

COURSE OUTLINE

Developmental Skills Lab 021 Arithmetic IA

I. Catalog Statement

Developmental Skills Lab 021 introduces students to whole number, fractions, decimals, and percent computation. This course is designed to meet the needs of students who wish to improve their basic math skills and to earn high school credit.

Units — 0.0

Total Laboratory Hours — 100.0

Recommended preparation: ESL 040 or equivalent

Note: This is a self-paced course in an open-entry, open-exit lab environment. Successful completion of this course is worth 5 credits (.5 unit) towards a high school diploma.

II. Course Entry Expectations

Skills Level Ranges: Reading 5, Writing 3, Listening/Speaking 4, and Math 1.

III. Course Exit Standards

Upon successful completion of the required coursework, the student will be able to:

1. identify properties of addition and multiplication;
2. perform the indicated operations and reduce answers to lowest terms;
3. simplify expressions;
4. find the perimeter and area of the figures;
5. covert decimals to percents;
6. write each percent as a fraction or a mixed number in lowest terms.

IV. Course Content

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|----|--------------------------------------|----------|
| A. | Whole Numbers | 20 hours |
| | 1. Place value and names for numbers | |
| | a. large numbers | |
| | b. expanded form | |
| | c. writing numbers in words | |
| | d. sets and the number line | |

2. Addition with whole numbers and perimeter
 - a. facts of addition
 - b. variables
 - c. vocabulary
 - d. properties of addition
 - e. solving equations
3. Rounding numbers and estimating answers
 - a. rounding
 - b. estimating
4. Subtraction with whole numbers
 - a. vocabulary
 - b. the meaning of subtraction
 - c. subtraction with borrowing
5. Multiplication with whole numbers and area
 - a. notation
 - b. vocabulary
 - c. multiplication with whole numbers
 - d. solving equations
6. Division with whole numbers
 - a. notation
 - b. vocabulary
 - c. the meaning of division
 - d. division by two-digit numbers
 - e. division by zero
7. Exponents and order of operations
 - a. order of operations
 - b. meaning of exponents
- B. Fractions and Mixed Numbers 20 hours
 1. The meaning and properties of fractions
 - a. fractions on the number line
 - b. the number “1” and fractions
 2. Prime numbers, factors, and reducing to lowest terms
 3. Multiplication and division with fractions
 4. Addition and subtraction with fractions
 5. Mixed-number notation
 - a. notation
 - b. changing improper fractions to mixed numbers
 6. Multiplication and division with mixed numbers
 7. Addition and subtraction with mixed numbers
 8. Combination of operations and complex fractions
- C. Decimals 20 hours
 1. Decimal notation and place value
 - a. decimal place value
 - b. rounding decimal numbers
 2. Addition and subtraction with decimals

- 3. Multiplication with decimals
 - a. estimating
 - b. combined operations
- 4. Division with decimals
- 5. Fractions and decimals
 - a. converting fractions to decimals
 - b. problems containing both fractions and decimals
- 6. Square roots and the Pythagorean theorem
- D. Ratio and Proportion 20 hours
 - 1. Ratios
 - 2. Rates and unit pricing
 - 3. Solving equations by division
 - 4. Proportions
 - 5. Applications of proportions
- E. Percent 20 hours
 - 1. Percents, decimals, and fractions
 - a. the meaning of percent
 - b. changing percents to decimals
 - c. changing decimals to percents
 - d. changing percents to fractions
 - e. changing fractions to percents
 - 2. Basic percent problems
 - a. solving percent problems using equations
 - b. solving percent problems using proportions
 - 3. General applications of percent
 - 4. Sales tax and commission
 - 5. Percent increase or decrease and discount
 - 6. Interest

V. Methods of Presentation

The following instructional methodologies may be used in the course:

- 1. independent study using worksheets and texts;
- 2. computer-aided instruction;
- 3. small group instruction;
- 4. video instruction.

VI. Assignments and Methods of Evaluation

- 1. Students must complete the entire course contract.
- 2. Students complete the assessments at the end of each chapter.
- 3. Unit tests.
- 4. Final test.

VII. Textbook

McKeague C. Basic College Mathematics.

Pacific Grove: Robert W. Pirtle, 2003.

10th Grade Textbook Reading Level. ISBN 0-534-39861-8

VIII. Student Learning Outcome

- perform operations with all real numbers as needed for success in the real world and upper level mathematics;
- demonstrate conceptual understanding of the equivalency, comparison and conversion of fractions, decimals and percent;
- determine ratios and proportions and use them to solve real world problems.