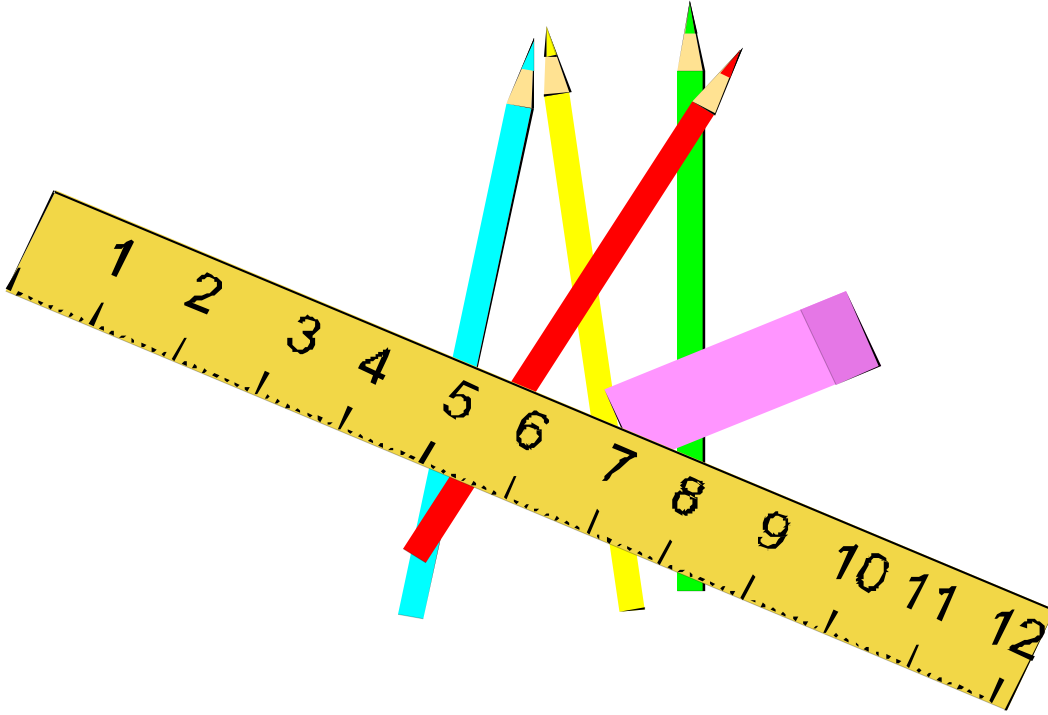


QUINCY PUBLIC SCHOOLS STANDARDS MAPS
MATHEMATICS
GRADE 7



Based on the Quincy Public Schools Design for Learning 2000

**QUINCY PUBLIC SCHOOLS STANDARDS MAPS
MATHEMATICS
GRADE 7**

STRAND #1: NUMBER SENSE		
	STATE STANDARDS	GRADE 7 OBJECTIVES
	1.6 NUMBER SENSE AND NUMBER RELATIONSHIPS Students engage in problem solving, communicating, reasoning, and connecting to:	
1.6.1	Represent and Use Equivalent Forms of Numbers	<ol style="list-style-type: none"> 1. Rewrite numbers as fractions, decimals, and percents. 2. Rank percents. 3. Drive a percent of numbers. 4. Use large and small percents. 5. Estimate the percent of a number. 6. Apply the percent equation. 7. Calculate simple interest. 8. Specify a percentage increase or percentage decrease.
1.6.2	Apply Ratios, Proportions, and Percents	<ol style="list-style-type: none"> 9. Find a ratio. 10. Find a rate. 11. Solve a proportion. 12. Decide whether two polygons are similar. 13. Use similar triangles to measure indirectly. 14. Read and make scale drawings and maps. 15. Use problem-solving strategies to solve real-life problems.
1.6.3	Relations of Fractions, Decimals, and Percents.	<ol style="list-style-type: none"> 16. Estimate and compute with fractions, decimals, and percents. 17. Derive the least common multiple of two numbers. 18. Rewrite mixed numbers and improper fractions. 19. Add and subtract fractions with common denominators and Different denominators. 20. Add and subtract mixed numbers. 21. Multiply fractions and mixed numbers. 22. Use distributive properties. 23. Divide fractions and mixed numbers. 24. Use problem-solving strategies to solve real-life problems.

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GRADE 7**

STRAND #1: NUMBER SENSE		
	STATE STANDARDS	GRADE 7 OBJECTIVES
1.6.4	Represent numerical relationships in one- and two-dimensional graphs.	25. Recognize a two dimensional graph. 26. Make a table of values for an expression. 27. Write an expression that represents a table of values. 28. Plot points in a coordinate plane. Draw a scatter plot. 29. Draw a histogram to represent data.
1.7 NUMBER SYSTEMS AND NUMBER THEORY		
Students engage in problem solving, communicating, reasoning, and connecting to:		
1.7.1	Explain the need for numbers other than whole numbers.	30. Prepare a time line to represent data. 31. Find the absolute value of a number. 32. Write number in scientific notation. 33. Find the square root of a number.
1.7.2	Know and use order relations for whole numbers, fractions, decimals, integers, and rational numbers.	34. Demonstrate a number line to order whole numbers, Fractions, and decimals. 35. Graph and order integers. 36. Select/separate number counters to add integers. 37. Interpret a number line to add integers. 38. Reconstruct patterns in a coordinate plane, summarize a table of values, and plot points in a coordinate plane.
1.7.3	Use operations involving fractions, decimals, integers, and rational numbers.	39. Compute with integers: add, subtract, multiply and divide. 40. Compute with fractions and mixed numbers: add and subtract Fractions, add and subtract mixed numbers, multiply fractions and mixed numbers, and divide fractions and mixed numbers.
1.7.4	Demonstrate how basic operations are related to one another.	41. Evaluate an expression using the order of operations. 42. Define and use the commutative and associative properties for given problems. 43. Evaluate powers. 44. Use divisibility tests. 45. Evaluate problems using the distributive property.

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STRAND #1: NUMBER SENSE		
	STATE STANDARDS	GRADE 7 OBJECTIVES
1.7.5	Create and apply number theory concepts, including prime numbers, factors, and multiples.	46. Identify prime and composite numbers. 47. Write the prime factorization of a number. 48. Find the Greatest Common Factor (GCF) of two numbers. 49. Find the Least Common Multiple (LCM) of two numbers.
1.8 COMPUTATION AND ESTIMATION		
Students engage in problem solving, communicating, reasoning, and connecting to:		
1.8.1	Compute with whole numbers, fractions, decimals, integers, and rational numbers.	50. Compute using addition, subtraction, multiplication and division with whole numbers, fractions, decimals, and percents. 51. Identify rational numbers.
1.8.2	Develop, analyze, and explain procedures for computing, estimating, and solving proportions.	52. Solve a proportion. 53. Write a proportion. 54. Apply problem-solving strategies to solve real-life problems. 55. Demonstrate understanding of ratios, rates, and proportions as an important part of every day life.
1.8.3	Select and use an appropriate method for computing from among mental arithmetic, paper-and-pencil, calculator, and computer methods.	56. Prepare a problem-solving plan. 57. Apply the strategy of solving a similar problem. 58. Identify congruent and similar figures. 59. Find the perimeter and area of geometric figures. 60. Perform mathematical experiments and simulations. 61. Apply the strategy of Guess, Check, and Revise. 62. Solve an algebraic equation.
1.8.4	Use computation, estimation, and proportions to solve problems. Estimate to check the reasonableness of results of computations and problems involving rational numbers.	63. Demonstrate logical reasoning to solve a problem. 64. Apply the strategy of Separating in Cases. 65. Apply the strategy of Working Backwards. 66. Apply other problem solving strategies. 67. Prepare tables and graphs to organize data and solve problems.

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GRADE 7**

STRAND #2: PATTERNS, RELATIONS AND FUNCTIONS		
	STATE STANDARDS	GRADE 7 OBJECTIVES
	2.4 PATTERNS AND FUNCTIONS Students engage in problem solving, communicating, reasoning, and connecting to:	
2.4.1	Describe a pattern found in a table.	<ul style="list-style-type: none"> Describe a pattern for the area of a rectangle.
2.4.2	Use an expression to make a table of values.	<ul style="list-style-type: none"> Organize data in a table of x and y values and graph.
2.4.3	Plot the x and y points of a function on a coordinate plane.	
2.4.4	Translate verbal sentences into algebraic equations.	<ul style="list-style-type: none"> Use proportions to solve a problem. Complete a table to solve a problem.
	2.5 ALGEBRA Students engage in problem solving, communicating, reasoning, and connecting to:	
2.5.1	Translate a verbal phrase into an algebraic expression.	<ul style="list-style-type: none"> Given a value of a variable, evaluate an algebraic expression. Use the order of operations to evaluate an expression.
2.5.2	Given a problem with two variables, find the solution by constructing a data table and/or graph.	
2.5.3	Read a table and/or graph to find the relationships within the data.	<ul style="list-style-type: none"> Relate tables, graphs, and stories of the same event.
2.5.4	Explore the concept of slope.	
2.5.5	Solve proportions with a missing variable.	<ul style="list-style-type: none"> Use the cross product method to solve proportions. Understand the meaning of inequality signs.
2.5.6	Apply algebraic expressions to solve problems of area and perimeter.	<ul style="list-style-type: none"> Use the simple interest formula to solve real-life problems. Solve percentage problems using either proportions or equations. Explore the commutative property. Explore the associative property. Explore the distributive property.

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STRAND #2: PATTERNS, RELATIONS AND FUNCTIONS		
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2.5.7	Translate a word problem into an equation.	

2.5.8	Demonstrate the efficient use of algebra tiles or other manipulatives to model expressions.	<ul style="list-style-type: none"> • Demonstrate the efficient use of algebra tiles or other manipulatives to solve equations. • Demonstrate the efficient use of pattern blocks to model and to solve equations.
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STRAND #3: GEOMETRY AND MEASUREMENT		
	STATE STANDARDS	GRADE 7 OBJECTIVES
	3.3 GEOMETRY	
	Students engage in problem solving, communicating, reasoning, and connecting to:	

3.3.1	Generalize the relationship between the number of sides and the sum of angles of polygons.	<ul style="list-style-type: none"> • Apply formulas for finding perimeter and area of triangles and quadrilaterals.
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3.3.2	Describe angles formed by intersecting lines and the relationships among them.	<ul style="list-style-type: none"> • Identify lines, segments, planes, and points of intersection.
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3.3.3.	Design a home of your choice using geometric figures.	
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3.3.4	Discover and illustrate transformations.	<ul style="list-style-type: none"> • Determine real world examples of objects that have a symmetric relationship.
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3.3.5	Draw and label solid figures.	<ul style="list-style-type: none"> • Calculate the surface area of solids.
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3.3.6	Recognize, identify and describe complementary and supplementary angles using maps and building plans from real life situations.	
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3.3.7	Identify the radius, diameter, circumference and chord.	<ul style="list-style-type: none"> • Calculate the area and circumference of circles.
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3.3.8	Calculate the length of the third side of a right triangle when given the two other sides.	
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	3.4 MEASUREMENT	
	Students engage in problem solving, communicating, reasoning, and connecting to:	

3.4.1	Accurately measure to the degree required using a protractor and a ruler.	
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3.4.2	Discover the relationship of circumference to diameter by measuring several different sized circles.	
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3.4.3	Recognize and explain the relationships of miles per hour and dollars per pound.	
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3.4.4	Introduce the difference between surface area and volume.	
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STRAND #4: STATISTICS AND PROBABILITY		
	STATE STANDARDS	GRADE 7 OBJECTIVES
	4.2 STATISTICS Students engage in problem solving, communicating, reasoning, and connecting to:	
4.2.1	Collect, organize, and describe data systematically.	<ul style="list-style-type: none"> • Describe measures of central tendency. • Differentiate between data that use mean, median and mode. • Select the appropriate measure for a given situation.
4.2.2	Construct, read, and interpret tables, charts, and graphs.	<ul style="list-style-type: none"> • Compare survey results by size of sample: i.e. class, grade and school. • Generalize results.
4.2.3	Make inferences and convincing arguments that are based on data analysis.	<ul style="list-style-type: none"> • Assess and manipulate conclusions derived from collected data.
4.2.4	Evaluate arguments that are based on data analysis.	<ul style="list-style-type: none"> • Develop questions that are based on a data set, which lead to the understanding of the information presented. • Develop questions, which demonstrate an understanding of the conclusion.
4.2.5	Develop and explain why statistical methods are powerful aids for decision-making.	<ul style="list-style-type: none"> • Explain how statistics are used in real life situations. • Summarize and communicate decisions using statistical data.
	4.3 PROBABILITY Students engage in problem solving, communicating, reasoning, and connecting to:	
4.3.1.	Model situations by devising and carrying out experiments or simulations to determine probabilities.	<ul style="list-style-type: none"> • Determine the number of possible combinations in different types of situations. • Calculate the probability of an individual event by conducting an experiment using: counting principle, simulation and experimental models.
4.3.2	Construct a sample space to determine probabilities.	<ul style="list-style-type: none"> • Name three events that have a probability of 1/2. • *Compute the probability of an event.
4.3.3	Describe the power of using a probability model by comparing experimental results with mathematical expectations.	<ul style="list-style-type: none"> • Predict the number of times an event will occur by multiplying its probability by the number of trials. • Examine investigating fair games.

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MATHEMATICS
GRADE 7**

STRAND #4: STATISTICS AND PROBABILITY		
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4.3.4	Make predictions that are based on experimental or theoretical probabilities and determine their reasonableness.	<ul style="list-style-type: none"> • Develop inferences based on the results obtained from Determining the number of possible combinations in different types of situations. Calculating the probability of an individual event by conducting an experiment using the counting principle, simulation, or experimental models. Naming three events that have a probability of 1/2. Computing the probability of an event.
4.3.5	Develop and explain an appreciation for the pervasive use of probability in the real world.	<ul style="list-style-type: none"> • Explain how probability can be used in solving problems.