

Workplace Numeracy

Activity Summary

- In this activity, students will:
- ♦ Interview two people to collect information about the application of Numeracy as an **Essential Skill** in the workplace.
 - ♦ Collect, if possible, authentic workplace resources that show the use of these skills.
 - ♦ Work in groups of 2 or 3, to create five problems, using ratio, rate, proportion and percent based on the information collected.
 - ♦ Provide solutions to the problems created.



Prior Knowledge

- Working knowledge of ratio, rate, proportion and percent
- **Essential Skills** including a detailed description of numeracy

Teaching Planning Notes

- Review assignment including prior knowledge required and assessment and evaluation tools
- Instruct students that a community member can be anyone they have contact with in the community, such as a pastor, postman, scout leader, etc. and that an employer is someone who hires people to work for them such as a store manager, business owner, etc.
- Assign the interview task well in advance of the time you will need the data for the proportional reasoning unit to ensure that students have collected the data.
- Book time in the computer lab for students to use word processing software (for problem questions not solutions) (optional)
- Provide students an opportunity to present one of their problems and its solution to the class or create a poster to display a problem and solution. (optional)
- Alternative #1: Teachers may take the data collected by the class and collate it for the students prior to students creating their questions.
- Alternative #2: Have students work with one of the people they interviewed to create a problem based on an authentic workplace scenario and provide its solution.

Note 1: The authentic workplace resources (if collected) may also be incorporated into future learning opportunities.

Assessment of Student Achievement

Task	Tool / Type
Interview	It's Everywhere "Tell Me About It" - Interview Sheet (Formative)
Create and solve problems	It's Everywhere Creating Problems and Solutions Checklist and Rubric (Formative and Summative)

Activity and Assessment Materials

- It's Everywhere Assignment Sheet
- Tell Me About It - Interview Sheet (2 per student)
- Creating Problems and Solutions: Checklist and Rubric

FOCUS ON LEARNING

Essential Skills:

Document Use

Conducting Interview

Writing

Conducting Interview

Creating Problems and Solutions

Numeracy

Creating Problems and Solutions

Oral Communication

Conducting Interview

Creating Problems and Solutions

Collecting Authentic Workplace Documents

Thinking Skills

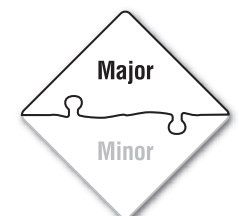
Creating Problems and Solutions

Working with Others

Creating Problems and Solutions

Computer Use (Optional)

Creating Problems (word processing)



Curriculum Linkages For Ontario Educators

Essential Skills truly are everywhere and as teachers we are always teaching students the **Essential Skills!** As subject teachers and specialists, we know that many of the curriculum expectations we are accountable to teach and assess, also address the **Essential Skills** and while the linkages are not always readily apparent, the linkages exist nonetheless.

While this activity connects to a variety of courses, it is most closely aligned to the following course(s):

- Foundations of Mathematics, Grade 9, Applied – MFM 1P

To assist you, the teacher, in making more transparent linkages, we have identified the following curriculum linkages for this activity.

Foundations of Mathematics, Grade 9, Applied – MFM 1P (codes not available at present)

Coded Overall Expectations	Coded Specific Expectations
solve problems involving proportional reasoning	illustrate equivalent ratios, using a variety of tools (e.g., concrete materials, diagrams, dynamic geometry software)
	represent, using equivalent ratios and proportions, directly proportional relationships arising from realistic situations
	solve for the unknown value in a proportion, using a variety of methods (e.g., concrete materials, algebraic reasoning, equivalent ratios, constant of proportionality) make comparisons using unit rates
	solve problems involving ratios, rates, and directly proportional relationships in various contexts (e.g., currency conversions, scale drawings, measurement), using a variety of methods (e.g., using algebraic reasoning, equivalent ratios, a constant of proportionality; using dynamic geometry software to construct and measure scale drawings)
	solve problems requiring the expression of percents, fractions, and decimals in their equivalent forms (e.g., calculating simple interest and sales tax; analysing data)

It's Everywhere!

Like it or not, Math is everywhere! Mathematical skills (also known as Numeracy skills) are used in several workplaces. In this activity, you will:

- Interview people in the workforce to determine how they use Numeracy skills in their current job, and if possible, collect actual samples of documents or forms that are used.
- Work in groups, using the information you collected, to create five problems that use ratio, rate, proportion, and percent then write clear, well-organized solutions to your problems.



Task #1: Tell Me About It

Considering Teachers (not myself), Parents/Guardians/Relatives, Community Members, and Employers, interview two people (each from a different category) to determine how mathematics may be used on the job. Complete the Interview Sheet for each person interviewed. If you are able to collect actual documents, attach them to the interview sheet.

Task #2: Creating Problems and Solutions

Working in groups of two or three, use the actual data you collected and/or the job activity examples from the people you interviewed, to create five problems and solutions.

Your set of problems must include ratios, rates, proportions and percent.

For each problem, provide a clear, well-organized solution. Each person in the group must complete at least one solution.

It's Everywhere! Tell Me About It Interview Sheet

Person Interviewed: _____

Job Title: _____

Category: Teacher Parent/Guardian/Relative
 Community Member Employer

Use of Numeracy Skills Survey

Numeracy refers to the workers' ability to understand and use numbers and to think in quantitative terms.

NUMERACY <i>Essential Skill</i> SUB-CATEGORY	DESCRIPTION	IMPORTANCE RATING 1 (LITTLE) TO 5 (VERY)	FREQUENCY OF USE (CIRCLE ONE)
Money Math	Financial transactions, such as handling cash, preparing bills or making payments		Hourly Daily Weekly Monthly Yearly
Scheduling or Budgeting and Accounting Math	Managing time and money as resources, planning and monitoring their use, assessing best value, reducing waste		Hourly Daily Weekly Monthly Yearly
Measurement and Calculation Math	Measuring and describing the physical world		Hourly Daily Weekly Monthly Yearly
Data Analysis Math	Analysis of numerical data		Hourly Daily Weekly Monthly Yearly
Numerical Estimation	Using numbers to perform estimating tasks		Hourly Daily Weekly Monthly Yearly

It's Everywhere!

Give a brief description of at least one activity you do that uses numeracy skills.

Is there a document that is referred to or a form that is filled out when completing this activity?

Yes No If yes, what is name of the document/form? _____

Is it possible to obtain a sample copy of this document? Yes No

Are any of these documents available on-line? Yes No

If yes, where can they be found? _____

Other Information (Optional)

How many years have you been with this organization? _____

How long have you been in your current position? _____

How many hours do you work in a typical week? _____

How are you paid?

Hourly wage Yearly Salary Piecework Other _____

It's Everywhere!

Creating Problems and Solutions Checklist and Rubric

CREATING PROBLEMS AND SOLUTIONS CHECKLIST	COMPLETED <input checked="" type="checkbox"/>
Created 5 questions	<input type="checkbox"/>
Created solutions for 5 questions (at least one solution per group member)	<input type="checkbox"/>
Used ratio	<input type="checkbox"/>
Used rate	<input type="checkbox"/>
Used proportion	<input type="checkbox"/>
Used percent	<input type="checkbox"/>

CATEGORIES/ CRITERIA	LEVEL 1 (50-59%)	LEVEL 2 (60-69%)	LEVEL 3 (70-79%)	LEVEL 4 (80-100%)
Knowledge and Understanding Understands mathematical concepts of ratio, rate, proportion and percent	Limited	Some	Considerable	Thorough
Thinking Created problems appropriate to the data available	Limited Effectiveness	Some Effectiveness	Considerable Effectiveness	High Degree of Effectiveness
Communication Used mathematical symbols, labels, units and conventions correctly	Limited Effectiveness	Some Effectiveness	Considerable Effectiveness	High Degree of Effectiveness
Application Selected the appropriate method to solve the problems	Limited Effectiveness	Some Effectiveness	Considerable Effectiveness	High Degree of Effectiveness

Note: A student whose achievement is below Level 1 (50%) has not met the expectations for this assignment.