

**MATHEMATICS
STRAND A**

NUMBER SENSE

CONCEPTS

OPERATIONS

The student will be able to...

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OBJECTIVES	PreK	K	1	2	3	4	5	6	7	8
1. Identify numbers and numerals between zero and one thousand.		I	D	D	M	E	E	E	E	E
2. Count by rote - cardinal order.	I	D	D	M	E	E	E	E	E	E
3. Name and write numbers in a standard and expanded form up to a billion.				I	D	M	E	E	E	E
4. Use one to one correspondence in counting a set of objects.	I	D	M	E	E	E	E	E	E	E
5. Name numerals in print.	I	D	D	D	D	D	M	E	E	E
6. Match numerals to sets.	I	D	D	D	M	E	E	E	E	E
7. Combine/Separate sets of objects.	I	D	D	M	E	E	E	E	E	E
8. Compare sets of objects.	I	D	M	E	E	E	E	E	E	E
9. Represent whole numbers and fractions using objects.		I	D	D	D	M	E	E	E	E
10. Name, write and order fractions.		I	D	D	D	D	M	E	E	E
11. Name, write and order decimals.			I	D	D	D	D	M	E	E
12. Name, write and order percents.					I	D	D	D	M	E
13. Relate and convert fractions, decimals and percents.							I	D	D	M
14. Name, write and order integers.						I	D	D	M	E
15. Identify numbers expressed with exponents.							I	D	M	E
16. Identify numbers expressed with scientific notation.								I	D	M
17. Identify numbers expressed with radicals.									I	D

LEGEND: I = Introduce D = Develop M = Master E = Enrich/Expand/Extend

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OBJECTIVES	PreK	K	1	2	3	4	5	6	7	8
18. Identify numbers expressed with absolute value.							I	D	M	E
19. Represent whole numbers and fractions using objects.		I	D	D	M	E	E	E	E	E
20. Recognize value of whole numbers.	I	D	D	M	E	E	E	E	E	E
21. Recognize value of fractions, decimals and percents.						I	D	M	E	E
22. Recognize value of integers and rational numbers.									I	D
23. Communicate numbers as percents, exponents, scientific notation, radicals, absolute value and ratios.								I	D	M
24. Understand equivalency using whole numbers.	I	D	D	M	E	E	E	E	E	E
25. Understand equivalency using decimals, fractions and percents.						I	D	D	D	M
26. Understand representations of rational and irrational numbers.									I	D
27. Express numbers of equivalency using integers, fractions, decimals, percents, exponents, scientific notation, radicals, absolute value, ratios and factorials.								I	D	M
28. Use ordinal numbers 1 st through 10 th or higher.	I	D	D	M	E	E	E	E	E	E
29. Understand symbols (>,<=).			I	D	M	E	E	E	E	E
30. Count orally to 100 or more by 2's, 5's and 10's.			I	D	M	E	E	E	E	E
31. Count forward and backward by one beginning with any number less than 100.			I	D	M	E	E	E	E	E

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OBJECTIVES	PreK	K	1	2	3	4	5	6	7	8
32. Count forward by 10's from any number less than 10 using 100 chart (i.e., 7, 17, 27).				I	D	M	E	E	E	E
33. Know place value patterns and uses zero as a place holder, trading ten ones for 10.			I	D	M	E	E	E	E	E
34. Demonstrate knowledge of the meaning of addition and subtraction using manipulatives, drawings, symbols and story problems.			I	D	M	E	E	E	E	E
35. Solve basic addition facts using concrete objects and thinking strategies, such as count on, count back, doubles, doubles plus one and make ten.			I	D	M	E	E	E	E	E
36. Describe the related facts that represent a given fact family up to 18.			I	D	M	E	E	E	E	E
37. Understand the place value of whole numbers to 999.			I	D	M	E	E	E	E	E
38. Understand the place value of decimals.					I	D	M	E	E	E
39. Memorize addition and subtraction facts through twelve.		I	D	M	E	E	E	E	E	E
40. Memorize addition and subtraction facts through eighteen.			I	D	M	E	E	E	E	E
41. Understand the inverse relationship of addition and subtraction.			I	D	M	E	E	E	E	E
42. Skip count, group and use place value with whole numbers between zero and one hundred.		I	D	M	E	E	E	E	E	E

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OBJECTIVES	PreK	K	1	2	3	4	5	6	7	8
43. Use scientific and exponential notation.								I	D	M
44. Identify patterns while counting, grouping and using place value.		I	D	M	E	E	E	E	E	E
Whole Numbers										
1. Compare the decimal system to Roman numerals or other numerical systems.				I	D	D	M	E	E	E
2. Select and compute proper operation for problem solving.		I	D	D	D	D	D	D	D	D
3. Apply estimation in problem solving and computation.	I	D	D	D	D	D	D	D	D	D
4. Show the relationship between our monetary system and the decimal system.				I	D	D	M	E	E	E
5. Compute addition and subtraction problems.	I	D	D	M	E	E	E	E	E	E
6. Add and subtract with regrouping.				I/D	M	E	E	E	E	E
7. Add and subtract without regrouping, 2 digits.			I	D/M	E	E	E	E	E	E
8. Add and subtract with regrouping, 2 digits.				I/D	M	E	E	E	E	E
9. Add and subtract without regrouping, 3 digits.				I/D	M	E	E	E	E	E
10. Add and subtract with regrouping, 3 digits.				I/D	M	E	E	E	E	E
11. Recall and use basic multiplication facts through the twelve times table.				I	D	M	E	E	E	E
12. Multiply multi-digit numbers.						I/D	M	E	E	E

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OBJECTIVES	PreK	K	1	2	3	4	5	6	7	8
13. Recognize inverse relationship of multiplication and division.					I/D	M	E	E	E	E
14. Divide using one digit divisors.						I/D	M	E	E	E
15. Estimate quotients.					I	D	D	M	E	E
16. Recognize odd and even numbers.			I	D/ M	E	E	E	E	E	E
17. Understand and calculate LCM and GCF.						I	D	M	E	E
18. Identify prime and composite numbers.						I	D	M	E	E
19. Understand prime factorization.						I	D	M	E	E
20. Identify number properties.		I	D	D	D	D	M	E	E	E
Decimals										
1. Add decimals.				I	D	D	M	E	E	E
2. Subtract decimals.				I	D	D	M	E	E	E
3. Compare and order decimals.						I	D	M	E	E
4. Multiply by both whole numbers and decimals.						I	D	M	E	E
5. Divide by both whole numbers and decimals.							I/D	M	E	E
6. Estimate products.						I	D	M	E	E
7. Estimate quotients.						I	D	D	M	E
8. Round decimals.					I	D	D	M	E	E

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OBJECTIVES	PreK	K	1	2	3	4	5	6	7	8
Fractions/Mixed Numbers										
1. Understand fractions.		I	D	D	D	D	M	E	E	E
2. Estimate fractional parts.						I	D	M	E	E
3. Add and subtract fractions.					I	D	M	E	E	E
4. Find fractional parts of a number.						I	D	M	E	E
5. Multiply fractions.							I	D	M	E
6. Divide fractions.							I	D	M	E
7. Convert fractions and mixed numbers to simplest form.						I	D	M	E	E
8. Find LCD.						I	D	M	E	E
9. Convert improper fractions and mixed numbers.						I	D	M	E	E
10. Add and subtract mixed numbers.						I	D	D	M	E
11. Multiply and divide mixed numbers.						I	D	D	M	E

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STRAND B

MEASUREMENT

The student will be able to...

OBJECTIVES	PreK	K	1	2	3	4	5	6	7	8
Time and Temperature										
1. Sort and name colors.	I	D/M	E	E	E	E	E	E	E	E
2. Order days of the week and months of the year.	I	D	D	M	E	E	E	E	E	E
3. Read a calendar.	I	D	D	M	E	E	E	E	E	E
4. Tell time to the hour.		I	D/M	E	E	E	E	E	E	E
5. Tell time to the half hour.		I	D	M	E	E	E	E	E	E
6. Tell time to the quarter hour.				I/D	M	E	E	E	E	E
7. Tell time in five minute increments.				I/D	M	E	E	E	E	E
8. Tell time to the nearest minute.				I	D	M	E	E	E	E
9. Estimate time.			I	D	M	E	E	E	E	E
10. Add/subtract units of time.				I	D	D	D	M	E	E
11. Use a time schedule.			I	D	D	M	E	E	E	E
12. Identify time as A.M. or P.M.			I	D	M	E	E	E	E	E
13. Choose reasonable time for a given activity.			I	D	D	M	E	E	E	E
14. Measure degrees in Fahrenheit.			I	D	D	D	M	E	E	E
15. Measure degrees in Celsius.				I	D	D	D	M	E	E
Units of Money										
1. Identify coins and value of coins.		I	D	M	E	E	E	E	E	E
2. Determine equivalent groups of coins.			I	D	M	E	E	E	E	E
3. Count groups of coins up to \$.99.			I	D/M	E	E	E	E	E	E

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**MATHEMATICS
STRAND B**

MEASUREMENT

The student will be able to...

Page 2 of 3

OBJECTIVES	PreK	K	1	2	3	4	5	6	7	8
4. Identify \$1.00.			I	D/M	E	E	E	E	E	E
5. Count money more than \$1.00.				I/D	M	E	E	E	E	E
6. Add/subtract units of money.			I	D	M	E	E	E	E	E
7. Multiply/divide units of money.					I	D	D	M	E	E
8. Count and trade money.			I	D	D	M	E	E	E	E
9. Find value of a collection of coins.			I	D	D	M	E	E	E	E
10. Estimate with money.				I	D	D	M	E	E	E
Measuring Skills										
1. Use non-standard units to measure.	I	D	D	M	E	E	E	E	E	E
2. Compare length.	I	D	D	M	E	E	E	E	E	E
3. Estimate and measure length in customary units.			I	D	D	D	M	E	E	E
4. Estimate and measure length in metric units.			I	D	D	D	D	D	D	M
5. Estimate weight, capacity and mass in standard and metric measurement.		I	D	D	D	D	D	M	E	E
6. Measure weight, capacity and mass in standard and metric measurement.					I	D	D	M	E	E
7. Understand relationship of metric system to base ten.						I	D	D	D	M
8. Choose appropriate unit of measurement.			I	D	D	D	M	E	E	E
9. Change to smaller/larger customary units.				I	D	D	D	M	E	E
10. Change to smaller/larger metric units.						I	D	D	M	E

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The student will be able to...

OBJECTIVES	PreK	K	1	2	3	4	5	6	7	8
Plane Figures										
1. Sort squares, circles, rectangles, triangles, diamonds and ovals.	I	D	M	E	E	E	E	E	E	E
2. Identify squares, circles, rectangles, triangles, diamonds and ovals.	I	D	D	M	E	E	E	E	E	E
3. Draw/Create squares, circles, rectangles, triangles, diamonds and ovals.	I	D	D	D	M	E	E	E	E	E
4. Identify, describe, draw/create rhombuses, parallelograms and trapezoids.						I	D	D	D	M
5. Identify and draw lines of symmetry.			I	D	D	M	E	E	E	E
6. Identify and draw points, lines, planes, vertices, angles, line segments and rays.						I	D	M	E	E
7. Identify and draw parallel, perpendicular, intersecting and skew lines.						I	D	D	M	E
8. Identify and draw parallel, perpendicular, intersecting planes.						I	D	D	M	E
9. Identify and demonstrate reflections (flips), translations (slides), and rotations (turns).				I	D	D	D	D	M	E
10. Find perimeter using standard units.			I	D	D	M	E	E	E	E
11. Find perimeter using non-standard units.					I	D	D	D	D	D
12. Find area of geometric figures using non-standard units.	I	D	D	M	E	E	E	E	E	E
13. Compare area and perimeter.								I	D	M
14. Measure an angle with a protractor.							I	D	M	E

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MATHEMATICS

GEOMETRY

**STRAND C
MATHEMATICS**

SPATIAL SENSE

The student will be able to...

Page 2 of 3

OBJECTIVES	PreK	K	1	2	3	4	5	6	7	8
Congruency										
1. Match geometric shapes.	I	D	M	E	E	E	E	E	E	E
2. Demonstrate an understanding of positional concepts.	I	D	M	E	E	E	E	E	E	E
3. Identify groups or orders by attributes.	I	D	M	E	E	E	E	E	E	E
4. Identify groups or orders by attributes.						I	D	D	D	M
Similarity										
1. Identify and demonstrate similar figures.						I	D	D	D	M
Solid Figures										
1. Sort spheres (balls) and cubes (boxes).		I/D	M	E	E	E	E	E	E	E
2. Identify spheres, rectangular solids, cones, cylinders, pyramids and prisms.			I	D	D	D	M	E	E	E
3. Know attributes of two and three dimensional figures.			I	D	M	E	E	E	E	E
4. Sort two and three dimensional figures according to their attributes.			I	D	M	E	E	E	E	E
5. Measure an angle with use of a protractor.							I	D	M	E
6. Identify and draw points, line segments, angles, rays, planes, parallel lines and planes, perpendicular lines and planes, and skew lines.						I	D	D	D	M

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MATHEMATICS

GEOMETRY

STRAND C

SPATIAL SENSE

MATHEMATICS

The student will be able to...

OBJECTIVES	PreK	K	1	2	3	4	5	6	7	8
Lines										
1. Identify and draw points, line segments, angles, rays, planes, parallel lines and planes, perpendicular lines and planes.						I	D	D	D	M
Pythagorean Theorem										
1. Identify and apply.										I
Coordinate Geometry										
1. Locate/Plot points in two-dimensional coordinate planes.						I	D	D	M	E
Geometric Formulas										
1. Calculate the perimeter and/or circumference and apply the solution to problem-solving situations when given a plane figure.							I	D	D	D
2. Calculate the area and apply the solution to problem-solving situations when given a polygon.							I	D	D	D
3. Calculate the surface area and/or volume when given a prism or pyramid.								I	D	D

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**MATHEMATICS
STRAND D
ALGEBRAIC THINKING**

The student will be able to...

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OBJECTIVES	PreK	K	1	2	3	4	5	6	7	8
1. Identify and describe patterns.	I	D	D	D	D	D	D	D	D	D
2. Copy and extend patterns.	I	D	D	D	D	D	D	D	D	D
3. Analyze patterns.	I	D	D	D	D	D	D	D	D	D
4. Compare and order whole numbers (trichotomy).	I	D	D	D	D	D	M	E	E	E
5. Understand that a geometric symbol or letter can be used to represent an unknown (variables).			I	D	D	D	D	D	D	D
6. Compare and order positive fractions and decimals.						I	D	D	D	M
7. Compare and order negative and rational numbers.							I	D	D	D
8. Apply order of operations.							I	D	D	M
9. Perform basic operations using integers.							I	D	M	E
10. Understand absolute value of integers.							I	D	M	E
11. Solve algebraic equations involving variables.								I	D	D
Graphing										
1. Graph inequalities on a number line.									I/D	D
2. Graph linear equations.										I/D
Simplify and Manipulate Algebraic Expressions										
1. Find a common term in a simple polynomial.										I
2. Apply commutative, associative identity and inverse properties.							I	D	D	D

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**MATHEMATICS
STRAND E**

DATA ANALYSIS

PROBABILITY

The student will be able to...

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OBJECTIVES	PreK	K	1	2	3	4	5	6	7	8
Data Analysis										
1. Collect and organize data to construct an appropriate type of graph.	I	D	D	D	D	D	D	M	E	E
2. Interpret a chart or a table.		I	D	D	D	M	E	E	E	E
3. Interpret a bar graph, pictograph or line graph.			I	D	D	M	E	E	E	E
4. Interpret a circle graph.				I	D	D	D	D	D	M
5. Interpret a scale drawing.								I	D	M
6. Determine range, mean, median and mode from sets of data.						I	D	D	M	E
7. Understand and apply the concepts of range, mean, median and mode.								I	D	D
8. Arrange numerical data into stem-and-leaf plot and a box-and-whisker plot for one or two sets of data.								I	D	D
9. Interpret and analyze stem-and-leaf plot and box-and-whisker plot for one or two sets of data.									I	D
10. Analyze graphs with intervals other than one.						I	D	M	E	E
11. Construct a graph or diagram using an appropriate scale.						I	D	D	D	D
12. Make a scatter plot when given ordered pairs or numerical data.									I	D
13. Understand basic concepts of chance and probability.			I	D	D	D	D	M	E	E
14. Make predictions about the likelihood of simple events.			I	D	D	D	D	M	E	E

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MATHEMATICS

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DATA ANALYSIS

PROBABILITY

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OBJECTIVES	PreK	K	1	2	3	4	5	6	7	8
Data Analysis										
15. Use models including tree diagrams to show possible outcomes and to predict events.								I	D	D
16. Compare experimental results with mathematical expectations of probabilities.							I	D	D	D
17. Determine the odds for and the odds against a given situation.									I	D
18. Determine probabilities using counting procedures, factorials, tables, tree diagrams and formulas for permutations and combinations.									I	D
19. Determine the probability for simple and compound events as well as independent and dependent events.									I	D
Inferences, Real World Situations										
1. Apply data analysis skills to real world situations.	I	D	D	D	D	D	D	D	D	D
2. Form hypotheses, design experiments, collect and interpret data and evaluate hypotheses by drawing conclusions based on statistics.						I	D	D	D	D
3. Identify common uses and misuses of probability and statistics in the everyday world.									I	D

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COURSE TITLE

PRE-ALGEBRA

A. Course Description

The purpose of this course is to provide the foundation for advanced mathematics courses and to develop the skills needed to solve a variety of real world and mathematical problems, with an emphasis on strengthening the skills and concepts needed for success in Algebra I and Geometry.

B. Objectives

After successfully completing this course, the student will be able to:

1. Name and write integers, fractions and decimals
2. Identify numbers expressed with exponents, scientific notation, radicals, absolute value and ratios
3. Recognize value of integers and rational numbers
4. Communicate numbers as percents, exponents, scientific notation, radicals, absolute value and ratios
5. Understand representations of rational and irrational numbers
6. Express numbers of equivalency using integers, fractions, decimals, percents, exponents, scientific notation, radicals, absolute value, ratios and factorials
7. Use scientific and exponential notation
8. Identify number systems other than the decimal number system
9. Select and compute proper operation for problem solving
10. Apply estimation in problem solving and computation
11. Recognize and use number theory
12. Understand and calculate LCM and GCF
13. Round and convert decimals and percents
14. Solve equations involving decimals
15. Understand fractions:
 - a. estimate fractional parts
 - b. add and subtract fractions
 - c. find fractional parts of a number
 - d. multiply fractions
 - e. divide fractions
 - f. convert fractions and mixed numbers to simplest form
 - g. find LCF
 - h. convert improper fractions and mixed numbers
 - i. add and subtract mixed numbers
 - j. multiply and divide mixed numbers
 - k. add/subtract units of time

16. Understand measuring skills:
 - a. compare length
 - b. estimate and measure length in customary units
 - c. estimate and measure length in metric units
 - d. estimate and measure weight, capacity and mass
 - e. choose appropriate unit of measurement
 - f. change to smaller/larger customary units
 - g. change to smaller/larger metric units
 - h. select and apply the appropriate form of measurement to solve the problem when given a variety of problem-solving situations
17. Understand plane figures:
 - a. identify, describe, draw/create rhombuses, parallelograms and trapezoids
 - b. identify and draw lines of symmetry
 - c. identify and demonstrate reflections (flips), translations (slides) and rotations (turns)
 - d. find perimeter using standard units
 - e. compare area and perimeter
 - f. measure an angle with a protractor
18. Identify and construct congruent figures
19. Identify and demonstrate similar figures
20. Understand solid figures:
 - a. identify spheres, rectangular solids, cones, cylinders, pyramids and prisms
 - b. measure an angle with use of a protractor
21. Understand lines:
 - a. identify and draw points, line segments, angles, rays, planes, parallel lines and planes, perpendicular lines and planes
 - b. construct congruent line segments, angle bisectors, perpendicular bisectors, and congruent angles
22. Identify and apply the Pythagorean Theorem
23. Locate/Plot points in two-dimensional coordinate planes
24. Understand and apply geometric formulas:
 - a. calculate the perimeter and/or circumference and apply the solution to problem-solving situations when given a plane figure.
 - b. calculate the area and apply the solution to problem-solving situations when given a polygon
 - c. calculate the surface area and/or volume when given a prism or pyramid
25. Understand algebraic thinking:
 - a. identify and describe patterns
 - b. analyze patterns
 - c. compare and order whole numbers (trichotomy)
 - d. understand that a geometric symbol or letter can be used to

- represent an unknown (variables)
 - e. compare and order positive fractions and decimals
 - f. compare and order negative and rational numbers
 - g. apply order of operations
 - h. perform basic operations using integers
 - i. understand absolute value of integers
 - j. solve algebraic equations involving variables
26. Graph inequalities on a number line
27. Simplify and manipulate algebraic expressions:
- a. find a common term in a simple polynomial
 - b. apply commutative, associative identity and inverse properties
 - c. apply distributive property
 - d. translate word phrases into algebraic expressions
28. Understand and apply data analysis:
- a. collect and organize data to construct an appropriate type of graph
 - b. interpret a chart or a table
 - c. interpret a bar graph, pictograph or line graph
 - d. interpret a scale drawing
 - e. interpret a circle graph
 - f. determine range, mean, median and mode from sets of data
 - g. understand and apply the concepts of range, mean, median and mode
 - h. arrange numerical data into stem-and-leaf plot and a box-and-whisker plot for one or two sets of data
 - i. interpret and analyze stem-and-leaf plot and box-and-whisker plot for one or two sets of data
 - j. analyze graphs with intervals other than one
 - k. construct a graph or diagram using an appropriate scale
 - l. make a scatter plot when given ordered pairs or numerical data
29. Understand the basic concepts of chance and probability:
- a. make predictions about the likelihood of simple events
 - b. use models including tree diagrams to show possible outcomes and to predict events
 - c. compare experimental results with mathematical expectations of probabilities
 - d. determine the odds for and the odds against a given situation
 - e. determine probabilities using counting procedures, tables, tree diagrams and formulas for permutations and combinations
 - f. determine the probability for simple and compound events as well as independent and dependent events
30. Understand and apply real world situations:
- a. apply data analysis skills to real world situations
 - b. form hypotheses, design experiments, collect and interpret data and evaluate hypotheses by drawing conclusions based on statistics

- c. identify common uses and misuses of probability and statistics in the everyday world

C. Methods of Assessment

1. Daily homework
2. Quizzes and tests
3. Mid-term and final examinations
4. Cooperative group work
5. Projects on topics pertaining to the material
6. Portfolios