

Lakewood City Schools

Course of Study for Consumer Mathematics

Scope and Sequence – Consumer Mathematics is an elective course open to juniors and seniors only. It concentrates on practical applications of Mathematics; it is not a college preparatory course.

Some of the topics included in the course are money management, budgeting, car purchases, house purchases, taxes, investments, and insurance. The course recapitulates a wide variety of fundamental mathematics content, with an emphasis on mathematical processes standards wherein students apply problem-solving and decision-making techniques, and communicate mathematical ideas.

Course Overview: The Organizational Scheme for this Document

This document has two types of units: numbered units and lettered units.

The numbered units, one through nine, are presented sequentially over the course of the school year.

The lettered units, A through D, are presented throughout the entire school year. Each lettered unit describes its own frequency, duration, and approximate timetable. In this document the lettered units follow the numbered units.

Content standards (benchmarks and indicators) have been noted alongside the learning target in which they receive greatest coverage, or for the learning target where they first occur. They have not (yet) been noted for *every* time they occur. Most content standards repeat over a half-dozen or more learning targets. This course of study will be updated over the course of the 2008-2009 school year to include most of these recurrences.

Throughout this document, Ohio Academic Content Standards are abbreviated as follows. “NNO” indicates the Number, Number Sense, and Operations Standard. “M” indicates the Measurement Standard. “GSS” indicates the Geometry and Spatial Sense Standard. “PFA” indicates the Patterns, Functions, and Algebra Standard. “DAP” indicates the Data Analysis and Probability Standard. “MP” indicates the Mathematical Processes Standard. In each case the abbreviation is followed by a grade range or individual grade and then a letter or number; to indicate each relevant benchmark (grade range/letter) or indicator (grade/number). Please note that the Mathematical Processes Standard does not include indicators.

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Unit One: On Your Own

A short description of the unit in narrative form goes here.

Standard and Benchmark	Grade Level Indicators	Clear Learning Targets	Strategies/Resources
MP5-7A Clarify problem-solving situation and identify potential solution processes; e.g. consider different strategies and approaches to a problem from various perspectives.	n/a	I can track where my money goes.	Text § 1.1
MP5-7C Use more than one strategy to solve a problem, and recognize there are advantages associated with various methods.	n/a	I can add and subtract money amounts.	Text § 1.2
		I can construct and maintain an expense record.	Text § 1.3
		I can recognize and understand fixed and variable expenses.	Text § 1.4
		I can calculate my income.	Text §1.5
		I can multiply and divide money amounts.	Text § 1.6
		I can save for a big expense	Text § 1.7
MP5-7H Use representations to organize and communicate mathematical thinking and problem solutions.	n/a	I can construct and maintain a budget.	Text § 2.1 Quicken, Microsoft Money

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Unit One: On Your Own

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		I can recognize budget items that are easy for me to change.	Text § 2.2
MP5-7D Recognize whether an estimate or an exact solution is appropriate for a given problem situation.	n/a	I can estimate money amounts.	Text §2.3
MP5-7B Apply and adapt problem-solving strategies to solve a variety of problems, including unfamiliar and non-routine problem situations.	n/a	I can model and solve money problems.	Text § 2.4
		I can plan for changes I can't predict, and emergencies.	Text § 2.5, 2.6
DAP5-7F Determine and use the range, mean, median and mode to analyze and compare data, and explain what each indicates about the data.		I can determine averages involving money amounts.	Text § 2.7
		I can incorporate “extra money” into my budget.	Text § 2.8, 2.9

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Unit Two: Earning A Paycheck

A short description of the unit in narrative form goes here.

Standard and Benchmark	Grade Level Indicators	Clear Learning Targets	Strategies/Resources
		I can calculate my yearly, monthly, and weekly salary.	Text § 3.1, 3.2
		I can fill out a time card.	Text § 3.3
		I can calculate overtime.	Text § 3.4
		I can calculate an income that includes tips.	Text §3.5
		I can track on-the-job expenses, and use them to calculate my net income.	Text §3.6
		I can find the percent of a number, and the percent of money amounts.	Text § 3.7
		I can calculate an income that includes commissions.	Text § 3.8, 3.9
		I can choose a job I prefer by weighing a number of factors.	Text § 3-DM
		I can calculate deductions and determine net pay.	Text § 4.1, 4.2
NNO5-7BCD Compare, order, and convert among fractions, decimals and percents. Develop meaning for percents, including percents greater than 100 and less than 1. Use models and pictures to		I can find a percent of gross pay; and find a percent given the part and the whole.	Text § 4.3, 4.4

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Unit Two: Earning A Paycheck

A short description of the unit in narrative form goes here.

relate concepts of ratio, proportion, and percent. NNO8-10G Estimate, compute, and solve problems involving real numbers, including ratio, proportion and percent, and explain solutions. MP5-7I Select, apply, and translate among mathematical representations to solve problems; e.g., representing a number as a fraction, decimal, or percent as appropriate for a problem.			
NNO5-7BCD see above NNO8-10G see above		I can determine the percentage of gross pay, for a group of deductions.	Text § 4.5
M8-10F Write and solve real-world, multi-step problems involving money...and verify reasonableness of solutions.		I can read and interpret a tax table, and compute my taxable income.	Text § 4.7, 4.6
		I can complete basic tax forms, and determine whether there will be a refund or if there is a balance due.	Text § 4.8
		I understand the basics of health insurance policies, and can compute premiums.	Text § 4.9
		I can make health insurance computations involving deductibles.	

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Unit Two: Earning A Paycheck

A short description of the unit in narrative form goes here.

		I know how I can save money, and how to compute savings towards retirement.	Text § 4.10, 4.11

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Unit Three: Banking and Saving

A short description of the unit in narrative form goes here.

Standard and Benchmark	Grade Level Indicators	Clear Learning Targets	Strategies/Resources
		I understand the services offered by banks, and the charges associated with each service.	Text § 5.1
MP8-10H	n/a	I can choose the bank that is best for me by weighing a number of factors.	Text § 5.2
NNO5-7HI Use and analyze the steps in standard and non-standard algorithms for computing with fractions, decimals and integers. Use a variety of strategies, including proportional reasoning, to estimate, compute, solve and explain solutions to problems involving integers, fractions, decimals, and percents.		I can choose to particular checking account service that is best for me by weighing a number of factors	Text § 5.3
		I understand the charges for using a bank’s ATM, and can compute them.	Text § 5.4
NNO10-12C Apply factorials and exponents, including fractional exponents, to solve practical problems. MP8-10B Apply mathematical knowledge and skills routinely in other content areas and practical situations.		I understand the charges and interest paid for savings accounts, certificates of deposit, and the like; and can compute them.	Text § 5.5, 5.6
		I know the information and documentation needed to obtain	Text § 6.1

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Unit Three: Banking and Saving

A short description of the unit in narrative form goes here.

		banking services.	
		I know how to complete deposit slips, withdrawal slips, and checks.	Text § 6.2, 6.3, 6.4
		I know how to track banking deposits, withdrawals, and checks that I write; and can compute my balance.	Text § 6.5
		I understand debit cards, and can compute both charges and interest earned.	Text § 6.6
		I can read a bank statement, and can check whether its computations are correct.	Text § 6.7
		I can reconcile my checking account to the bank statements I receive.	Text § 6.8

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Unit Four: Cash or Credit

A short description of the unit in narrative form goes here.

Standard and Benchmark	Grade Level Indicators	Clear Learning Targets	Strategies/Resources
		I understand the costs and benefits of using a credit card.	Text § 7.1
		I know the information and documentation needed to obtain a credit card.	Text § 7.2
		I can determine whether having or using a credit card is good for me by weighing a number of factors.	Text § 7.4
		I know how to protect my credit card.	Text § 7.3
PFA8-10D Use algebraic representations, such as tables, graphs, expressions, functions, and inequalities, to model and solve problem situations.		I can compute the cost of buying an item on credit.	Graphing calculator or spreadsheet project demonstrating time value of money.
		I can read a credit card statement, and can check whether its computations are correct.	Text § 7.5
		I can choose the credit card that is best for me by weighing a number of factors.	
		I understand what happens when I return an item that I purchased using a credit card.	Text § 7.6
		I can analyze a credit card statement and determine whether I should	Text § 7.7

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Unit Four: Cash or Credit

A short description of the unit in narrative form goes here.

		continue to buy on credit.	
		I understand cash advances, and the charges associated with these.	Text § 7.8
		I know places where I can obtain loans, and the requirements for each.	Text § 8.1
		I understand credit ratings and the factors that affect their computation.	Text § 8.2
		I can compute the cost of a loan, including both fees and interest.	Text § 8.3
		I can complete a loan application, and know what information and documentation is needed to obtain one.	Text § 8.4, 8.5

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Unit Five: Selecting Housing

A short description of the unit in narrative form goes here.

Standard and Benchmark	Grade Level Indicators	Clear Learning Targets	Strategies/Resources
PFA5-7J Use formulas in problem-solving situations.		I can calculate how much I can afford to spend on rent.	Text § 9.1
		I can choose an apartment that best fits my needs by weighing a number of factors.	Text § 9.2
		I can read a lease and recognize its cost and important terms.	Text § 9.3
		I can compute the security deposit given its description in a lease agreement.	Text §9.4
PFA5-7C Use variables to create and solve equations and inequalities representing problem situations.		I can calculate whether I can afford to buy a house given its value and my income.	Text § 9.5
PFA5-7J Use formulas in problem-solving situations.		I can compute the down payment given its description in a mortgage document.	Text § 9.6
		I can compute the monthly mortgage payment given the loan’s description in a mortgage document.	Text § 9.7
		I can compute the closing costs for a loan.	Text § 9.8
		I can compute real estate taxes for a property given its assessed value and the tax rate.	Text § 9.9
		I can compute insurance costs for a property given the relevant rate.	Text § 9.10

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Unit Five: Selecting Housing

A short description of the unit in narrative form goes here.

		I can compare various mortgages and determine the one that is best for me using a variety of factors.	
		I can plan and budget for home furnishing, and home maintenance.	Text § 10.1, 10.2, 10.4
		I can analyze purchases and determine whether new or used is best for me.	Text § 10.3, 10.5
M8-10AB Solve increasingly complex non-routine measurement problems and check for reasonableness of results. Use formulas to find surface area and volume for specified three dimensional objects accurate to a specified level of precision. GSS5-7B Draw circles and identify and determine the relationships among the radius, diameter, center, and circumference.		I can find perimeters and areas and use the result of these calculations to compute home remodeling costs.	Text § 10.6, 10.7
		I can compute home remodeling costs that involve tiling and other materials that come in multiple amounts.	Text §10.8

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Unit Six: Buying and Preparing Food

A short description of the unit in narrative form goes here.

Standard and Benchmark	Grade Level Indicators	Clear Learning Targets	Strategies/Resources
		I know what a balanced diet is, and can compute whether my diet is healthy and balanced.	Text § 11.1
M8-10D Use proportional reasoning...to solve problems involving measurements and rates.		I can eat a balanced diet, even if I choose not to eat certain foods.	Text § 11.2
M5-7B Convert units of length, area, volume, mass, and time within the same measurement system.		I can compute the amount of calories I eat each day.	Text § 11.3
		I can solve a proportion. I can scale a recipe to feed differing numbers of people.	Text § 11.4
		I understand the impact of activity on health and diet.	Text § 11.5
		I can read a food label and compute important dietary factors.	Text § 12.1
		I can compute the unit price of foods sold in varying quantities.	Text § 12.2
		I can determine the best value by comparing unit prices.	Text § 12.3
		I can determine the best value by incorporating coupon savings into my calculations.	Text § 12.4, 12.5

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Unit Six: Buying and Preparing Food

A short description of the unit in narrative form goes here.

		I can develop useful and efficient shopping strategies.	Text § 12.6

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Unit Seven: Buying Personal Items

A short description of the unit in narrative form goes here.

Standard and Benchmark	Grade Level Indicators	Clear Learning Targets	Strategies/Resources
		I can list and prioritize my various personal needs.	Text § 13.1
		I can compute sales tax, and analyze whether it is worth travelling for lower sales tax.	Text § 13.2
		I can analyze and evaluate my personal expenses for clothing and personal care items.	Text § 13.3, 13.4, 13.5
		I can evaluate sale items and determine the net value of a sale.	Text § 13.6
		I can read and understand advertising and promotional claims. I recognize misleading advertisements.	Text § 13.7
		I understand how quantitative claims are justified, and can justify my own claims that include numbers.	Text § 13.8
		I understand how, when, and why items are put on sale; and the pattern of sales.	Text § 14.1
		I can compute the actual sale price, given percentage or fractional descriptions.	Text § 14.3
		I am familiar with factory outlets, and can compute the value of shopping there.	Text § 14.2

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Unit Seven: Buying Personal Items

A short description of the unit in narrative form goes here.

		I can place orders through catalogs or online.	Text § 14.4
		I can read an order summary, and can compute the proper total to check whether it is correct.	Text § 14.5
		I know how to protect myself from fraud when ordering through catalogs or online.	

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Unit Eight: Owning a Vehicle

A short description of the unit in narrative form goes here.

Standard and Benchmark	Grade Level Indicators	Clear Learning Targets	Strategies/Resources
		I can evaluate my transportation needs.	Text § 15.1
		I can choose the form of transportation that is best for me by weighing a number of factors.	Text § 15.1
MP8-10A Formulate a problem or mathematical model in response to a specific need or situation, determine information required to solve the problem, choose method for obtaining this information, and set limits for acceptable solution.	n/a	I can search for and find a car that best meets several of my requirements, determining which is the best buy, even when terms from different sellers are not identical.	Text § 15.2
		I understand what it is to be a careful shopper.	Text § 15.3
		I know places where I can obtain car loans, and the requirements necessary to obtain one.	Text § 15.4
		I can compute the cost of a car loan, including down payment, all fees and interest.	Text § 15.4
		I can read a loan agreement, identify and understand its important terms.	Text § 15.5
		I can compare the costs of buying a car and leasing a car to determine which is	Text § 15.7

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Unit Eight: Owning a Vehicle

A short description of the unit in narrative form goes here.

		the better value.	
		I can plan and budget for car loan and lease payments.	Text § 15.6
		I understand the basic operation of car insurance, and can calculate the costs for various insurance plans.	Text § 16.1, 16.2
MP8-10C Recognize and use connections between equivalent representations and related procedures...apply proportional thinking when measuring, describing functions, and comparing probabilities.	n/a	I can determine the car insurance that is best for me by weighing a variety of factors.	
		I understand how insurance deductibles work, and can calculate my out-of-pocket cost for various situations.	Text § 16.3
		I understand the costs involved operating an automobile, and can plan & budget for these.	Text § 16.4
		I can plan & budget for unexpected car repairs.	Text § 16.5

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Unit Nine: Recreation, Travel, and Entertainment

A short description of the unit in narrative form goes here.

Standard and Benchmark	Grade Level Indicators	Clear Learning Targets	Strategies/Resources
		I can analyze and calculate the costs for varying types of recreation.	Text § 17.1
		I can choose the form of recreation that best fits my needs and desires by weighing a number of factors.	
		I can search and find recreational bargains and calculate their true cost.	Text § 17.2
		I can compare recreational alternatives and determine which is the best buy, even when terms from different sellers are not identical.	Text § 17.3
		I can plan and budget for recreational costs; and understand the value of doing this.	Text § 17.4
GSS5-7E Use proportions to express relationships among corresponding parts of similar figures.		I can read road maps; using it to compute distance and travel time.	Text § 18.1, 18.2
		I can use online mapping services; to find distances and travel time.	Google Maps, Mapquest
		I can compute the expected gasoline cost for a proposed trip.	Text § 18.3
		I can compute food and lodging costs for a proposed trip.	Text § 18.4

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Unit Nine: Recreation, Travel, and Entertainment

A short description of the unit in narrative form goes here.

		I can search and find lodging bargains and calculate their true cost.	Expedia, Travelocity, Priceline
		I can plan and budget for unexpected costs that might occur when I am travelling.	

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Unit A: Ohio Graduation Test: Practice and Tutoring

This unit is designed to help students who have not yet passed the Mathematics portion of the Ohio Graduation Test, prepare for and succeed at that exam; and to prepare all students for the mathematics portion of the wide variety of employment tests that they are likely to encounter in their future.

This unit is presented for the first five to seven minutes of class, nearly every day; in the form of two “bell work” problems. Students are guided through the first of these problems, the second one is a challenge that they complete and turn in immediately for scoring.

These problems are typical of those found on standardized aptitude, achievement, and employment tests. The choice of problems is based upon the particular needs of each cohort of students – with a focus on those areas that need strengthening – so the Academic Content Standards addressed by this unit will be matched to the particular needs of each cohort of students.

Students are also assigned as peer tutors to this end. For example, during a series of bell-work problems focused on the Geometry and Spatial Sense Standard; students who have performed well on these kinds of questions will coach students who are struggling. So as the tutees receive help mastering particular standards, the tutors will master MP8-10F, the will “use precise mathematical language and notations to represent problem situations and mathematical ideas.” And they will master MP 11-12I, as they “communicate mathematical ideas orally and in writing with a clear purpose and appropriate for a specific audience.”

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Unit B: Writing Assignments

Each quarter every student will complete at least one writing assignment. Often these are chosen to coincide with current events of interest. Example assignments from last year are found below. This course-of-study will be updated over the course of the 2008-2009 school year to include additional examples.

Standard and Benchmark	Grade Level Indicators	Clear Learning Targets	Strategies/Resources
		I can succinctly describe an important contribution to mathematics.	Short Biography Assignment
		I can describe a mathematical indicator and its components (inputs.) I can use it to compute accurate results, and evaluate the results.	Carbon Footprint or Ecological Footprint Calculation
		I can identify numerical claims, and assess their accuracy and fairness.	Analysis of Numerical Claims in Political Speech
		I can describe the operation of voting systems different from the one most typically used to elect local, state, and federal officials. I can compare results from different voting/preference systems and evaluate their relative fairness.	Report on Alternative Voting Systems

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Unit C: Career Opportunities

Members of the community who use math in their occupation visit our classroom and describe their jobs.

From time to time during the course of the school year, hopefully at least once per quarter, guest speakers will address our class. These speakers will describe their occupation, and how they use mathematics; and answer student questions.

Tentative speakers this year include a banker, a manufacturing engineer (business owner), a graphic designer (business owner), a radiologist, and a nurse.

This course of study will be updated over the course of the 2008-2009 school year – for this section, standards addressed by the various speakers will be tallied, and listed as examples.

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Some of the topics included in the course are money management, budgeting, car purchases, house purchases, taxes, investments, and insurance. The course recapitulates a wide variety of fundamental mathematics content, with an emphasis on mathematical processes standards wherein students apply problem-solving and decision-making techniques, and communicate mathematical ideas.

Unit D: Quantitative Reasoning & Simple Mathematical Models

A short description of the unit in narrative form goes here.

Standard and Benchmark	Grade Level Indicators	Clear Learning Targets	Strategies/Resources

Lakewood City Schools

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Unit Z: tbd

A short description of the unit in narrative form goes here.

Standard and Benchmark	Grade Level Indicators	Clear Learning Targets	Strategies/Resources
<p>Cut and paste the ODE Academic Content Standards and Benchmarks that are covered in this unit.</p> <p>These can be accessed on the ODE website.</p>	<p>Cut and paste the ODE Indicators that are covered in this unit.</p> <p>These can be accessed on the ODE website</p>	<p>I can...</p> <p>(Add newly created “I Can” statements that are the Clear Learning Targets in this column, based on the grade level indicator listed to the left.)</p>	<p>Add your resources and strategies here</p>