



STAGE 3

MARKET RESEARCH AND BUSINESS PLAN

Students will gather and analyze data about customers' pizza preferences. They will learn how to market their product and create promotional materials, and responsible packaging.

Lesson 2 • Analyzing Survey Results

Overview

In this lesson, students will analyze the data gathered from their completed surveys by creating graphs and making business decisions based on their findings. Opportunities to extend learning through additional data analysis and representation are also included for teachers who wish to deepen the math connections.

Learning Goals

Students will learn:

- About relative frequency tables and stacked-bar graphs
- To create charts that represent the data from our surveys
- To make team decisions about our product and business based on the data

Materials Needed

- [Stage 3 Lesson 2 Teaching Slides](#)
 - [Student Resource Packet](#) (all lessons, printable)
 - [STEMterprise Deliverables Tracker](#)
 - [Pizza Shop Business Planning Booklet](#)
 - [Pizza Survey Template](#) (printable)
 - [Google Form Pizza Survey Template](#) or [Microsoft Form Pizza Survey Template](#)
 - [Data Collection Questions](#)
 - [Bar Chart Template](#) (printable, optional).
 - [Data and Decisions Checklist](#) (printable, optional).
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Teachers Notes

This stage requires students to have their surveys completed. Stage 3, Lesson 1 introduced students to creating and conducting surveys.

The two key tasks in this lesson are creating a graph and making decisions based on their survey data.

Data analysis can be explored extensively in this lesson. The grade 5 Ontario Math Curriculum expectations [D1.2, and 1.3](#) include stacked-bar graphs and relative frequency tables, which are featured in this lesson. Creating infographics is an engaging task and expectation; however, they have been excluded from this lesson due to time. Teachers can opt to have students create data representation that fits with their goals. The lesson can extend to include mean, median, and mode.

Graphing: If students use Google Forms, a stacked-bar graph can be made by selecting the data created in Google Sheets, clicking insert, chart, then a variety of chart choices appear on the right side. Stacked-bar graphs can also be created in Microsoft Forms. Chart created digitally can be copied and pasted. An optional, simple [Bar Chart Template](#) is available for students to represent their data using paper and pencil.

Time Frame: 60 min

This is an ideal lesson to do during math periods.

Career Connection

There is an optional Career Connection at the end of this and all lesson slides and

the [Career Connections Slides](#) can be found at this link. Career: Data Processing Technician.

Curriculum Expectations

Mathematics - Strand D Data

D1.1 explain importance of sampling techniques

D1.2 collect data, using appropriate sampling techniques as needed, to answer questions of interest about a population, and organize the data in relative-frequency tables

D1.3 select from among a variety of graphs, including stacked-bar graphs, the type of graph best suited to represent various sets of data; display the data in the graphs with proper sources, titles, and labels, and appropriate scales; and justify their choice of graphs

D1.6 analyse different sets of data presented in various ways, including in stacked-bar graph

(Extension) D1.5 determine the mean and the median and identify the mode(s)

Science and Technology - Strand A STEM Skills and Connections

A1.1 use scientific research process and skills to conduct investigations

A1.2 use scientific experimentation process and associated skills to conduct investigations

A1.5 communicate their findings, using science and technology vocabulary

Transferable Skills:

- Entrepreneurship and Collaboration

Agriculture/Agri-Food Themes:

- Determining how to increase interest in grain-based foods
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STEMterprise References for Educators

STEMterprise Webpage: <https://goodineverygrain.ca/ontario-farming-stemterprise/>

Video Links

- [Ontario Farming STEMterprise: Grade 5 Pizza Shop Business](#)
- [Students: Are you ready for your own pizza business?](#)

STEMterprise Teacher Support Resources

- [Ontario Farming Grade 5 Educator Information Packet](#)
- [STEMterprise Grade 5 Assessment Planning](#)
- [Project Overview](#)
- [Combined Grade Activities](#)
- [Career Connections Slides](#)
- [Coding Connections Slides](#)
- [Good in Every Classroom Education Blog](#)
- [Good in Every Classroom Newsletter Sign-Up](#)

Stage 3 | Lesson 2: Analyzing Surveys

Slide 5: Business Connection	This Business Connection slide is intended to get kids thinking about the learning ahead as it specifically relates to their pizza business. Encourage the students to make early connections about the learning goals and the connection to their business. These simple signposts give students a sense of where they are on their learning journey. You can note the number of stages and which lesson you're on in that particular stage.
Slide 6: Minds On!	Introduce this Relative Frequency table. Although this is a new math concept in grade 5, students should be familiar with tables to record data from previous grades. As a class look at the pepperoni total and explain that the "Total" column represents the number of people and the "Relative Frequency" is represented as a fraction, decimal and percent. Go through the mushrooms, onions and green peppers as a class. Allow students the opportunity to figure out the relative frequency for the cheese. This relative frequency table is based on the Teacher Support in the Ontario Grade 5 Math Curriculum Definition from the Ontario curriculum: A relative frequency table is an extension of a frequency table and shows each category expressed as a proportion of the total frequencies, represented using fractions, decimals, or percentages. The sum of the relative frequencies is 1 or 100%.
Slide 7: Graphs	Stacked bar graphs are a new mathematical concept for grade 5s. Students may choose to represent their own data as a stacked bar graph (and you may want to encourage this) so taking time to look closely at how it is created and comparing it to other graphs may be helpful for their own data representation. To have a more comprehensive discussion about the data on this table and how it can be represented, the table and graph are linked to this Stacked Bar Graph Sample. You can open the sheet to see the graph in a larger format and view the data in different bar graphs and a pie chart. You can also make a copy of the Sheet to model making charts and changing the data.
Slide 8: Data (Activity)	Activity 1: In business groups, review data collected in surveys. Choose how to present data (which type of graph/infographic to create) and complete OPTION: have students present the results of their data to the class.

	Consider sharing a slide deck or doc with your class so they can copy and paste their graph and it can be projected in a larger format Educator: Time will vary for this aspect of the lesson depending on the time needed for the students to create graphs. Teachers could skip the presentation of the data to the class of the data if time is short and the teacher can review the graphs/data and give feedback. The Data and Decisions Checklist document can be used for students and a place to make notes as they work on this task.
Slide 9: Decisions from Data Analysis (Activity)	Activity 2: Identify common preferences and trends in pizza choices. Based on results of survey, groups make final decision re pizza type/toppings, and target demographic groups, and complete <i>Decisions we have made</i> (page 9) of Pizza Shop Planning Booklet. Time will vary for this aspect of the lesson depending on the time needed for the students to create graphs. Teachers could skip the presentation of the data to the class if time is short and the teacher can review the graphs/data and give feedback. The Data and Decisions Checklist document can be used for students and a place to make notes as they work on this task.
Slide 10: Wrap Up	Now is a great time to continue the THINGS TO CONSIDER chart for your class. Provide students with sticky notes, one per business group or pair. Have them add one thing they need to remember (in relation to this lesson) as they develop their pizza business. This is a great time to review what they have learned relating to data and their business! You might consider asking the class “What things will we need to consider when planning our pizzas?” Have a few students share answers with the class.
Slide 11: What’s Next?	The “What’s Next?” slide is intended to be flexible and may be customized or filled in by teachers based on their classroom needs, pacing, and next steps.
Slide 13: Career Connections (Extension)	Use this career connection for either lesson as it relates to both and go to the AgScope Data Processing Technician link for more info.