

Ledyard High School
Math Curriculum

Consumer Math

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Consumer Math

Course Overview:

This course provides students with an opportunity to meet the following academic expectations:

- Speak clearly and communicate ideas accurately in a variety of settings
- Employ problem solving skills effectively
- Demonstrate critical thinking skills

Consumer Math Committee Members:

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Connecticut State Framework for Mathematics

This curriculum document is aligned with the most recent Connecticut State Frameworks adopted in September 2005. The Connecticut State Frameworks consists of four strands, Geometry and Measurement, Algebraic Reasoning: Patterns and Functions, Numerical and Proportional Reasoning and Working with Data: Probability and Statistics. Each content strand is composed of an Essential Question with two to three components. Each component consists of one to two performance standards. Each standard consists of two to four performance expectations.

Each strand of the Frameworks is divided into a set of Core Content Standards and Expected Performances and a set of Extended Content Standards and Expected Performances. The Core is the set of standards the state expects every student to be able to know by the 10th grade and therefore can be tested on the CAPT. The Extended set of standards is the set of standards that not all students will reach by the 10th grade, if at all.

The Consumer Math curriculum document primarily contains material linked to two of the four framework strands: Numerical and Proportional Reasoning, and Algebraic Reasoning. This course is designed to meet the needs of 11th and 12th grade students, as they become independent consumers in our community.

U.S. Financial Literacy and Education Commission

The unit topics of Consumer Math course were adopted from a topic guideline provided by the U.S. Financial Literacy and Education Commission. The commission provides financial education resources for all Americans through its website: www.mymoney.gov

USFL Topics

- Budgeting & Taxes
- Credit
- Financial Planning
- Home Ownership
- Paying for Education
- Privacy, Fraud & Scams
- Responding To Life Events
- Saving & Investing
- Starting a Small Business

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Unit 1: Earning

Abstract

As high school students begin working part-time jobs it is important for them to be knowledgeable of gross and net pay, and understand how gross pay can be determined. In addition to regular hourly rates of pay, students will learn about earning tips, overtime pay, piecework gross pay and commission. Knowing how to compute gross pay, deductions, and net pay will prepare students to set budgets and to make educated decisions when comparing job opportunities.

Essential Questions:

How do numbers represent quantitative relationships? How do functions help us describe data and physical phenomena and solve a variety of problems?

Focus Questions:

1. Why is gross pay calculated in so many different ways?
2. How can mathematical operations be used to accurately determine gross pay, deductions and take-home pay?
3. How can real-world problems be modeled and solved using equations?

Benchmarks:

The student will be able to

1. calculate income for varying pay periods in order to plan and evaluate budget needs, given piecework amounts and rates.
2. calculate income for varying pay periods in order to plan and evaluate budget needs, given hourly rates and tip percentages.
3. calculate income for varying pay periods in order to plan and evaluate budget needs, given hours/overtime hours, and hourly rates.
4. calculate income for varying pay periods in order to plan and evaluate budget needs, given an annual salary.

5. calculate income for varying pay periods in order to plan and evaluate budget needs, given total sales and commission rates.
6. calculate hours and/or sales required in order to earn a specific gross pay amount.
7. read tables to find the amount withheld for federal income tax in order to plan for paycheck deductions.
8. compute the state taxes on a straight percent basis in order to plan for paycheck deductions.
9. calculate the amount of income withheld for Social Security and Medicare taxes given tax rates to plan for paycheck deductions.
10. calculate an employee's deduction amount for group insurance given the total insurance amount and the employer's insurance pay rate, in order to plan for paycheck deductions.
11. calculate net pay per pay period in order to plan and evaluate budget needs.

Required Activities (Common Experiences):

1. Utilize "Foldables" for note-taking/study skills.
2. Spreadsheet Application: Gross Income; Glencoe activity workbook, p. 6
3. Students utilize W-2 information to complete a 1040EZ tax return.
Math Studio: Getting Ready for Tax Day; Glencoe text p. 140-143.
4. Create an organized comparison of two similar job offerings having comparable salaries and benefits. Calculate the total income for each and defend your job choice in writing.

Suggested Activities:

1. As a group develop a list of standard interview questions. Interview individuals, who work hourly, piecework, salary, etc. jobs. Students present their findings to the class and create a list of pros and cons for each type of income payment method.
2. Use an algebraic equation to model total income scenarios of piecework and commission payment.
3. Simulation: Applying for a Job; Glencoe activity workbook, p. 12.
4. Career Path: Psychologist; Glencoe activity workbook, p. 80.

Assessment Tasks:

1. Required activities above.
2. Teacher generated tests and quizzes that align to unit benchmarks, focus questions and the essential questions. Problems are drawn from the *ExamView Pro* question bank found in the Glencoe's resource pack.

Instructional Resources and Materials:

Source 1: AGS Consumer math

Source 2: Money math, Lessons for Life

Source 3: On Your Own, a Personal Budgeting Simulation

Source 4: Primary Text, Mathematics with Business Applications, Glencoe 2007, chapters 1, 2 and 11 (insurance discussion)

Source 5: Primary Workbook, Glencoe, Mathematics with business Applications

Pacing: This unit is expected to take approximately 25 classes taught in the block

Notes to Teachers:

- Address jobs with tips
Source 1, activity 6
- *Carefree Builders* from Colchester catalog: design & calculate price, plan a budget to take advantage of one year of free interest
Source 1, page 42-45
- Create activities to address how much must be earned in order to meet a budget

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Unit 2: Budgeting Money and Banking

Abstract

This unit is comprised of three sub-units: creating a balanced budget, maintaining and reconciling a check register, and product comparisons. Students research the cost of living independently by investigating fixed and variable expenses, and determine the difference between necessities and desired purchases. Students learn what it takes to live within ones means and are challenged to create a balanced budget based on realistic income and expense information. In addition, students have the opportunity to work with authentic bank forms, write checks and maintain a check register, compute simple interest on a savings account, and determine future values of annuities. Sales tax, discounts, rebates, coupons and other factors, which may affect purchase price, are also discussed as students become more adept at making sound consumer decisions.

Essential Questions:

How do numbers represent quantitative relationships? How do functions help us describe data and physical phenomena and solve a variety of problems?

Focus Questions:

1. How can mathematical operations assist in developing personal budgets?
2. How are formulas used to model problems involving savings, investments and interest?
3. How can mathematics be used to compare products and to make educated financial decisions?

Benchmarks:

The student will be able to

1. compute total monthly expenditures and the average monthly expenditure given a detailed sample set, in order to determine whether expenditures are within the constraint of a given net income.

2. prepare a budget based on current employment opportunities and expense costs and be able to make adjustments to reflect changing income or expenses.
3. write deposit and withdrawal slips for savings and checking accounts to become familiar with common banking forms and practices.
4. utilize checks and a check register to record and reconcile checkbook activity.
5. record online banking charges and other service charges in a check register.
6. calculate simple interest on savings accounts to understand basic financial growth.
7. solve problems involving interest, principal, rate, and time using a model equation (Interest = principal x rate x time).
8. locate compound interest given a table of information or using formulas.
9. compare the future value of annuities.
10. compute sales tax in order to determine total purchase price.
11. use unit pricing to compare products.
12. compute final price using coupons and rebate in order to make sound economical decisions.
13. calculate sale price using markdown percentage or markdown amount with the original price in order to make sound economical decisions.

Required Activities (Common Experiences):

1. Utilize "Foldables" for note-taking/study skills.
2. Students will work in small groups to research pay opportunities for local jobs. Students will contribute information to create an organized spreadsheet to show their findings. Resources may include Internet, print media, and local contacts.
3. Students will work in small groups to research independent living expenses such as rent, utilities, etc. Students will contribute information to create an organized spreadsheet to show their findings. Resources may include Internet, print media, and local contacts.
4. Students reconcile check register samples to corresponding bank statements; students build to reconciling consecutive months.

5. Students research ATM service charges - convenience stores, network banks, non-network banks, etc. and provide written report of findings.
6. Students research bank and credit union services such as cost of checks, money orders, bank checks, certified checks, etc. as well as overdraft charges and charges for returned checks
7. Students complete Math Studio: "Credit Where Credit Is Due"; Glencoe text, p. 280-281

Suggested Activities:

1. Math Studio: "A Cool Savings Strategy"; Glencoe text, p. 228-229
2. Spreadsheet Application: Compound Interest; Glencoe, activity workbook, p. 39
3. Spreadsheet Application: Cash Purchases; Glencoe, activity workbook, p. 45

Assessment Tasks:

1. Required activities above.
2. Teacher generated tests and quizzes that align to unit benchmarks, focus questions and the essential questions. Problems are drawn from the *ExamView Pro* question bank found in the Glencoe's resource pack.

Instructional Resources and Materials:

Source 1: AGS Consumer math

Source 2: Money math, Lessons for Life

Source 3: On Your Own, a Personal Budgeting Simulation

Source 4: Primary Text, Mathematics with Business Applications, Glencoe 2007, chapters 3-6, 10.

Source 5: Primary Workbook, Glencoe, Mathematics with business Applications

Pacing: This unit is expected to take approximately 20 classes taught in the block

Notes to Teachers:

- Project needed for planning and managing budget
Source 2, page 67, lesson 4, Spreading the Budget
Source 3: pages 40-56
- Students need practice with filling out forms used in checking and savings accounts
Source 1, activity 109-111
Source 3; chapter 4, page 57-79
- Review may be needed for some students for converting and calculating percents
Source 3, chapter 8 and 9, Health, Life, Auto, and Homeowners insurance
Source 4 section 22-4, 22-5 T-bills
Source 5, section 22-4, 22-5 T-bills

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Unit 3: Credit Cards and Loans

Abstract

Credit card purchasing and finance charge calculations are emphasized in this unit, so that students fully understand the cost of buying on credit. Education and car loans, as well as mortgages and other large purchases made on credit, will be discussed and researched. Students will solve problems involving loans and solve for unknown values of principal, rate, and time.

Essential Questions:

How do numbers represent quantitative relationships? How do functions help us describe data and physical phenomena and solve a variety of problems?

Focus Questions:

1. How do credit card companies make their money?
2. How can consumers use mathematics to make sound financial decisions about purchasing items on credit?

Benchmarks:

The student will be able to

1. calculate the monthly credit card finance charge using unpaid balance method, in order to understand the cost of buying on credit
2. calculate the balance on a charge account based on previous balance, new purchases, and new payments and finance charges in order to control credit spending
3. calculate the amount financed, given the sale price and down payment.
4. calculate the simple interest and monthly payment, given principal, rate and time; determine the total amount repaid.

5. articulate how credit card purchases and payment decisions can impact long term money management.

Required Activities (Common Experiences):

1. Utilize "Foldables" for note-taking/study skills.
2. Students create a spreadsheet to compare monthly payments and total amount paid when principal and rate are held constant and time is allowed to vary
3. Students create a spreadsheet to compare monthly payments and total amount paid when principal and time are held constant and the rates are varied.
4. Students compare typical rates for education loans, vehicle loans, mortgages, small business loans, personal loans, and credit cards and analyze for sound financial decisions
5. Students compare the total amount paid, when paying the minimum amount due, for one year to the overall change in the balance due.
6. Students read and discuss some of the fine print on credit card agreements pertaining to grace period and how average daily balance and minimum payment amounts are determined.

Suggested Activities:

1. Simulation: Charge Accounts; Glencoe, activity workbook, p. 50-51
2. Spreadsheet Application: Loans; Glencoe, activity workbook, p. 57

Assessment Tasks:

1. Required activities above.
2. Teacher generated tests and quizzes that align to unit benchmarks, focus questions and the essential questions. Problems are drawn from the *ExamView Pro* question bank found in the Glencoe's resource pack.

Instructional Resources and Materials:

Source 1: AGS Consumer math

Source 2: Money math, Lessons for Life

Source 3: On Your Own, a Personal Budgeting Simulation

Source 4: Primary Text, Mathematics with Business Applications, Glencoe 2007
chapters 7, 8, chapter 10-1, 10-2

Source 5: Primary Workbook, Glencoe, Mathematics with business Applications

Pacing: This unit is expected to take approximately 15 classes taught in the block

Notes to Teachers:

- More exposure to vocabulary and credit card statements
Source 1, page 116
Source 3, chapter 5, pages

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Unit 4: Transportation

Abstract

In this unit, students will learn how to access information necessary for purchasing a new or used vehicle. Using common resources available to consumers, students will learn about sticker prices, Kelley's Blue Book, Consumer Reports, as well as determine the cost of insurance. Students will also gain knowledge about the cost of operating and maintaining a vehicle. In addition to purchasing a vehicle, students will investigate the cost of leasing a vehicle, as well as determine other means of transportation in both rural and urban communities.

Essential Questions:

How do numbers represent quantitative relationships? How do functions help us describe data and physical phenomena and solve a variety of problems?

Focus Questions:

1. How can mathematics be used to make a sound financial decision when purchasing a vehicle?
2. How do age and gender affect premium rates for auto insurance?
3. What factors enter into the decision-making of whether to purchase or lease a vehicle, or utilize other means of transportation?

Benchmarks:

The student will be able to

1. read and interpret the manufacturer/dealer label on a new vehicle in order to calculate the dealers cost of a new vehicle.
2. utilize resources such as the Kelley's Blue Book and Consumer Reports April issue to determine the average retail price of a used vehicle to make an informed purchase decision.

3. use tables to compute the annual premium for vehicle insurance (Progressive.com).
4. compute the total cost per mile for operating and maintaining a vehicle (tires, oil change, filter change, tune ups, fuel).
5. calculate the total cost of leasing or renting a vehicle in order to make an informed financial decision.

Required Activities (Common Experiences):

1. Utilize "Foldables" for note-taking/study skills.
2. Given a new car sticker price information, justify which options are desirable vs. necessary.
3. Compare the benefits of owning vs. leasing a vehicle in writing after listening to Radio Glencoe Podcasting - episode #2 "Buying a Car" on busmath.glencoe.com
4. Compare the cost and convenience of alternate means of transportation. Students report findings orally and in writing.

Suggested Activities:

1. Read and discuss the fine print on a vehicle lease agreement.
2. Simulation: Vehicle Expenses; Glencoe, activity workbook, p. 65-68

Assessment Tasks:

1. Required activities above.
2. Teacher generated tests and quizzes that align to unit benchmarks, focus questions and the essential questions. Problems are drawn from the *ExamView Pro* question bank found in the Glencoe's resource pack.

Instructional Resources and Materials:

Source 1: AGS Consumer math

Source 2: Money math, Lessons for Life

Source 3: On Your Own, a Personal Budgeting Simulation

Source 4: Primary Text, Mathematics with Business Applications, Glencoe 2007,
Chapter 9

Source 5: Primary Workbook, Glencoe, Mathematics with business Applications

Pacing: This unit is expected to take approximately 7 classes taught in the block

Notes to Teachers:

- Additional examples of transportation costs
Source 1, activities 60-64

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Unit 5: Starting Your Own Business
Employer Obligations

Abstract

In this unit, students assume the role of an employer. They first learn to write a job description and determine realistic rates of pay for specific jobs. Next, students revisit gross pay calculations and discuss minimum wage requirements set by the state and by federal law. Finally, students will learn about an employer's legal and financial obligations involving social security, unemployment compensation, and insurance.

Essential Questions:

How do numbers represent quantitative relationships? How do functions help us describe data and physical phenomena and solve a variety of problems?

Focus Questions:

1. How can a job description be written to attract viable applicants?
2. Other than gross pay, what payroll obligations might an employer encounter?
3. How is mathematics be used by employers, to ensure that effective payroll decisions are made?

Benchmarks:

The student will be able to

1. write a job description and determine the cost of advertising a job opening.
2. calculate the cost of an employer's portion for social security and unemployment compensation.
3. calculate the cost for an employer to offer (or an employee to purchase) long-term disability insurance.
4. calculate the cost of an employer's portion for health insurance.
5. calculate employer's contribution to employee benefits such as: sick leave, vacation, and Medicare.

Required Activities (Common Experiences):

1. Utilize "Foldables" for note-taking/study skills.
2. Students will research and report in writing, the average rate of pay for specific occupations. In addition, students will investigate and report on benefits that may be offered by an employer to offset a lower rate of pay, or to entice potential applicants.
3. Spreadsheet Application: Personnel; Glencoe, activity workbook, p. 96

Suggested Activities:

1. Contact the Better Business Bureau to investigate how to establish and maintain membership.
2. Investigate Craig's List to determine potential advertising site or to find potential clients.
3. Given a business, students determine skills that a prospective employee might need, then create a functional resume. Students review each other's resumes and determine the best candidate for the job. (reference p. 447 text)

Assessment Tasks:

1. Required activities above.
2. Teacher generated tests and quizzes that align to unit benchmarks, focus questions and the essential questions. Problems are drawn from the *ExamView Pro* question bank found in the Glencoe's resource pack.

Instructional Resources and Materials:

Source 1: AGS Consumer math

Source 2: Money math, Lessons for Life

Source 3: On Your Own, a Personal Budgeting Simulation

Source 4: Primary Text, Mathematics with Business Applications, Glencoe 2007
chapters 11, 13

Source 5: Primary Workbook, Glencoe, Mathematics with business Applications

Pacing: This unit is expected to take approximately 10 classes taught in the block

Notes to Teachers:

- Extensions for enrichment or extra credit opportunity
Source 4, Chapter 13, sections 1-6, Recruiting, Hiring, and
administering wages
Source 5, section 13-1 through 13-5

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Unit 6: Starting Your Own Business
Sales

Abstract

This next unit continues with the student assuming the role of the business owner. The students will focus on what it takes to promote and sell a product or service. Students use "sampling" to predict sales potential and determine product/service price based on cost and net profit analysis. Students will utilize knowledge gained in prior units pertaining to balanced budgets, to create a balanced budget for a business. Students will also discuss how adjustments can be made to a budget in response to market fluctuations.

Essential Questions:

How do numbers represent quantitative relationships? How do functions help us describe data and physical phenomena and solve a variety of problems?

Focus Questions:

1. How can individuals use mathematics to determine whether business ideas are feasible?
2. How can problems faced by business owners be modeled and solved using equations?

Benchmarks:

The student will be able to

1. sample a subset population in order to predict product sales potential for a greater population.
2. organize a business budget with expenses and income columns
3. determine product markup price or service price based on cost and net profit analysis.
4. research the cost of advertising in various media, such as newspaper, radio, television.
5. determine markdown sale price or service price markdown based on market fluctuations.

Required Activities (Common Experiences):

1. Utilize "Foldables" for note-taking/study skills.
2. Students will take on the role as a member of a marketing research team to project sales potential of a student product. The team will conduct a survey to determine willingness to purchase an item at varying prices. The team will use the information to project potential sales and profit.
3. Students use common resources from Internet and media to determine the cost of advertising.

Suggested Activities:

1. Spreadsheet Application: Sales; Glencoe, activity workbook, p. 118-119
2. Simulation: Major foods Corporation; Glencoe, Activity workbook, p. 127-128.
3. Students will find the break even point for a business based on given cost and sales information.
4. Students make personnel and production decisions based on business trends and costs.

Assessment Tasks:

1. Required activities above.
2. Teacher generated tests and quizzes that align to unit benchmarks, focus questions and the essential questions. Problems are drawn from the *ExamView Pro* question bank found in the Glencoe's resource pack.

Instructional Resources and Materials:

Source 1: AGS Consumer math

Source 2: Money math, Lessons for Life

Source 3: On Your Own, a Personal Budgeting Simulation

Source 4: Primary Text, Mathematics with Business Applications, Glencoe 2007
chapter 14.2, 14.6 and 16

Source 5: Primary Workbook, Glencoe, Mathematics with business Applications

Pacing: This unit is expected to take approximately 8 classes taught in the block

Notes to Teachers:

None at this time.

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Unit 7: Travel and Leisure

Abstract

In this unit students will utilize personal budget information acquired in previous units, to set a budget and plan for a vacation. Students will access a variety of common resources to research such things as different modes of transportation, accommodations, as well as leisure activities. Students will present the details of their trip and use mathematics to defend selected options.

Essential Questions:

How do numbers represent quantitative relationships? How do functions help us describe data and physical phenomena and solve a variety of problems?

Focus Questions:

1. How can mathematics be used to assure that travel decisions are reasonable and within one's personal budget?
2. What resources are available to consumers for making sound financial decisions when planning a trip?

Benchmarks:

The student will be able to

1. utilize a variety of resources, such as atlases, maps, and the website www.mapquest.com, to determine total mileage and calculate trip time when traveling by car.
2. calculate the cost and time of travel using other modes of transportation, such as by train or bus.
3. research travel options utilizing services available to consumers such as AAA, local travel agencies, as well as internet websites.
4. research accommodations cost and reservations utilizing hotel websites.

5. research airfare information utilizing airline websites.

Required Activities (Common Experiences):

1. Students plan a local day trip. Information should include mileage, time schedule, and budgeted expenses.
2. Students plan an overnight or weekend trip. Information should include mileage, time schedule, and budgeted expenses.
3. Students will work in small groups to plan a weeklong trip requiring travel by air or train. The group will choose a destination and investigate travel expenses, accommodations, food, and entertainment expenses. Students are expected to compare price and convenience of each option.

Suggested Activities:

1. Students will calculate costs of various modes of transportation and defend choices based on cost, time, and convenience factors.

Assessment Tasks:

1. Required activities above.
2. Teacher generated tests and quizzes that align to unit benchmarks, focus questions and the essential questions. Problems are drawn from the *ExamView Pro* question bank found in the Glencoe's resource pack.

Instructional Resources and Materials:

Source 1: AGS Consumer math

Source 2: Money math, Lessons for Life

Source 3: On Your Own, a Personal Budgeting Simulation

Source 4: Primary Text, Mathematics with Business Applications, Glencoe 2007

Source 5: Primary Workbook, Glencoe, Mathematics with business Applications

Pacing: This unit is expected to take approximately 5 classes taught in the block

Notes to Teachers:

- Enrichment Activities not tied to units above
 - Source 1, activity 108 Doubling your Money
(May be tied to savings, IRA's, or Investing)
 - Source 4, Glencoe Text, chapter 11 Insurance