2.1 Developing a Thesis

In this section, you will compile a personal interest inventory and will compare your results with those of your classmates. You will also work at developing a thesis question, which will become the focus of your project. To complete the course project, you may wish to work as a team with other students who share your interests.

Personal Interest Inventory

Academic Subjects

A1	Anthropology	A10	Geology	A19	Politics
A2	Astronomy	A11	German	A20	Psychology
A3	Biology	A12	History	A21	Religion
A4	Chemistry	A13	Law	A22	Sociology
A5	Computers	A14	Literature	A23	Spanish
A6	Economics	A15	Mathematics	A24	Visual Arts
A7	English	A16	Phys. Ed.	A25	World Issues
A8	French	A17	Physics		
A9	Geography	A18	Poetry		

Select your three favourite academic subjects from the 25 listed above and rank them in order. Do the same with the 25 non-academic interests listed below and record them in a chart. You can add or delete certain topics from these lists.

Non-Academic Interests

N1	Baseball	N9	Football	N18	Reading
N2	Basketball	N10	Gymnastics	N19	Rugby
N3	Camping	N11	Hiking	N20	Singing
N4	Carpentry	N12	Hockey	N21	Skiing
N5	Cars	N13	Painting	N22	Travelling
N6	Computer Programming	N14	Part-Time Job	N23	Volleyball
		N15	Physical Fitness	N24	Volunteering
N7	Cycling	N16	Playing Music	N25	Writing
N8	Figure Skating	N17	Politics		

index—an arbitrarily defined number that provides a measure of scale

INVESTIGATION 1: CLASSROOM INTEREST COMPARISON

Are there other students in your class who have interests similar to yours? Using an **index**, you can measure the similarity between you and your classmates.

Purpose

Calculate an interest index for each student in your class to determine which students have interests that are most closely related to yours.

Procedure

A. (*Without technology*) Record your ranked set of favourite subjects and interests on paper in a chart similar to the spreadsheet below. To make the comparison easier, use the labels from the list instead of the actual subject and interest names.

	A	B	C	D	E	F	G	H
1		Academic Subject			Non-Academic Interest			
2		Favourite	Second	Third	Favourite	Second	Third	
3	*My interests*	A15	A2	A16	N12	N6	N25	
4	**Student**							**Score**
5								

B. In finding a score for each of your classmates, try to match each of their selections to one of yours using the following guide to assign points:

	Their Favourite	Second	Third
Your Favourite	10	6	3
Second	6	3	2
Third	3	2	1

For example, if you and a classmate share the same favourite, give that student 10 points; if your second choice is that student's third choice, give her or him 2 points. If you don't share any favourites with that classmate, assign 0 points. The classmate with the highest score is the one with interests most similar to yours.

Think about Spreadsheet Formulas

If you are using a spreadsheet formula, why is it important to use a standardized entry like the labels here (e.g., A15) instead of words?

A. (*With spreadsheet technology*) Create a spreadsheet similar to the one above and record your favourites as shown.

B. Since you have used consistent entries, you can write a formula using logical operators to add up the score each person should receive. Use the CD that accompanies this textbook to access these formulas.

Technolink

For more information on using logical operators and formulas with spreadsheet software, see Appendix E, pages 425 and 426.

	A	B	C	D	E	F	G	H
1		Academic Subject			Non-Academic Interest			
2		Favourite	Second	Third	Favourite	Second	Third	
3	*My interests*	A15	A2	A16	N12	N6	N25	
4	**Student**							**Score**
5	Carlos	A10	A5	A3	N3	N1	N2	13
6	Phoebe	A2	A3	A16	N1	N2	N3	7
7	Ralph	A4	A5	A6	N7	N8	N9	0
8	Wanda	A23	A14	A15	N12	N8	N1	13
9	Dorothy	A2	A16	A10	N12	N23	N25	19
10	Keisha	A14	A1	A3	N8	N10	N13	0

Technolink

This spreadsheet and its formulas are included on the textbook CD.

Based on the example above, you share the most interests with Dorothy.

Discussion Questions

1. What is the significance of the score that the formula produces?
2. What are some weaknesses of this system of finding similarities between people?
3. How could you determine if there is a relationship between a student's gender and interests?

FINDING A TOPIC

thesis—a formal statement or question that your project will answer or discuss

mind map—a visual display used in brainstorming to illustrate relationships

You may be struggling with simplifying a large project idea and turning it into a more manageable project **thesis**. A **mind map** can help you organize the information you have.

A mind map is a brainstorming tool that can illustrate how a topic relates to other concepts. You can use it to expand on the interests you discovered in your investigation.

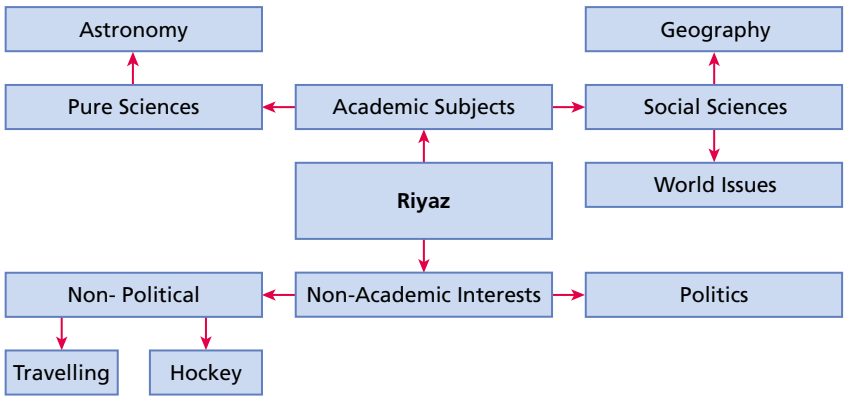
To see how to construct a mind map, consider how Riyaz uses them as he expands on the results of his investigation.

Example 1 Constructing a Mind Map

Riyaz identified astronomy, geography, and world issues as his three favourite academic subjects, and politics, travelling, and hockey (sports in general) as his three favourite non-academic interests. Use a mind map to illustrate how these topics relate and expand each subject or area of interest one level further.

Solution

Starting from the centre, connect all six interests in the most meaningful way possible. One obvious connection would be to link the three non-academic interests and the three academic subjects. In addition, divide his purely scientific interests from his interests in social science. His political and non-political interests should also be separated.

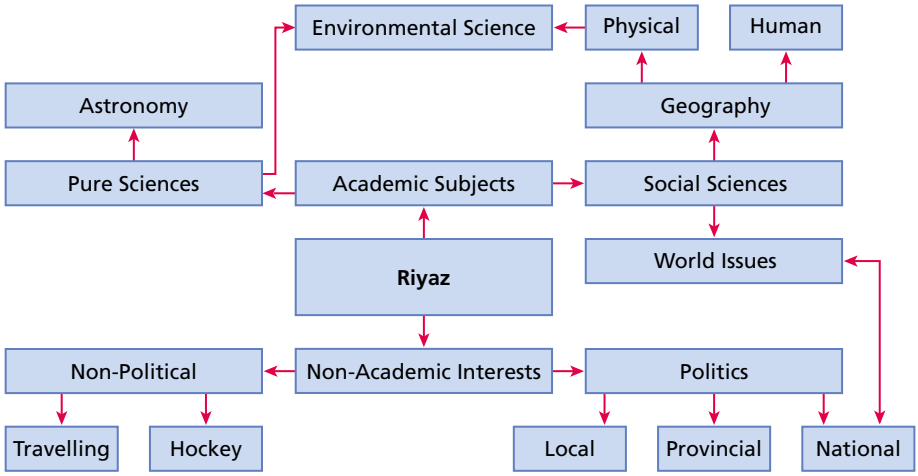


Project Connection

A mind map is a great way to get started. Take your six favourites and create one of your own.

To expand this map one level further, brainstorm about each endpoint on his map and work at connecting these new points back together in meaningful ways.

Geography could be divided into human and physical geography. Physical geography is strongly related to environmental science, a pure science. Similarly, politics at the national level is related to world issues.



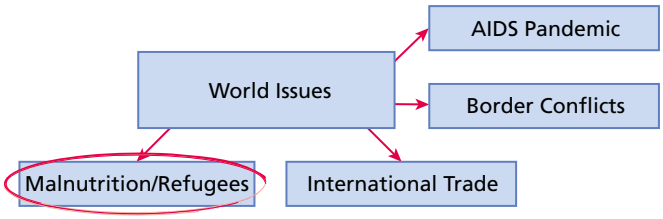
When working with mind maps, remember the following:

- Start off as simply as possible and draw lines between related words.
- Work from the inside out.
- Do not be afraid to start over; a dead end is simply a reason to try again.

Example 2 Expanding a Thesis Topic

Riyaz is interested in doing a project related to his studies in world issues. Expand this part of the mind map by brainstorming related concepts and construct a number of thesis questions.

Solution



Riyaz can think of four related topics; however, malnutrition/refugees strikes him as a topic worthy of study. With this in mind, he brainstorms and creates a number of questions that can be explored with the use of statistical information.

Project Connection

From your mind map, take an end-point of interest or a junction between two parts and work at developing a thesis question.

(a) Is there a relationship between the number of refugee camps located in a nation and the rate of malnutrition for that country?

(b) How has the issue of malnutrition changed from 1950 to the present?

(c) Where are malnourished people in Canada most likely to live? Do they live mostly in rural or urban areas?

(d) Using statistical analysis, determine the characteristics of a typical resident of a refugee camp in Southeast Asia. Make a comparison with a typical resident of a refugee camp in Africa.

(e) Given a country with a high rate of malnutrition, examine changes over time in that country's agricultural production, education and medical practices, industrial production, international borrowing, political stability, and so on. Are there any relationships?

To analyze a thesis question properly, consider the following:

1. What are the main **variables** in my question?
2. Can these variables be measured statistically?
3. Is there enough data to make an interesting analysis?

variable—a measurable characteristic that can change

Example 3 Thesis Question Analysis

Consider the questions Riyaz has developed for Example 2.

Analyze each of the questions using the steps above and determine which one(s) would provide the most insightful answer. In addition, make sure that your question has a result that is interesting and worthy of study.

Solution

Riyaz uses a chart to analyze his questions.

	Main Variables	Can These Be Measured?
Question (a)	Number of camps Rate of malnutrition	Yes Not easily
Question (b)	Change in malnutrition	No
Question (c)	Location of malnourished people	Not easily
Question (d)	Characteristics of refugee camp residents	Yes (dependent on characteristics chosen)
Question (e)	Agricultural production Education and medical practices Industrial production International borrowing Political stability	Yes Yes Yes Yes Not easily

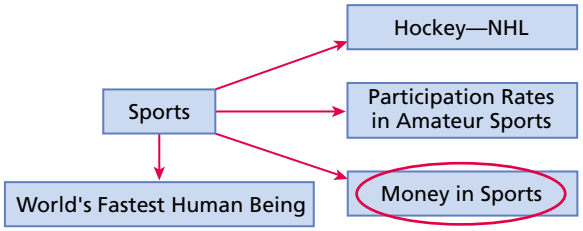
Project Connection

Remember, the analysis of your thesis must make use of the tools you discover in this course. You must also be able to present your findings to your class.

While both Questions (d) and (e) can be statistically measured, it is clear that Question (e) has more data available and would, therefore, make a more interesting analysis. Question (e) requires the knowledge of some basic economic statistics for various countries in the developing world and can be summarized in a way that will be interesting. Question (e) makes the best thesis question.

Example 4 Thesis Question Analysis

Stephanie has a strong interest in sports. Review Stephanie's mind map by brainstorming related concepts and develop a number of thesis questions.



Solution

After coming up with four topics of interest, Stephanie chose the topic Money in Sports. With that in mind, she thought of four questions:

(a) How do people at my school feel about high salaries in professional sports?

(b) How have salaries paid to professional hockey players and professional football players in Canada changed from 1960 to the present?

(c) Is there a relationship between a very large salary increase to an athlete and his or her subsequent performance?

(d) Does the amount (either overall or calculated per capita) that a country spends to prepare its athletes for the Olympics correspond to the country's success at the Games?

KEY IDEAS

personal interest inventory—use the personal interest inventory to brainstorm possible topics for your project

mind map—related themes and issues can be studied in a mind map; topics for your major project can usually be found in the endpoints of a mind map

thesis question—the focus of your project is answering your thesis question. When considering a thesis question, determine

- the main variables in your question
- whether the variables can be measured statistically
- whether there is enough data to make an interesting analysis

2.1 Exercises

A

1. Sort each list of words into two or three categories.
   - **(a)** packing, shopping list, drive, sleeping bag, unpack, canoe, relax, sunscreen, swim, sleep, eat, bug bite, picnic
   - **(b)** pedal, steer, wheel, brake, tire, shift, push, dial, radio, pull, seat, turn, switch, window
   - **(c)** hard drive, type, click, mouse, download, plug-in, CD-ROM, read, keyboard, play, record, cable, save, load, monitor
   - **(d)** dig, seeds, hose, plant, prune, water, clip, harvest, garden, hoe, shovel, fertilizer
   - **(e)** wake up, copier, shower, breakfast, lunch, drive, break, meeting, phone, fax
   - **(f)** ref, blue line, slashing, puck, fans, net, goalie, forward, defence, face off, skate, shoot, save
2. Using the sorted lists from Question 1, draw lines between related words to create a mind map.
3. **Application** Take the first few pages of a recent newspaper and draw a mind map that connects a major issue or current event with related articles.
4. Determine the main variables in the following thesis questions.
   - **(a)** How is the accuracy of a person's ability to estimate height and distance related to his or her height? To his or her age?
   - **(b)** Are females better than males at estimating the size of a large crowd?
   - **(c)** Is there a relationship between the quality of a person's clothing and her or his mid-term average?
   - **(d)** What is the relationship between mid-term average and favourite subject?
5. Consider the variables identified in Question 4. Rate them on a scale of 1 to 10, with 1 meaning *easily defined and measurable* and 10 meaning *not measurable or well-defined.*

B

6. Dawn has wanted to become an entrepreneur ever since her brother started a carpet-cleaning service last year. For her course project, she wants to study small business in Canada. Create five questions related to this topic that can be statistically studied and that provide enough data to make Dawn's project interesting.
7. Gord loves to watch TV and would like to study the TV-watching habits of his classmates. Create five questions related to this topic that can be statistically studied. Ensure they will provide enough data to make Gord's project interesting.

8. **Knowledge and Understanding** Hafiz started getting more sleep this semester and has noticed that his grades are improving. He would like to study whether this is true of people in general. Create five questions related to this topic that can be statistically studied and that will provide enough data to make an interesting project. Identify a challenge associated with each question.

Think about Thesis Questions

When evaluating a thesis question, ask yourself:

- What are the main variables in my question?
- Can these variables be statistically measured?
- Is there enough data to make an interesting analysis?

9. Flavia wants to study the shopping habits of people in her community. Her thesis question is *What is important to people when they go shopping?* What challenges will Flavia face in using this question? How could her thesis question be improved to make the project easier to study and more insightful?

10. Joylene wants to do her project on music, but needs help with a thesis question. Create five questions related to this topic and write them in order from most effective to least effective.

11. Deborah wants to study her classmates' reactions to a recent theatrical release, but her teacher has asked her to expand the scope of her project. What changes would you suggest Deborah make to her study? Create a suitable thesis question for this new project.

12. Saima wants to study the attributes of Canadians who donate to international charities that provide food to developing countries. Her teacher has asked that she adjust the scope of her project to make it easier to collect data. What changes would you suggest that Saima make to her study? Create a suitable thesis question for this new project.

13. **Communication** Choose three of the following thesis questions and explain with details why you think each one would be the basis for a feasible and worthwhile project.

(a) How is the accuracy of a person's ability to estimate height and distance related to her or his height?
(b) Are females better than males at estimating the size of a large crowd?
(c) What is the relationship between a student's mid-term average and his or her favourite subject?
(d) Which local fast-food outlet is the best?
(e) What do students at your school think about local school uniforms?

C

14. Create a mind map consisting of at least three levels that relates Canada, politics, and poverty. Develop three thesis questions about an endpoint in the mind map and then evaluate each question.

15. **Thinking, Inquiry, Problem Solving** Create two rating systems (one for women and one for men) based on the table on the following page to determine which dish is most nutritionally balanced. State all of your assumptions. Is the most balanced meal the same for both women and men? How would you explain the difference, if any?

Guideline for Daily Nutritional Requirement[1]

	Men	Women
Calories	2500–3000	2000
Protein	63 g	50 g
Total fat	60–75 g	50–60 g
Saturated fat	20–25 g	15–20 g
Cholesterol	300 mg	300 mg
Fibre	20–30 g	20–30 g
Carbohydrate	340 g	275 g
Sodium	2400 mg	2400 mg

[1] Reader's Digest, *The How-To Book of Healthy Cooking: Good Food That's Good For You* (Pleasantville, New York: The Reader's Digest Association, Inc., 1995) 9.

Dishes[2]

	Greek Poached Chicken and Lemon Stew	Pork Chops Stuffed with Apples and Pears	Poached Salmon Steaks	Hearty Beef, Turkey, and Mashed-Potato Pie
Calories	291	384	262	393
Protein	50 g	40 g	29 g	31 g
Total fat	7 g	15 g	11 g	7 g
Saturated fat	2 g	5 g	3 g	2 g
Cholesterol	135 mg	113 mg	75 mg	68 mg
Fibre	2 g	3 g	1 g	8 g
Carbohydrate	25 g	21 g	11 g	52 g
Sodium	313 mg	133 mg	200 mg	360 mg

[2] Reader's Digest 61, 106, 133, 159.

ADDITIONAL ACHIEVEMENT CHART QUESTIONS

16. **Knowledge and Understanding**

(a) What is a thesis?

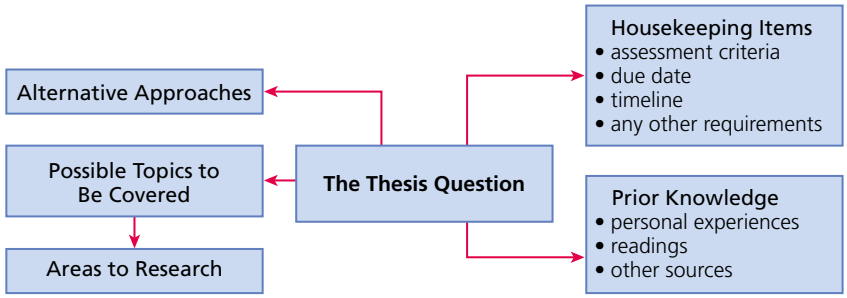
(b) List the characteristics of a good thesis question or statement.

17. **Application**

(a) Misa has identified the following three areas of interest: Canada, hockey, and politics. Create a mind map that shows how these three topics connect with one another.

(b) Use your mind map to formulate a possible thesis question.

18. **Thinking, Inquiry, Problem Solving** The general mind map that follows could be used as a framework for your project. Use this template to create a project mind map for your thesis question or statement.



19. **Communication** Consider the following thesis question: *Are most of the problems faced by countries in the world—such as poverty, hunger, and environmental destruction—the consequences of excessive population growth?* Determine whether or not this is an example of a good thesis question and justify your reasoning.

Chapter Problem

Mystery Most Mathematical—Part I

Here is a copy of the first e-mail that I received:

```
Subject:   Re: Puzzle - Part 1
Date:      Monday 08:47:35 -0700 (EDT)
From:      314159@homework.com
To:        jto@coldmail.com

Five groups of five. See where your interests lie.

parallax, Ramapithecus, robot, Glomar Challenger,
white dwarf, Pocketronic, Paul Langerhans, mammog-
raphy, P waves, sonar, Abell clusters, Buckminster
Fuller, Nereid, Palenque, pre-Cambrian shield,
dialysis, nebula, angioplasty, Gottlieb Daimler,
papyrus, Daniel Barringer, pancreas, Meave Leakey,
mineral, Minoan

Determine the common denominator for each group of
five. Pick the topic that interests you the most and
design a research question.

Good luck!
```