

Wallingford Public Schools - HIGH SCHOOL COURSE OUTLINE

Course Title: Business Mathematics	Course Number: 8114
Department: Mathematics	Grade(s): 11-12
Level(s): General	Credit: 1
Course Description: This course focuses on mathematical functions using whole numbers, fractions, decimals, and percents that are required to function in today's business world as well as to handle personal finance. The ability to estimate and approximate answers in solving financial problems will be emphasized. Students will work with computer spreadsheets and learn to create and interpret graphic representations of numerical data. Business topics that will be covered include interest rates, job costing, merchandising, payroll, credit, taxes, insurance, and global business. Satisfactory completion of this course satisfies one math credit for graduation.	
Required Instructional Materials <i>Practical Mathematics</i> , Fredrick Leinwand Postman Wantuck Holt Rinehart Winston 1998 Third edition <u>Other Instructional Materials</u> Business Math (workbook), 15 th ed., 2003 Thomson-Southwestern Business Math published by Prentice Hall Business Math published by Southwestern Math in Everyday Life published by Walch Money Instructor –website Banking by BankAmerica	Completion/Revision Date Approved by Board of Education on December 17, 2007.

Mission Statement of the Curriculum Management Team

The mission of the Wallingford K-12 mathematics program is to develop mathematical literacy in all students. Students will understand the importance of mathematics and become flexible and resourceful problem solvers. They will use a range of numerical, algebraic, geometrical and statistical concepts and skills to formulate and solve authentic problems, communicating their reasoning in oral and written form.

Enduring Understandings for the Course

- A problem solver understands what has been done, knows why the process was appropriate, and can support it with reasons and evidence.
- There can be different strategies to solve a problem, but some are more effective and efficient than others are.
- The context of a problem determines the reasonableness of a solution.
- There are many different ways a paycheck may be calculated
- There is a big difference between the money you earn and the money you take home
- The way that data is collected, organized and displayed influences interpretations.
- The analysis of data is important to the success of a business.
- Knowledge of basic mathematics is essential to personal financial success.
- Time, money, and rate of interest are significant factors in meeting financial goals.

• The amount you save is not as important as establishing the savings habits now.
• The purchasing power of a dollar changes over time.
• Costs and prices can be compared in many ways to determine the best buy.
• Credit cards have both benefits and risks.
• The sticker price of a car is negotiable.
• There are many additional expenses to owning a car.
• Many payment options should be examined before purchasing a car.
• Insurance protects a person against loss and additional expenses.
• Many factors affect insurance premiums.

Learning Strand

1.0 Problem Solving

NOTE: This learning strand should be taught through the integration of the other learning strands. This learning strand is not meant to be taught in isolation as a separate unit.

ENDURING UNDERSTANDING(S)

- A problem solver understands what has been done, knows why the process was appropriate, and can support it with reasons and evidence.
- There can be different strategies to solve a problem, but some are more effective and efficient than others are.
- The context of a problem determines the reasonableness of a solution.

ESSENTIAL QUESTIONS

- How do I know where to begin when solving a problem?
- How does explaining my process help me to understand a problem's solution better?
- How do I decide what strategy will work best in a given problem situation?
- What do I do when I get stuck?
- How do I know when a result is reasonable?
- What is the relationship between solving problems and computation?

LEARNING OBJECTIVES The student will :

- 1.1 Distinguish between given information, unknown information, and assumptions that may be necessary.
- 1.2 Devise a plan to solve the problem.
- 1.3 Identify different strategies to solve a problem (table, diagram, number pattern)
- 1.4 Apply an appropriate strategy(ies) to solve a problem.
- 1.5 Justify the strategy and solution with mathematical reasoning and evidence.
- 1.6 Analyze strategies used to solve a problem.
- 1.7 Judge the reasonableness of a solution for a problem.
- 1.8 Communicate the solution and the strategies used to solve the problem in oral and/or written form.
- 1.9 Pose problems from given situations

INSTRUCTIONAL SUPPORT MATERIALS

- CAPT sample items and released items
- Websites for problem solving
 - Math Forum
 - NCTM Standards and Illuminations
- CSDE Goals 2000 resources (Q drive)

SUGGESTED INSTRUCTIONAL STRATEGIES

Each lesson throughout the course should begin with a problem solving experience that can integrate mathematical concepts.

- Small group discussion about strategies and solutions
- Written explanation of strategy and solution for a problem
- Peer editing of strategies and solutions
- Revise written solutions of problems
- Oral presentation of solution strategies
- Journal writing
- Modeling
- Think aloud
- Student inquiry through guided investigations
- Graphic organizers
- Cooperative learning
- See other learning strands for integration

SUGGESTED ASSESSMENTS

- Open-ended questions included on tests and quizzes
- Performance Tasks
- Teacher observations
- Written explanation of strategy and solution

for a problem

- District rubric for assessing problem solving
- Oral presentation of solution strategies
- See other learning strands for integration

LEARNING STRAND

2.0 Earning a Living

ENDURING UNDERSTANDING(S)

- There are many different ways a paycheck may be calculated
- There is a big difference between the money you earn and the money you take home

ESSENTIAL QUESTIONS

- How is your net pay calculated?
- How can job expenses and job benefits affect your earnings?
- How can an employee who is paid hourly earn more than someone who is salaried?

LEARNING OBJECTIVES The student will :

- 2.1 Calculate gross pay for hourly rate employees
- 2.2 Calculate gross pay for salaried employees
- 2.3 Calculate regular and overtime pay
- 2.4 Calculate salary based on commission
- 2.5 Calculate salary based on piece work
- 2.6 Calculate deduction & net pay
- 2.7 Identify employee benefits
- 2.8 Compare job benefits and job expenses

INSTRUCTIONAL SUPPORT MATERIALS

- Internet
- Overhead transparency
- Example paycheck stubs

SUGGESTED INSTRUCTIONAL STRATEGIES

- On site visitation of payroll department
- Spreadsheet
- Guest speaker
- Journal writing
- Modeling
- Think aloud
- Student inquiry through guided investigations
- Teacher directed class discussions
- Graphic organizers
- Cooperative learning

SUGGESTED ASSESSMENT METHODS

- Homework
- Projects
- Tests & Quizzes
- Open-ended questions included on tests and quizzes
- Performance Tasks
- Teacher observations
- Written explanation of strategy and solution for a problem
- Oral presentation of solution strategies

LEARNING STRAND

3.0 Data Analysis

ENDURING UNDERSTANDING(S)

- The way that data is collected, organized and displayed influences interpretations.
- The analysis of data is important to the success of a business.

ESSENTIAL QUESTIONS

- Why is data collected and analyzed?
- How do people use data to influence others?
- How can predictions be made based on data?

LEARNING OBJECTIVES The students will:

- 3.1 Calculate measures of central tendency
- 3.2 Calculate range, quartiles, and outliers
- 3.3 Analyze data related to the world of business
- 3.4 Represent data using appropriate graphs (line, bar, pie, picture, etc.)
- 3.5 Interpret data based on a graphs

INSTRUCTIONAL SUPPORT MATERIALS

- Newspapers
- Internet
- Excel

SUGGESTED INSTRUCTIONAL STRATEGIES

- Spreadsheet
- Guest speaker
- Journal writing
- Modeling
- Think aloud
- Student inquiry through guided investigations
- Teacher directed class discussions
- Graphic organizers
- Cooperative learning

SUGGESTED ASSESSMENT METHODS

- Homework
- Projects
- Tests & Quizzes
- Open-ended questions included on tests and quizzes
- Performance Tasks
- Teacher observations
- Written explanation of strategy and solution for a problem
- Oral presentation of solution strategies

LEARNING STRAND

4.0 Personal Banking

ENDURING UNDERSTANDING(S)

- A knowledge of basic mathematics is essential to personal financial success.
- Time, money, and rate of interest are significant factors in meeting financial goals.
- The amount you save is not as important as establishing the savings habits now.

ESSENTIAL QUESTIONS

- What are the benefits of have a checking and savings account?
- What is the Rule of 72?
- Why do we reconcile a bank statement?
- What are the benefits of banking online?

LEARNING OBJECTIVES The students will :

- 4.1 Define debits, credits, fees, & balance.
- 4.2 Write out a check.
- 4.3 Maintain a check book.
- 4.4 Reconcile a bank statement for a checking account.
- 4.5 Interpret a bank statement for a savings account.
- 4.6 Identify and analyze the effect of different kinds of checking accounts.
- 4.7 Calculate interest and principal using simple and compound interest formulas
- 4.8 Calculate interest on money market, bonds, and CD accounts
- 4.9 Identify and calculate hidden costs of personal banking

INSTRUCTIONAL SUPPORT MATERIALS

- Checkbook
- Internet
- Sample bank statement
- Overhead transparency

SUGGESTED INSTRUCTIONAL STRATEGIES

- Spreadsheet
- Journal writing
- Modeling
- Think aloud
- Student inquiry through guided investigations
- Teacher directed class discussions
- Graphic organizers
- Cooperative learning

SUGGESTED ASSESSMENTS

- Homework
- Projects
- Tests & Quizzes
- Open-ended questions included on tests and quizzes
- Performance Tasks
- Teacher observations
- Written explanation of strategy and solution for a problem
- Oral presentation of solution strategies

LEARNING STRAND

5.0 Responsible Purchasing

ENDURING UNDERSTANDING(S)

- The purchasing power of a dollar changes over time.
- Costs and prices can be compared in many ways to determine the best buy.
- Credit cards have both benefits and risks.
- There are various methods of payment for purchases, (i.e. credit cards, debit cards, check, cash)

ESSENTIAL QUESTIONS

- What is the consumer price index?
- How does inflation affect purchasing power?
- How does a knowledge of mathematics help determine which product is a better buy?
- How does knowledge of mathematics help one to use a credit card responsibly?

LEARNING OBJECTIVES The student will :

- 5.1 Compute inflation rate
- 5.2 Compute purchasing power after inflation
- 5.3 Calculate sales tax
- 5.4 Analyze the best buy based on unit prices
- 5.5 Analyze the best buy based on discounts, sales price, coupons, and rebates
- 5.6 Read a credit card statement
- 5.7 Compute an unpaid balance and identify the new charges
- 5.8 Compute a credit finance charge based on fixed and variable rates
- 5.9 Compute a new credit balance
- 5.10 Identify and analyze the benefits and drawbacks of credit cards

INSTRUCTIONAL SUPPORT MATERIALS

- Circulars
- Internet
- Overhead transparency
- Consumer reports

SUGGESTED INSTRUCTIONAL STRATEGIES

- Spreadsheet
- Journal writing
- Modeling
- Think aloud
- Student inquiry through guided investigations
- Teacher directed class discussions
- Graphic organizers
- Cooperative learning

SUGGESTED ASSESSMENTS

- Homework
- Projects
- Tests & Quizzes
- Open-ended questions included on tests and quizzes
- Performance Tasks
- Teacher observations
- Written explanation of strategy and solution for a problem
- Oral presentation of solution strategies

LEARNING STRAND

6.0 Transportation Expenses

ENDURING UNDERSTANDING(S)

- The sticker price of a car is negotiable.
- There are many additional expenses to owning a car.
- Many payment options should be examined before purchasing a car.

ESSENTIAL QUESTIONS

- What expenses factor into owning a car?
- What are important considerations when buying a car?
- How will a knowledge of mathematics help make a better purchase?

LEARNING OBJECTIVES The student will :

- 6.1 Estimate and compute traveling distances using a mileage chart or map
- 6.2 Estimate and compute travel time and rate of travel
- 6.3 Determine the cost of a car with options and additional expenses
- 6.4 Compute the amount you need to finance to buy a new car
- 6.5 Compute the finance charge for an automobile loan
- 6.6 Calculate operating expenses (mpg, gas, repair)
- 6.7 Justify the purchase of a given car
- 6.8 Compute the cost for renting a car

INSTRUCTIONAL SUPPORT MATERIALS

- Car advertisements
- Newspapers
- Consumer reports

SUGGESTED INSTRUCTIONAL STRATEGIES

- Spreadsheet
- Journal writing
- Modeling
- Think aloud
- Student inquiry through guided investigations
- Teacher directed class discussions
- Graphic organizers
- Cooperative learning

SUGGESTED ASSESSMENTS

- Homework
- Projects
- Tests & Quizzes
- Open-ended questions included on tests and quizzes
- Performance Tasks
- Teacher observations
- Written explanation of strategy and solution for a problem
- Oral presentation of solution strategies

LEARNING STRAND

7.0 Insurance

ENDURING UNDERSTANDING(S)

- Insurance protects a person against loss and additional expenses.
- Many factors affect insurance premiums.

ESSENTIAL QUESTIONS

- Why is insurance important?
- What factors affect the premiums of different kinds of insurance?
- To what extent will insurance protect you?

LEARNING OBJECTIVES The student will :

- 7.1 Define premium and deductible
- 7.2 Compute life insurance premiums
- 7.3 Identify the differences between term and whole life insurance
- 7.4 Decide, given relevant information, which type of life insurance to purchase
- 7.5 Compute health insurance premiums
- 7.6 Compute insurer's and insured share of health insurance cost
- 7.7 Compute insured's share of medical bills
- 7.8 Identify the different types of automobile insurance
- 7.9 Compute yearly automobile insurance premiums
- 7.10 Calculate property insurance premiums
- 7.11 Calculate how much can be collected on insurance claims
- 7.12 Analyze the factors that influence the amount of coverage of any insurance

INSTRUCTIONAL SUPPORT MATERIALS

- Requested material from various insurance companies
- Internet

SUGGESTED INSTRUCTIONAL STRATEGIES

- Spreadsheet
- Journal writing
- Modeling
- Think aloud
- Student inquiry through guided investigations
- Teacher directed class discussions
- Graphic organizers
- Cooperative learning

SUGGESTED ASSESSMENTS

- Homework
- Projects
- Tests & Quizzes
- Open-ended questions included on tests and quizzes
- Performance Tasks
- Teacher observations
- Written explanation of strategy and solution for a problem
- Oral presentation of solution strategies

LEARNING STRAND

8.0 Long Term Investments

ENDURING UNDERSTANDING(S)

- With higher risk comes the potential to earn higher reward or returns on our investments.
- It is important to diversify investments.
- Different types of investments offer varying growth potential
- Investments aren't guaranteed to grow.

ESSENTIAL QUESTIONS

- What is the stock market and how does it work?
- What is the difference between savings and investments?
- What is the difference between a dividend and a yield?
- What makes one stock a more desirable investment than the other?

LEARNING OBJECTIVES The student will :

- 8.1 Compute the cost, redemption value, and interest earned on U.S. savings bonds.
- 8.2 Calculate the total investment in a mutual fund.
- 8.3 Calculate profit or loss from mutual fund investments.
- 8.4 Calculate the cost of stock purchases.
- 8.5 Calculate annual stock dividends.
- 8.6 Calculate the yield on stock investments.
- 8.7 Calculate the proceeds from the sale of stock.
- 8.8 Explain what the stock market is and how it works.
- 8.9 Identify factors that cause the stock market to fluctuate.

INSTRUCTIONAL SUPPORT MATERIALS

- www.stocksquest.com
- Newspaper

SUGGESTED INSTRUCTIONAL STRATEGIES

- Spreadsheet
- Journal writing
- Modeling
- Think aloud
- Student inquiry through guided investigations
- Teacher directed class discussions
- Graphic organizers
- Cooperative learning

SUGGESTED ASSESSMENTS

- Homework
- Projects
- Tests & Quizzes
- Open-ended questions included on tests and quizzes
- Performance Tasks
- Teacher observations
- Written explanation of strategy and solution for a problem
- Oral presentation of solution strategies

LEARNING STRAND

9.0 Budgeting

ENDURING UNDERSTANDING(S)

- Organization is necessary to be fiscally responsible.
- Some expenses are predictable while some are varying
- Tracking income and expenses can prevent overspending

ESSENTIAL QUESTIONS

- What are the benefits of a budget?
- Why is a budget important for future financial success?
- How can maintaining a budget provide possible one time expense opportunities?

LEARNING OBJECTIVES The student will :

- 9.1 Identify fixed, variable, and annual expenses
- 9.2 Compute the amount to budget for each of these expenses
- 9.3 Analyze a monthly budget sheet
- 9.4 Prepare a personal budget
- 9.5 Apply the use of area and perimeter in preparing a budget for a one time expense.

INSTRUCTIONAL SUPPORT MATERIALS

- Excel
- Protractors
- Compass
- Rules
- Overhead Transparency

SUGGESTED INSTRUCTIONAL STRATEGIES

- Spreadsheet
- Journal writing
- Modeling
- Think aloud
- Student inquiry through guided investigations
- Teacher directed class discussions
- Graphic organizers
- Cooperative learning
- Creating a pie chart representation of a budget

SUGGESTED ASSESSMENTS

- Homework
- Projects
- Tests & Quizzes
- Open-ended questions included on tests and quizzes
- Landscape/Remodeling Project
- Performance Tasks
- Teacher observations
- Written explanation of strategy and solution for a problem
- Oral presentation of solution strategies

LEARNING STRAND

10.0 Marketing & Advertising

ENDURING UNDERSTANDING(S)

- Advertising is a necessary expense to create a greater profit.
- Simple algebraic procedures can predict future sales.

ESSENTIAL QUESTIONS

- What is the purpose of marketing & advertising?
- What are the benefits and draw backs of various marketing media?
- How does forecasting affect current business practices?

LEARNING OBJECTIVES The student will :

- 10.1 Predict future sales using trend data/forecast methods
- 10.2 Calculate market share
- 10.3 Compute the cost of advertising in various media
- 10.4 Analyze the most effective advertising techniques/strategies

INSTRUCTIONAL SUPPORT MATERIALS

- Ruler
- Graph paper
- Graphing calculators

SUGGESTED INSTRUCTIONAL STRATEGIES

- Spreadsheet
- Journal writing
- Modeling
- Think aloud
- Student inquiry through guided investigations
- Teacher directed class discussions
- Graphic organizers
- Cooperative learning

SUGGESTED ASSESSMENTS

- Homework
- Projects
- Tests & Quizzes
- Open-ended questions included on tests and quizzes
- Performance Tasks
- Teacher observations
- Written explanation of strategy and solution for a problem
- Oral presentation of solution strategies

LEARNING STRAND

11.0 Production

ENDURING UNDERSTANDING(S)

- There are numerous expenses involved in providing goods and services.
- You must sell a certain number of goods before making a profit.
- Simple algebraic procedures can predict the break-even point.

ESSENTIAL QUESTIONS

- Why is quality control important?
- How does overhead affect the cost of an item?

LEARNING OBJECTIVES The student will :

- 11.1 Calculate prime cost and total manufacturing costs
- 11.2 Identify various overhead costs
- 11.3 Classify expenses as raw material, labor, or overhead
- 11.4 Calculate the break-even point in production units and in sales production
- 11.5 Determine the number of manufactured items to be tested for quality control
- 11.6 Predict the number of defective items on an assembly line

INSTRUCTIONAL SUPPORT MATERIALS

- Excel
- Overhead transparency
- Internet

SUGGESTED INSTRUCTIONAL STRATEGIES

- Spreadsheet
- Journal writing
- Modeling
- Think aloud
- Student inquiry through guided investigations
- Teacher directed class discussions
- Graphic organizers
- Cooperative learning

SUGGESTED ASSESSMENTS

- Homework
- Projects
- Tests & Quizzes
- Open-ended questions included on tests and quizzes
- Performance Tasks
- Teacher observations
- Written explanation of strategy and solution for a problem
- Oral presentation of solution strategies