

Business and Technology
BUSINESS CALCULATIONS
DPC #11901 and #11902 [use these numbers if course is taught by teacher with a Business credential and students are to receive elective credit]

Mathematics
BUSINESS CALCULATIONS
DPC #51481 and #51482 [use these numbers if course is taught by teacher with a Math credential and students are to receive math credit]

A. Course Information

Grade Level: 12 (This class is also available to juniors who are concurrently enrolled in Algebra 1 or above).

Length of Course: Two Semesters

Type: This course does not satisfy UC course admission requirements for mathematics. This course does not meet the OUHSD Algebra graduation requirement nor prepare students for the CAHSEE Math.

Recommendation for Enrollment: None

B. Brief Description of the Course:

Business Calculations is designed to fuse together practical mathematics with Excel. As with Practical Mathematics, Business Calculations will bridge the gap between a high school math student and a productive and contributing member of our society. Students will acquire the necessary critical thinking skills to solve real life problems involving arithmetic. The course will cover:

- Basic Math Functions: percents, decimals, word problems, fractions, and mixed numbers.
- Bank Services: checking account and bank statement reconciliation.
- Payroll: How to determine gross earnings and determine payroll deductions.
- Taxes and Insurance: local, state, and federal taxes; and health, auto, life, and property insurance.
- Pricing of consumer goods as wholesale and retail products.
- Interest: simple and compound.
- Consumer Credit and Mortgages: buy or leasing a car, buying or renting a home, closed-end credit, and open-end credit.
- Depreciation: straight-line depreciation.

Approved 6-29-05
Revised 6-10-09

C. Board-adopted Textbook:

Robert A. Schultheis and Raymond M. Kaczmariski. Business Math. (Copyright 2003, 15th Edition) Thompson South-Western Publishing. Adopted 2005.

D. Supplementary Instructional Materials:

Items listed below are commonly used as supplementary materials and are coordinated with the adopted course objectives:

1. Internet
2. Microsoft Excel

E. Brief Outline of Course Content:

1. Basic number sense: fractions, mixed numbers, and decimals
 - a. Bank services
 - b. Payroll
 - c. Taxes
 - d. Insurance
 - e. Purchasing merchandise
 - f. Interest
 - g. Consumer credit and mortgages
 - h. Stocks and bonds
 - i. Depreciation
 - j. Financial statements

F. Content Standards for Business Calculations:

1. Subject Area Content Standards

The student will demonstrate an acceptable level of understanding of the following key concepts:

- a. Fractions and decimals
- b. Credit
- c. Interest

2. English/Language Arts Content Standards

The English/language arts content standards outlined below, which are adopted by the SBE, will be taught and reinforced in a manner appropriate for this course. The student will be expected to develop proficiency toward mastery of these standards:

READING

1.1 Reading Comprehension (Focus on Informational Materials)

Students read and understand grade-level-appropriate material. They analyze the organizational patterns, arguments, and positions advanced.

Comprehension and Analysis of Grade-Level-Appropriate Text

1.2 Verify and clarify facts presented in other types of expository texts by using a variety of consumer, workplace, and public documents.

WRITING

2.5 Write job applications and resumes.

- Provide clear and purposeful information and address the intended audience appropriately.
- Use varied levels, patterns, and types of language to achieve intended effects and aid comprehension.
- Modify the tone to fit the purpose and audience.
- Follow the conventional style for that type of document (e.g., resume, memorandum) and use page formats, fonts, and spacing that contribute to the readability and impact of the document

2.6 Deliver multimedia presentations:

- Combine text, images, and sound and draw information from many sources (e.g., television broadcasts, videos, films, newspapers, magazines, CD-ROMs, the internet, electronic media-generated images).
- Select an appropriate medium for each element of the presentation.
- Use the selected media skillfully, editing appropriately and monitoring for quality.
- Test the audience’s response and revise the presentation accordingly.

3. Math Content Standards

The math content standards outlined below, which are adopted by the SBE, will be taught and reinforced in a manner appropriate for this course. The student will be expected to develop proficiency toward mastery of these standards:

Number Sense	
Students know the properties of, and compute with, rational numbers expressed in a variety of forms:	
1.1	<i>Read, write, and compare rational numbers in scientific notation (positive and negative powers of 10) with approximate numbers using scientific notation.</i>
1.2	<i>Add, subtract, multiply, and divide rational numbers (integers, fractions, and terminating decimals) and take positive rational numbers to whole-number powers.</i>
1.3	<i>Convert fractions to decimals and percents and use these representation in estimations, computations, and applications.</i>
1.4	<i>Differentiate between rational and irrational numbers.</i>
1.5	<i>Know that every rational number is either a terminating or repeating decimal and be able to convert terminating decimals into reduced fractions.</i>
1.6	<i>Calculate the percentage of increases and decreases of a quantity.</i>
1.7	<i>Solve problems that involve discounts, markups, commissions, and profit and compute simple and compound interest.</i>

Students use exponents, powers, and roots and use exponents in working with fractions:	
2.1	Understand negative whole-numbers exponents. Multiply and divide expressions involving exponents with a common base.
2.2	Add and subtract fractions by using factoring to find common denominators.
2.3	Multiply, divide, and simplify rational numbers by using exponent rules.
2.4	Use the inverse relationship between raising to a power and extracting the root of a perfect square integer; for an integer that is not square, determine without a calculator the two integers between which its square root lies and explain why.
2.5	Understand the meaning of the absolute value of a number; interpret the absolute value as the distance of the number from zero on a number line; and determine the absolute value of real numbers.
Algebra and Functions	
Students express quantitative relationships by using algebraic terminology, expressions, equations, inequalities, and graphs:	
1.1	Use variables and appropriate operations to write an expression, an equation, an inequality, or a system of equations or inequalities that represents a verbal description (e.g., three less than a number, half as large as area A).
1.2	Use the correct order of operations to evaluate algebraic expressions such as $3(2v + 5)^2$.
1.3	Simplify numerical expressions by applying properties of rational numbers (e.g., identity, inverse, distributive, associative, commutative) and justify the process used.
1.4	Use algebraic terminology (e.g., variable, equation, term, coefficient, inequality, expression, constant) correctly.
1.5	Represent quantitative relationships graphically and interpret the meaning of a specific part of a graph in the situation presented by the graph.
Students interpret and evaluate expressions involving integer powers and simple roots:	
2.1	Interpret positive whole-number powers as repeated multiplication and negative whole-number powers as repeated division or multiplication by the multiplicative inverse. Simplify and evaluate expressions that include exponents.
2.2	Multiply and divide monomials; extend the process of taking powers and extracting roots to monomials when the latter results in a monomial with an integer exponent.
Mathematical Reasoning	
Students make decisions about how to approach problems:	
1.1	Analyze problems by identifying relationships
1.2	Formulate and justify mathematical conjectures based on a general description of the mathematical question or problem posed.
1.3	Determine when and how to break a problem into simpler parts.
Students use strategies, skills, and concepts in finding solutions:	
2.1	Use estimation to verify the reasonableness of calculated results.
2.2	Apply strategies and results from simpler problems to more complex problems.
2.3	Estimate unknown quantities graphically and solve for them by using logical reasoning and arithmetic and algebraic techniques.
2.4	Make and test conjectures by using both inductive and deductive reasoning.
2.5	Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to explain mathematical reasoning.
2.6	Express the solution clearly and logically by using the appropriate mathematical notation and terms and clear language; support solutions with evidence in both verbal and symbolic work.
2.7	Indicate the relative advantages of exact and approximate solutions to problems and give answers to a specified degree of accuracy.
2.8	Make precise calculations and check the validity of the results from the context of the problem.
Students determine a solution is complete and move beyond a particular problem by generalizing to other situation:	
3.1	Evaluate the reasonableness of the solution in the context of the original situation.
3.2	Note the method of deriving the solution and demonstrate a conceptual understanding of the derivation of solving similar problems.

3.3	<i>Develop generalizations of the results obtained and the strategies used and apply them to new problem situations.</i>
Algebra I	
Symbolic reasoning and calculations with symbols are central in algebra. Through the study of algebra, a student develops an understanding of the symbolic language of mathematics and the sciences. In addition, algebraic skills and concepts are developed and used in a wide variety of problem-solving situations.	
1.0	<i>Students identify and use the arithmetic properties of subsets of integers and rational, irrational, and real numbers, including closure properties for the four basic arithmetic operations where applicable:</i>
	<i>1.1 Students use properties of numbers to demonstrate whether assertions are true or false.</i>
2.0	<i>Students understand and use such operations as taking the opposite, finding the reciprocal, taking a root, and raising to a fractional power. They understand and use the rules of exponents.</i>
3.0	<i>Students solve equations and inequalities involving absolute values.</i>
4.0	<i>Students simplify expressions before solving linear equations and inequalities in one variable, such as $3(2x5) + 4(x-2) = 12$.</i>
5.0	<i>Students solve multi-step problems, including word problems involving linear equations and linear equations and linear inequalities in one variable and provide justification for each step.</i>
6.0	<i>Students graph a linear equation and compute the x-and y-intercepts (e.g., graph $2x + 6y = 4$). They are also able to sketch the region defined by linear inequality (e.g., they sketch the region defined by $2x = 6y < 4$).</i>

4. Workplace Skills

Students will demonstrate proficiency and continuing improvement in the following “workplace skills,” as appropriate for this level of coursework:

I. Basic Employability Skills

- a. good grooming
- b. good manners, politeness and courtesy
- c. pride in a job well done
- d. honesty and high ethical standards
- e. punctuality
- f. good work attendance
- g. completes tasks independently
- g. good speaking skills
- h. good listening skills
- i. good penmanship
- j. follows directions
- k. basic keyboarding skills
- l. computer literacy

II. Employee Relations Skills

- a. able to work with teams of people
- b. cooperative attitude
- c. good interpersonal skills
- d. collaborates to problem-solve
- e. respects authority
- f. high cultural respect and sensitivity

III. Job Success Skills

- a. problem-solving skills
- b. decision-making skills
- c. critical thinking skills
- d. higher order thinking skills
- e. able to plan and complete a project
- f. willing to engage in lifelong learning
- g. math skills through algebra
- h. good reading and writing skills
- i. good articulation skills
- j. good study skills
- k. meets increasingly higher expectations
- l. able to use technical tools correctly and safely
- m. able to change from task to task
- n. knows how to learn what one doesn't know
- o. knows how to build upon what is known
- p. is a self-starter

G. Assessment Procedures:

The following is a list of techniques that may be used in assessing student progress and/or achievement:

1. Chapter and unit exams
2. Project completion
3. Presentation evaluation