

Math for Life Curriculum Overview

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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.

<u>Deductions</u>	<u>Purpose</u>
Federal Income Tax	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 withholding allowances (the number of children or other people the employee supports) that are claimed.
State Tax	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.
FICA (as of 2003)	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.
Health Insurance	If an employee is required to pay all or part of his/her health insurance, the payment may be collected through a payroll deduction.
Union Dues	If an employee is part of a labor union, his/her dues may be collected through a payroll deduction.
Voluntary Contributions	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.

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:

Gross Pay	40 hours at \$8.50/hour (40 x 8.50 = \$340.00)	<u>\$ 340.00</u>
Federal Tax	16% of gross pay (340 x .16 = \$54.40)	<u>\$ 54.40</u>
State Tax	4.4% of gross pay (340 x .044 = \$14.96)	<u>\$ 14.96</u>
FICA	6.2% + 1.45% = 7.65% of gross pay (340 x .0765 = \$26.01)	<u>\$ 26.01</u>
Dependent Care	\$25.00	<u>\$ 25.00</u>
United Way Contribution	\$5.00	<u>\$ 5.00</u>
Total Deductions:	(54.40 + 14.96 + 26.01 + 25.00 + 5.00 = 125.37)	<u>\$ 125.37</u>
What is the net pay?	(340.00 - 125.37 = 214.63)	<u>\$ 214.63</u>
What is the annual take-home pay?	(214.63 x 50 = 10,731.50)	<u>\$ 10,731.50</u>

1. Gross Pay	\$560.00 (per week)	_____
Federal Tax	16% of gross pay	_____
State Tax	4.4% of gross pay	_____
FICA	7.65% of gross pay	_____
Health Insurance	\$45.00	_____
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:

$$\text{Bank Balance} + \text{Unprocessed Deposits} - \text{Outstanding Checks} = \text{Checkbook Balance}$$

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: _____

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: _____

2. Bank Balance: \$2,424.01

Unprocessed
Deposits: \$18.00, \$166.00
Outstanding Checks:
\$24.11, \$74.63, \$82.94, \$9.40

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 1

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:

CATEGORY	AMOUNT BUDGETED

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:

Total amount due: \$500.00

Payment: \$100.00

APR: 18%

Periodic Rate: 1.5%

$\$500 - \$100 = \$400.00$ Unpaid Balance

$\$400 \times .015 = \6.00 Finance Charge

$\$400 + \$6 = \$406.00$ New Balance

	<u>Total Amount Due</u>	<u>Payments & Credits</u>	<u>APR</u>	<u>Periodic Rate</u>	<u>Unpaid Balance</u>	<u>Finance Charge</u>	<u>New Balance</u>
1.	\$2,398.27	\$175.00	13%	1.08%	_____	_____	_____
2.	\$74.14	\$25.00	15%	1.25%	_____	_____	_____
3.	\$516.96	\$20.00	21%	1.75%	_____	_____	_____

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)

Customary System

16 ounces = 1 pound
 2,000 pounds = 1 ton

Metric System

1,000 milligrams = 1 gram
 1,000 grams = 1 kilogram
 1,000 kilograms = 1 metric ton

LENGTH

Customary System

12 inches = 1 foot
 3 feet = 1 yard
 5,280 feet = 1 mile

Metric System

10 millimeters = 1 centimeter
 100 centimeters = 1 meter
 1,000 millimeters = 1 meter
 1,000 meters = 1 kilometer

VOLUME

Customary System

3 teaspoons = 1 tablespoon
 4 tablespoons = 1/4 cup
 16 tablespoons = 1 cup
 8 fluid ounces = 1 cup
 2 cups = 1 pint
 2 pints = 1 quart
 4 quarts = 1 gallon

Metric System

1,000 milliliters = 1 liter

TEMPERATURE

Customary System

32° F = Freezing point of water
 98.6° F = Normal body temperature
 212° F = Boiling point of water

Metric System

0° C = Freezing point of water
 37° C = Normal body temperature
 100° C = Boiling point of water

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.:	<i>Ante Meridiem</i> ; 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.