82 85 76 77
68 66 75 71 74 90 69 65
75 79 80 85 85 82 76 80
60 85 75 45 87 77 63 62
66 47 84

Bar graphs use horizontal or vertical bars that represent data.

Broken-line graphs represent data using points joined by line segments. The only points that represent actual data are the end points of the segments.

3. The following table shows the number of students who participated in the after-school activities from Monday to Friday.

Day	Number of students
Monday	50
Tuesday	85
Wednesday	100
Thursday	85
Friday	30

- Display the information using a bar graph.
 - Which day of a week has the most participants?
 - Which two days have the same number of participants?
 - Compare the number of participants on Monday and Wednesday.
4. The following table shows the average monthly rainfall in South Africa.

Month	Average Monthly Rainfall in South Africa (mm)
January	166
February	100
March	39
April	35
May	9
June	3
July	16
August	16
September	24
October	49
November	114
December	112



- Display the information using a broken-line graph.
- Use the graph, which month has the least amount of rainfall? The most amount of rainfall?
- Explain why the broken-line graph is the most appropriate for displaying this type of data?

Technology Circle Graphs



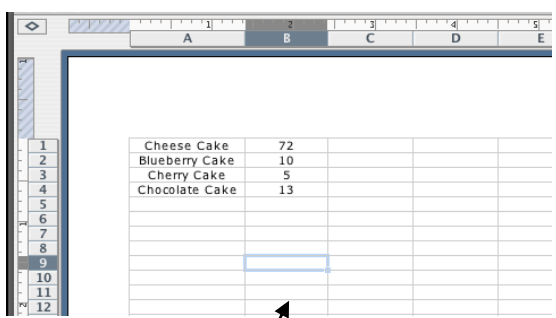
1. Start a new *Excel workbook*.

2. Enter the data from the table.

For example:

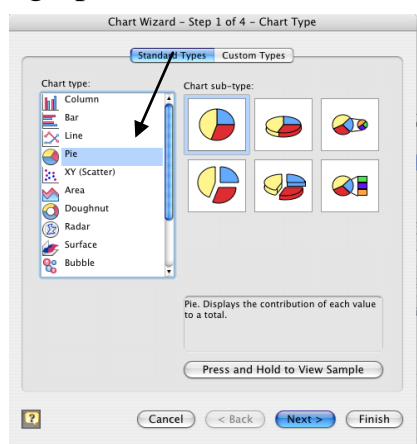
Favourite Cakes	Cheese Cake	Blueberry Cake	Cherry Cake	Chocolate Cake
Number of people	72	10	5	13

3. Your spreadsheet should now look like this.



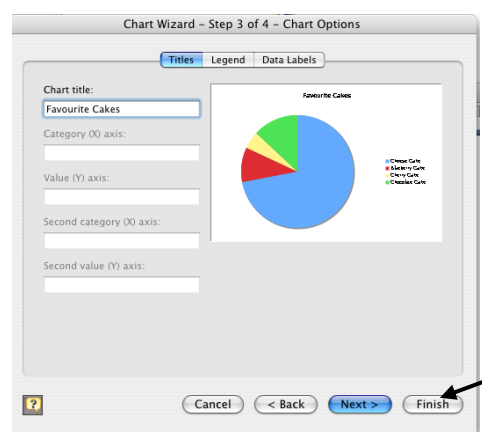
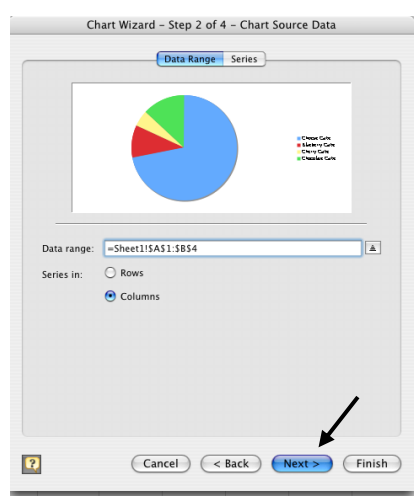
Note: you can enter data in the spreadsheet vertically or horizontally.

4. **Highlight** the data, and then click on the **Chart Wizard** and select **Pie** from the list shown in **Standard Types**. Select the first of the six choices. Click **Next** to display your graph.

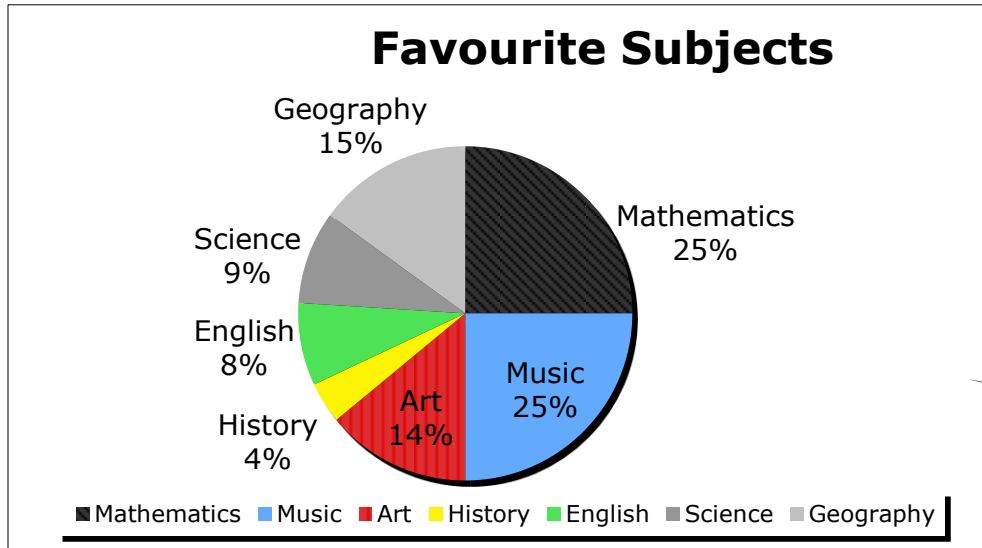


5. Click **Next** again to move to next window.

6. Now you can add a title and other information. Click **Finish** when you done.



5. Circle the most correct answer.



Circle graphs are used to display categorical data using parts of a circle.



- A part of a circle graph that explains the colours that represent each part or slice of the graph is a
 - legend
 - grid
 - axis
- The two subjects that make up the favourite subjects of half of the surveyed students are:
 - Mathematics and Science
 - Music and Science
 - Mathematics and Music
- The favourite subject for 3 out of every 20 students is:
 - Science
 - History
 - Geography
 - English
 - Art
- The total number of students in this survey is 200. How many students enjoy Mathematics the most?

6. Use Excel to create a circle graph for the following data.

Hours of sleeping per day	Number of people
5 hours or less	15
6	48
7	55
8	108
9	73
10 or more	65



7. Which graph is the most appropriate to represent each of the following data?

- The number of students belonging to different clubs.
- The relationship between the time and total distance travelled.
- The number of medals won by the hockey team for each year from 1995 to 2005.
- Nutrient facts of a canned fruit.
- Temperature forecasting for the next 14 hours.
- The number of eggs laid by 5 different kinds of chicken.

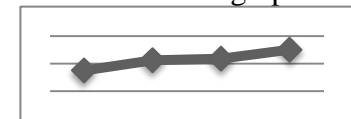
A - Bar graph



B - Circle graph



C - Broken-line graph



Expectations: i) organize categorical, discrete or continuous data and display the data in charts, tables, and graphs that have appropriate titles, labels and scales; ii) select appropriate type of graph to represent a set of data, graph the data using technology, and justify the choice of graph. For more activities and resources from the University of Waterloo's Faculty of Mathematics, please visit www.cemc.uwaterloo.ca.