

# MATH 120/120E – Fundamentals of Mathematics (3-5 Credits)

## DESCRIPTION:

Topics include sets, probability, statistics, geometry, and consumer mathematics. It may include problem solving, logic, mathematical systems, measurement, and graph theory. Course is broad in scope, emphasizing applications.

**MATH 120 Prerequisite:** MATH 095 or MATH 95E with a Grade of C or Better; or a Satisfactory ACT/SAT/Placement Test score.

## MATH 120E (Expanded):

Students who do not place or advance into the normal 3-credit MATH 120 can self-remediate and retake the placement test, or take MATH 120E (Expanded), which has the same Student Learning Outcomes as MATH 120 (listed below) and requires a co-requisite 2-credit MATH 20 Learning Support class. Topics in MATH 20 include: Place Value and Rounding; Converting between Decimals and Percents; Solving Linear Equations; Exponents; Order of Operations; Fractions; Square Roots; and Proportions.

**MATH 120E Prerequisite:** None

**MATH 120E Co-requisite:** MATH 20

## STUDENT LEARNING OUTCOMES:

At the end of the course, students will be able

- a. to apply set theory concepts to solve real world problems.
- b. to solve problems involving personal finance.
- c. to apply geometric concepts to solve real world problems.
- d. to solve problems involving basic probability.
- e. to analyze data using statistical methods.

## TEXT:

**Title:** \*Thinking Mathematically, 7<sup>th</sup> Edition;

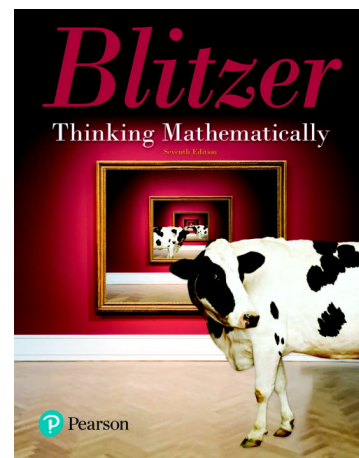
**Authors:** Blitzer;

**Publisher:** Pearson;

**ISBN-13:** My Math Lab with etextbook 18weeks – 9780135961841,

Unbound textbook only: 9780134686516

\*Note: Full-time instructors have the right to use no text or a different text.



## OUTLINE:

- **Set Theory:** Basic Set Concepts, Subsets, Venn Diagrams and Set Operations with Two and Three Sets, Applications (Blitzer, Sections 2.1-2.5)
- **Finance:** Percent, Sales Tax, Discounts, Income Tax, Simple Interest, Compound Interest, Annuities, Savings, Investments, Cars, Mortgages, Credit Cards (Blitzer, Sections 8.1-8.8)
- **Geometry:** Points, Lines, Planes, Angles, Triangles, Polygons, Perimeter, Tessellations, Area, Circumference, Volume, Surface Area (Blitzer, Sections 10.1-10.5)
- **Probability:** The Fundamental Counting Principle, Simple Probability, Events Involving Not/Or/And, Odds, Conditional Probability, Expected Value (Blitzer, Sections 11.1, 11.4, 11.6-11.8)
- **Statistics:** Sampling, Frequency Distributions, Graphs, Mean, Median, Mode, Standard Deviation, Normal Distributions, Applications (Blitzer, Sections 12.1-12.5)

If time permits, you teach any of the following additional topics:

- **Problem Solving:** Critical Thinking, Inductive and Deductive Reasoning, Problem Solving (Blitzer, Sections 1.1-1.3)
- **Logic:** Statements, Negations, Quantified Statements, Compound Statements, Connectives, Truth Tables, Equivalent Statements, Negations of Conditional Statements (Blitzer, Sections 3.1-3.6)
- **Number Theory:** Prime Numbers, Composite Numbers, Rational Numbers, Irrational Numbers, Real Numbers, Clock Addition (Blitzer, Sections 5.1-5.5)
- **Measurement:** The Metric System, Length, Area, Volume, Weights, Temperature (Blitzer, Sections 9.1-9.3)
- **Permutations and Combinations:** Permutations, Combinations, Probability with Permutations and Combinations (Blitzer, Sections 11.2-11.3, 11.5)
- **Voting and Apportionment:** Voting and Apportionment Methods, Flaws (Blitzer, Sections 13.1-13.4)

## EVALUATION:

Grades may be determined by student performance in one or more of the following areas: in-class tests, take-home tests, homework assignments, quizzes, special projects, papers, attendance, and class participation. Degree of importance and types of assessment used will depend on the instructor.

**This course satisfies or partially satisfies the General Education Math component for selected degree and certificate programs at CSN.**