Math for Life Curriculum Overview

Skills practice: fractions
decimals
percents
Earning money: salary
hourly pay
time sheets
overtime
benefits
stock options
Banking: simple & compound interest
savings and checking accounts
reconciling checking accounts
Budgeting: creating and using a budget
sample budgets
Investments: stock market
reading newspaper stock reports
dividends
annual yield
bonds
mutual funds
stock market indexes
Food and nutrition: calculating calories
reading food labels
increasing/decreasing recipes
Restaurants, etc: computing tips
guidelines for tipping
Living quarters: renting and furnishing apartments
purchasing a home
mortgage payments
home improvements & landscaping
Buying a car: pricing
auto insurance
mileage
Travel: planning a trip
reading maps
money exchanges
reading temperature graphs
Shopping: comparison shopping
coupons
unit pricing
sales tax,
sale pricing
charge accounts
Extras: world records, lotteries, target heart rates, etc.
Instructions for the User

- Pages should be worked in order. While each page contains a separate concept, units are organized around common themes. Concepts, in general, have been ordered from easier to more difficult.

- Each unit includes detailed explanations of concepts as well as problems pertaining to these concepts.

- Detailed solutions to all of the problems are included at the end of each unit.

- A section entitled “Help Pages” is located at the end of Unit 1 and can be saved as a reference for basic math functions.

- A “Table of Measurements” and “Glossary” are located at the back of the book on yellow paper.
## Deductions

Salary earned is called **gross pay**. (This is what an employee is told he or she will earn.) Take-home pay is called **net pay**. This is the amount an employee actually receives. Net pay is found by subtracting **deductions** from gross pay. Deductions are amounts of money withheld from gross pay for things like taxes, union dues, and health insurance.

Certain deductions are mandatory and others are optional. Additionally, some deductions only apply to certain workplaces. The following list provides definitions for a few deductions. This list does not cover all possibilities.

<table>
<thead>
<tr>
<th>Deductions</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal Income Tax</td>
<td>The government requires employers to withhold a certain amount of an employee’s pay for federal income tax. The amount withheld depends on the level of income, marital status, and the number of <strong>withholding allowances</strong> (the number of children or other people the employee supports) that are claimed.</td>
</tr>
<tr>
<td>State Tax</td>
<td>Depending on where the employee lives, a state income tax may be a required deduction. The amount withheld varies from state to state, depending upon the individual state’s tax laws.</td>
</tr>
<tr>
<td>FICA (as of 2003)</td>
<td>FICA is a required deduction by the federal government with few exceptions. It consists of two components; the first is a Social Security tax which is charged at a rate of 6.2% on the first $87,000 of an employee’s annual income. This cap increases annually. An additional 6.2% is matched by the employer. The second component is a Medicare tax which is charged at a rate of 1.45% and is also matched by the employer. Wages earned for the entire year are subject to the Medicare tax.</td>
</tr>
<tr>
<td>Health Insurance</td>
<td>If an employee is required to pay all or part of his/her health insurance, the payment may be collected through a payroll deduction.</td>
</tr>
<tr>
<td>Union Dues</td>
<td>If an employee is part of a labor union, his/her dues may be collected through a payroll deduction.</td>
</tr>
<tr>
<td>Voluntary Contributions</td>
<td>An employee may choose to have deductions taken from his/her pay for things such as: savings plans, child care, health care expenses not covered by insurance, and charitable donations. Opportunities for these deductions vary by employer.</td>
</tr>
</tbody>
</table>
Find the net pay in the following problems. Then find the person’s estimated annual take-home pay assuming the person works 50 weeks per year. Round to the nearest cent.

**Example:**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gross Pay</strong></td>
<td>40 hours at $8.50/hour</td>
</tr>
<tr>
<td></td>
<td>(40 x 8.50 = $340.00)</td>
</tr>
<tr>
<td><strong>Federal Tax</strong></td>
<td>16% of gross pay</td>
</tr>
<tr>
<td></td>
<td>(340 x .16 = $54.40)</td>
</tr>
<tr>
<td><strong>State Tax</strong></td>
<td>4.4% of gross pay</td>
</tr>
<tr>
<td></td>
<td>(340 x .044 = $14.96)</td>
</tr>
<tr>
<td><strong>FICA</strong></td>
<td>6.2% + 1.45% = 7.65% of gross pay</td>
</tr>
<tr>
<td></td>
<td>(340 x .0765 = $26.01)</td>
</tr>
<tr>
<td><strong>Dependent Care</strong></td>
<td>$25.00</td>
</tr>
<tr>
<td><strong>United Way Contribution</strong></td>
<td>$5.00</td>
</tr>
<tr>
<td><strong>Total Deductions:</strong></td>
<td>(54.40 + 14.96 + 26.01 + 25.00 + 5.00 = 125.37)</td>
</tr>
<tr>
<td><strong>What is the net pay?</strong></td>
<td>(340.00 - 125.37 = 214.63)</td>
</tr>
<tr>
<td><strong>What is the annual take-home pay?</strong></td>
<td>(214.63 x 50 = 10.731.50)</td>
</tr>
</tbody>
</table>

1. **Gross Pay** $560.00 (per week)

2. **Federal Tax** 16% of gross pay

3. **State Tax** 4.4% of gross pay

4. **FICA** 7.65% of gross pay

5. **Health Insurance** $45.00

6. **Total Deductions:**

What is the weekly net (take-home) pay? __________

What is the annual net (take-home) pay? __________
Reconciling the Checking Account

If you have a checking account, you will receive a monthly statement from the bank. The statement will show your monthly transactions, service charges, and account balance. It is important to use the statement to reconcile your account to ensure that your records match the bank’s records.

Unprocessed deposits are deposits which the bank has not yet added into your account. Outstanding checks are checks which have not yet been cashed by the payee (person or business to whom the check has been written). These will cause your checkbook balance to be different than the bank’s balance for your account.

The formula to reconcile a bank statement is as follows:

Bank Balance + Unprocessed Deposits − Outstanding Checks = Checkbook Balance

**Example:**

- Bank Balance: $1,024.23
- Unprocessed Deposits: $95.00, $15.75
- Outstanding Checks: $49.50, $25.98
- Checkbook Balance: $1,059.50

$1,024.23 + $95 + $15.75 − $49.50 − $25.98 = $1,059.50

Reconcile the following accounts:

1. Bank Balance: $956.17
   - Unprocessed Deposits: none
   - Outstanding Checks: $47.50, $72.00, $13.50
   - Checkbook Balance: __________

2. Bank Balance: $2,424.01
   - Unprocessed Deposits: $18.00, $166.00
   - Outstanding Checks: $24.11, $74.63, $82.94, $9.40
   - Checkbook Balance: __________

3. Bank Balance: $774.11
   - Unprocessed Deposits: $143.00, $171.53, $20.00
   - Outstanding Checks: $44.00, $52.67, $29.94, $5.00, $92.00, $131.98
   - Checkbook Balance: __________

4. Bank Balance: $356.10
   - Unprocessed Deposits: $97.19, $102.15
   - Outstanding Checks: $26.00, $6.48, $50.47, $95.75
   - Checkbook Balance: __________
Creating a Budget

A budget is a plan for how you will spend your money. It is important to use a budget to ensure that you have enough money to meet your needs throughout each month. The first step in establishing a budget is to determine your monthly expenses. To do this, keep track of all expenditures for the month. At the same time you must also determine your average monthly income.

STEP I

Determine the average monthly net income for the following salaries. (Hint: Multiply the amount earned by the number of pay periods per year, then divide by twelve.)

1. Biweekly net pay: $793.50
   (26 pay periods per year)

2. Semimonthly net pay: $659.70
   (24 pay periods per year)

3. Weekly net pay: $521.10
   (52 pay periods per year)

If your net pay changes weekly, you can also determine your average monthly pay.

To find average monthly pay:

A. Find your average weekly income. (Add your weekly checks and divide by the number of weeks added.)

B. Multiply your answer by 52 (weeks in a year).

C. Divide by 12 (months in a year).

Determine the average monthly net income for the following weekly wages. Round to the nearest cent if necessary:

4. $159.25, $102.36, $172.10, $168.46

5. $126.48, $129.87, $167.90, $143.29, $192.90, $95.70
STEP II

The next step in creating your budget is to take your list of monthly expenses, categorize them, and budget an amount of money for each category. Each person’s categories may be a little different, but many categories are common.

**Fixed expenses** are expenses that do not change from month to month (such as rent or car payment.) **Variable expenses** are expenses that change monthly (such as phone or entertainment). When preparing a budget and including variable expenses, use an average amount spent per month.

**It is important to make sure the total amount budgeted for the month does not exceed the average amount you earn each month!**

Once you have created your budget, you can determine what percent of your income is used for each category. It is usually advised that shelter, including utilities, should not exceed 50% of one’s salary.

List your own budget categories and expenses:

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>AMOUNT BUDGETED</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>
Automobile Insurance

Automobile insurance is an agreement between a driver and an insurance company. The driver agrees to pay a premium and the company agrees to cover certain costs, such as property damage or personal injury, in the event of an accident.

Nearly all comprehensive and collision insurance are sold on a deductible basis. If your car is damaged and you make a claim for repair, you pay the deductible amount and the insurance company will pay for the damages above the amount of the deductible.

1. Sara hit a guard rail and did $1,200 worth of damage to her car. Her deductible is $400. How much of the repair will be covered by her insurance company?

2. Eli currently pays $700 per year for automobile insurance. He was recently notified that his rates will be increased by 15% next year.
   A. How much will he pay for auto insurance next year?

   B. What will his quarterly payments be at this new rate?

3. Melissa’s car was vandalized in the school parking lot. She carries a $250 deductible. The total cost of the repairs came to $475. How much of the cost of the repairs will Melissa’s insurance company pay?

4. Pete received a speeding ticket. His insurance company informed him that, because of the ticket, his rates would be increased by 7%. Previously he paid $725 per year for auto insurance.
   A. How much will he have to pay following the increase?

   B. Typically, points received as the result of a ticket stay on a driver’s license for three years. If Pete is charged the higher insurance rate for 3 years, how much extra money will he have spent on insurance due to his ticket?
Charge Accounts

A **charge account** allows you to buy an item now and pay for it at a later date. You can pay for an item or service with a **credit card**. At the end of the month you will receive a statement telling you the total amount due. Failure to pay the entire amount within a stated number of days will result in a **finance charge**. A finance charge is interest you pay on an unpaid credit card balance. Credit cards often charge high interest rates.

Your bill will always state the **APR**. That is the **annual percentage rate** or the amount of interest you will be charged over one year. Next to that you will see a rate followed by D (daily) or M (monthly). This determines your daily or monthly finance charge, respectively. In this book, credit card finance charges will be determined using a monthly compounded rate.

To find the finance charge on a credit card balance:

1. Subtract the amount of the payment from the total amount due. This is the unpaid balance.

2. Multiply the unpaid balance by the periodic rate. In this book the periodic rate is the annual percentage rate divided by 12. This is the finance charge.

3. Add the finance charge to the unpaid balance. This is the new balance.

**Example:**

<table>
<thead>
<tr>
<th>Total amount due:</th>
<th>$500.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment:</td>
<td>$100.00</td>
</tr>
<tr>
<td>APR:</td>
<td>18%</td>
</tr>
<tr>
<td>Periodic Rate:</td>
<td>1.5%</td>
</tr>
</tbody>
</table>

\[
\text{Unpaid Balance} = \$500.00 - \$100.00 = \$400.00 \\
\text{Finance Charge} = \$400 \times 0.015 = \$6.00 \\
\text{New Balance} = \$400 + \$6 = \$406.00
\]
<table>
<thead>
<tr>
<th>Total Amount Due</th>
<th>Payments &amp; Credits</th>
<th>APR</th>
<th>Periodic Rate</th>
<th>Unpaid Balance</th>
<th>Finance Charge</th>
<th>New Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>$2,398.27</td>
<td>$175.00</td>
<td>13%</td>
<td>1.08%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$74.14</td>
<td>$25.00</td>
<td>15%</td>
<td>1.25%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$516.96</td>
<td>$20.00</td>
<td>21%</td>
<td>1.75%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Yvonne purchased a prom dress, shoes, and a purse for $250.00. When her statement arrived, she was only able to make a payment of $50.00. Her annual percentage rate was 21%, which is a monthly rate of 1.6%. If Yvonne continued to make payments of $50.00 each month, how long would it take to pay for the outfit?

How much did the outfit actually cost her?
TABLE OF MEASURES

**TIME**
- 60 seconds = 1 minute
- 60 minutes = 1 hour
- 24 hours = 1 day
- 7 days = 1 week
- 365 days = 1 year
- 52 weeks = 1 year
- 12 months = 1 year
- 10 years = 1 decade
- 100 years = 1 century
- 1000 years = 1 millennium

**WEIGHT (MASS)**

<table>
<thead>
<tr>
<th>Customary System</th>
<th>Metric System</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 ounces = 1 pound</td>
<td>1,000 milligrams = 1 gram</td>
</tr>
<tr>
<td>2,000 pounds = 1 ton</td>
<td>1,000 grams = 1 kilogram</td>
</tr>
<tr>
<td></td>
<td>1,000 kilograms = 1 metric ton</td>
</tr>
</tbody>
</table>

**LENGTH**

<table>
<thead>
<tr>
<th>Customary System</th>
<th>Metric System</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 inches = 1 foot</td>
<td>10 millimeters = 1 centimeter</td>
</tr>
<tr>
<td>3 feet = 1 yard</td>
<td>100 centimeters = 1 meter</td>
</tr>
<tr>
<td>5,280 feet = 1 mile</td>
<td>1,000 millimeters = 1 meter</td>
</tr>
<tr>
<td></td>
<td>1,000 meters = 1 kilometer</td>
</tr>
</tbody>
</table>

**VOLUME**

<table>
<thead>
<tr>
<th>Customary System</th>
<th>Metric System</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 teaspoons = 1 tablespoon</td>
<td>1,000 milliliters = 1 liter</td>
</tr>
<tr>
<td>4 tablespoons = 1/4 cup</td>
<td></td>
</tr>
<tr>
<td>16 tablespoons = 1 cup</td>
<td></td>
</tr>
<tr>
<td>8 fluid ounces = 1 cup</td>
<td></td>
</tr>
<tr>
<td>2 cups = 1 pint</td>
<td></td>
</tr>
<tr>
<td>2 pints = 1 quart</td>
<td></td>
</tr>
<tr>
<td>4 quarts = 1 gallon</td>
<td></td>
</tr>
</tbody>
</table>

**TEMPERATURE**

<table>
<thead>
<tr>
<th>Customary System</th>
<th>Metric System</th>
</tr>
</thead>
<tbody>
<tr>
<td>32° F = Freezing point of water</td>
<td>0° C = Freezing point of water</td>
</tr>
<tr>
<td>98.6° F = Normal body temperature</td>
<td>37° C = Normal body temperature</td>
</tr>
<tr>
<td>212° F = Boiling point of water</td>
<td>100° C = Boiling point of water</td>
</tr>
</tbody>
</table>
GLOSSARY

401K and 403B accounts: Retirement savings accounts to which employees contribute pre-tax dollars. The tax and payments are deferred until the employee retires.

52 week high and low: The highest and lowest prices paid for a share of a company’s stock during the past year

addends: The numbers added together in an addition problem

all-inclusive: When applied to a vacation this is a term used to describe a vacation package which typically includes meals, non-alcoholic beverages, and non-motorized watersports.

a.m.: Ante Meridiem; the hours from 12:00 midnight until 12:00 noon

American Stock Exchange (AMEX): One of the 3 U.S. stock exchanges

annual: Yearly

annual interest: The amount of interest earned in one year

annual percentage rate: The amount per year of a finance charge written as a percent; a way of representing the cost of borrowing money

annual salary: The amount of money earned in one year

annual yield: The yearly dividend expressed as a percent of the price of the stock

area: The number of unit squares or parts of unit squares required to tile a plane figure; the amount of space inside a flat, enclosed area ex. rectangle: \( A = lw \)

Automatic Teller Machine (ATM) Computer controlled machines allowing bank customers to make deposits and withdrawals 24 hours per day.