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# Introduction

Mathematics is a very important life skill. However, many students do poorly in this subject area because they do not understand why maths is relevant to their everyday lives. As a result, they struggle with the concepts and skills. In order for students to think maths is important and useful, they must understand its practical applications. *Maths Simulations* helps students see how maths is used in the real world. This progressive unit gives them something more to look forward to than the standard approach of drill and practice that is so commonly associated with maths instruction. As students use the simulations, their interest and enjoyment of maths will increase, causing their level of success to improve.

The 93 pages in *Maths Simulations* are filled with a variety of fun-filled activities that focus on home economics. Students are given the opportunity to practice computational and problem-solving skills as they learn how incomes and expenses affect the finances and ultimately, the lifestyles of different sizes of families.

The simulations in this book are organised as follows:

- Family Profile
- Professions
- Cheque Accounts
- Estimated Family Budgets
  - Food
  - Housing
  - Transportation
  - Other Expenses
  - Unexpected Events
  - Total Expenses

*Maths Simulations* is ideal for intermediate students. The easy-to-follow lesson design gives you maximum flexibility to adjust the curriculum to meet the needs of your students. Each lesson includes one or more objectives, suggested vocabulary to help present important concepts, a list of materials and a detailed explanation of the procedure needed to complete the simulation. In addition, follow-up activities are frequently provided to extend the lessons. The last section of this book provides pages that allow students to practice and review a variety of mathematical skills. These activities can be utilised throughout the unit and are referred to in each lesson where appropriate.



# Family Budgets

## *Objectives*

Students will predict and estimate their monthly and yearly family budgets for food, housing, transportation, other expenses, unexpected events and total expenses. Then they will compare their predictions with their estimates.

## *Suggested Vocabulary*

See pages 31, 47, 53, 59, 67 and 74.

## *Materials*

- Part 1: Food (pages 31–46)
- Part 2: Housing (pages 47–52)
- Part 3: Transportation (pages 53–58)
- Part 4: Other Expenses (pages 59–66)
- Part 5: Unexpected Events (pages 67–72)
- Part 6: Total Expenses (pages 73–79)
- Family Profile Record Sheets (page 10) from previous simulations.

## *Procedure*

1. Ask students to brainstorm a list of possible expenses a family might have. Discuss the purpose and the importance of having a budget. Explain that a budget is the amount of money a family thinks it will need to cover its expenses.
2. Before beginning Simulation # 4. Part 1, have students predict their monthly and yearly budgets for food, housing, transportation, other expenses, unexpected events and total expenses. Tell them to write this information on their Family Profile Record Sheet (page 10).
3. Firstly, have students use prior knowledge to predict their monthly costs. Then tell them to determine their yearly costs by multiplying each monthly value by 12 (for the number of months).
4. Have students determine the monthly and yearly total expenses. Explain that the monthly total is determined by adding together all of the monthly values for each category. The yearly total can be determined by adding together all of the yearly values for each category or by taking the total monthly amount and multiplying it by 12. Allow students to use calculators if needed.
5. Discuss how budgets may vary, depending on family size and needs.

## *Follow-Up Activities*

1. Encourage students to keep a record of their real-life families' basic expenses for one or two months. You may wish to limit this activity to one category such as food, transportation or housing.
2. Invite a financial planner to speak to your class.

# Food

## **Objectives**

Students will create sample food menus to plan breakfast, lunch and dinner meals. Then they will estimate their food expenses for one day, one week, one month and one year.

## **Suggested Vocabulary**

brand name, generic, nutritious, fresh produce, dairy products, poultry, frozen foods, entrees, beverages, bakery, label, ingredients, calories, preservatives, additives, artificial flavours/colours, low fat, sugar free, price per unit, bulk, cashier, cash register, customer, restaurant, bill, fast foods, tip, à la carte

## **Materials**

- Food Pyramid (page 34), one copy per student
- Food Price List (pages 35–38), one copy per student or for pairs of students
- Sample Food Menu—Option 1 (page 39), one copy per student if using Option 1
- My Food Menu—Option 1 (page 40), 21 copies per student if using Option 1
- Food Menu Summary—Option 1 (pages 41–43), one copy per student if using Option 1
- Sample Food Menu—Option 2 (page 44), one copy per student if using Option 2
- My Food Menu—Option 2 (page 45), three copies per student if using Option 2
- Food Menu Summary—Option 2 (page 46), one copy per student if using Option 2
- Family Profile Record Sheets (page 10) from previous simulations.

### *Optional:*

- Basic Operations with Whole Numbers (pages 80 and 81)
- Understanding Decimals (page 82)
- Adding and Subtracting Decimals (page 83)
- Understanding Fractions and Mixed Numbers (page 84)
- Multiplying Fractions and Mixed Numbers (page 85)
- Understanding Percentages (page 86)
- Finding Percentages (page 87)
- Answer Key (page 92)

## **Procedure**

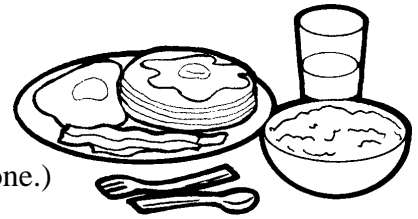
1. Be sure students know how to multiply fractions and convert fractions to decimals for the food menu activities.
2. For capable maths students, use Option 1 (page 32, pages 39–43). For less capable maths students, use Option 2 (page 33, pages 44–46). Provide students with copies of the Food Pyramid (page 34) whether they are using Option 1 or 2. Have students do research at local grocery stores to determine food prices or provide copies of the Food Price List (pages 35–38).
3. After students complete Option 1 or 2, ensure they record their estimated monthly and yearly expenses for food on their Family Profile Record Sheets (page 10).

# Sample Food Menu—Option 1

**Family:** 2 adults, 3 children

**Meal:** Breakfast

**Day:** (1) 2 3 4 5 6 7 (Circle one.)



Food Item	(Servings per Adult x Number of Adults) + (Servings per Child x Number of Children) =	Total Servings
Eggs	$(2 \times 2) + (1 \times 3) = 4 + 3 =$	7
Toast	$(2 \times 2) + (1 \times 3) = 4 + 3 =$	7
Fresh Fruit	$(1 \times 2) + (1 \times 3) = 2 + 3 =$	5
Milk	$(1 \times 2) + (1 \times 3) = 2 + 3 =$	5

Food Item	Calculation of Cost	Cost for No. of Servings Needed (Rounded to Nearest Cent)
Eggs	<p>\$3.00 for 12—only 7 needed</p> $\frac{7}{12}$ of \$3.00 = $\frac{7}{12} \times \frac{2}{1} = \frac{14}{12}$ $\frac{14}{12} = 14 \div 12 = \$1.75$	\$1.75
Toast	<p>\$2.00 for 20 slices—only 7 needed</p> $\frac{7}{20}$ of \$2.00 = $\frac{7}{20} \times \frac{2}{1} = \frac{14}{20}$ $\frac{14}{20} = 14 \div 20 = \$0.70$	\$0.70
Fresh Fruit	<p>\$3.00 for 1 kilo (4 servings)—only 5 are needed</p> $\frac{5}{8}$ of \$3.00 = $\frac{5}{8} \times \frac{2}{1} = \frac{10}{8}$ $\frac{10}{8} = 10 \div 8 = \$1.87$	\$1.87
Milk	<p>\$2.50 for 2 litres (8 servings)—only 5 are needed</p> $\frac{5}{8}$ of \$2.50 = $\frac{5}{8} \times \frac{3}{1} = \frac{15}{8}$ $\frac{15}{8} = 15 \div 8 = \$1.56$	\$1.56
<b>TOTAL</b>		<b>\$5.88</b>