



# Mathematics:

## Applications and Concepts

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Competencies and Objectives		Page References
<b>1.</b>	<b>Model and apply concepts and perform basic operations using decimals, fractions, and mixed numbers. (P, D, G, N)</b>	
1a	Use a number line and other models to compare, order, round, and estimate fractions and decimals.	SE: 67-70, 127 #5, 220
1b	Model and perform addition, subtraction, multiplication, and division of rational numbers to include decimals and fractions.	SE: 71-75, 76-80, 82-85, 88-91, 92-95, 109-110, 619-620
1c	Solve real-life problems involving the four basic operations of decimals, fractions, and mixed numbers.	SE: 73 #5, 78 #6, 80, 83 #4, 91 #36-#40, 95 #32-#33
1d	Use powers of ten to multiply and divide decimals.	SE: 104-105
1e	Convert among decimals, fractions, and mixed numbers.	SE: 62-66, 70 #39, 108
<b>2.</b>	<b>Apply and use basic principles of number sense and perform operations involving exponents, scientific notation, and order of operations. (P, M, N)</b>	
2a	Use patterns and models to review the concept of exponents.	SE: 98-101, 110 #50-#56
2b	Find the greatest common factor (GCF) and least common multiple (LCM) using prime factorization.	SE: 61 #19-#22, 85 #45-#48, 609, 610, 612
2c	Convert between standard form and scientific notation.	SE: 104-107, 110, 621, 649, 668
2d	Apply patterns to the concepts of roots of perfect squares and evaluate/estimate powers, squares, and square roots with and without a calculator.	SE: 116-119, 120-122, 146, 147, 650

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2e	Apply the order of operations to solve real-life problems.	The following references can be used to meet this standard. <i>WebQuest</i> 3, 465
<b>3.</b>	<b>Convert and use standard units (English and metric) of measurement. (P, D, M, G, N)</b>	
3a	Convert within a standard measurement system.	SE: 52 #36-#38, 156 #2, 158 #28, #29, 185 #2, 338 #27-#29, 604-607, 686, 688
3b	Use standard units of measurement to solve application problems.	SE: 53 #46, 73 #5, 222 #37, 567 #24-#26, 586 #38-#39
3c	Convert temperature using Fahrenheit and Celsius formulas.	SE: 648 #2
3d	Measure and find dimensions of given figures using standard measurements.	SE: 107 #37-#40, 182 #22
<b>4.</b>	<b>Collect, organize, and interpret data using concepts of probability and statistics. (P, D, M, G, N)</b>	
4a	Interpret and construct frequency tables and charts from given data and student collected data.	SE: 68 #3, 95 #32, #33, 159 #31-#32, 164 #15-#16, 214 #66-#68, 223 #38-#39, 244 #25, 422 #3, #5, #6
4b	Interpret and construct histograms, bar, line, and circle graphs (when given degrees) from given data.	SE: 27 #53, #54, 161 #2, 163 #11-#14, 173 #45, 240 #35, 420-425, 426-429, 431, 458, 459, 602
4c	Interpret and construct stem-and-leaf, scatter plots, and line plots from given data.	SE: 161 #2, 163 #11-#14, 430-433, 438 #16, #17, 444 #17, #18, 539-542, 602
4d	Find and compare mean, median, mode, and range of given or collected sets of data.	SE: 36 #8, 38 #57-#60, 69 #32, 435-438, 442, 453 #8-#12, 459, 463 #14, 665 #14, 673 #20
4e	Make predictions based on given data.	SE: 27 #53-#54, 95 #32-#33, 162 #3, 173 #45, 406-409, 412, 539
4f	Solve problems using simple permutations and combinations.	SE: 384-387, 388-391, 655 #6-#9
4g	Calculate and apply probability of a single event.	SE: 374-377, 383 #27-#30, 387 #38-#41, 410, 665 #15, 673 #19
<b>5.</b>	<b>Apply concepts of geometry to angles, polygons, and two and three-dimensional figures. (P, M, G, N)</b>	

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5a	Identify and name two and three-dimensional figures.	SE: 263, 273, 319, 331-334, 364
5b	Classify, draw, and measure acute, obtuse, right, and straight angles.	SE: 48 #36, 256-260, 663 #1-#3
5c	Classify and compare the properties of quadrilaterals.	SE: 178-179, 187 #25, 199, 272-275, 282 #27-#29, 307
5d	Classify triangles by sides and angles.	SE: 262-265, 267-670, 307, 629, 653 #5
5e	Find the perimeter and area of polygons and circumference and area of circles.	SE: 85 #34, 119 #43-#45, 122 #34, 128 #16, 164 #24, 314-318, 319-323, 363, 364, 613, 632
5f	Perform rotations, reflections, and translations on plane figures.	SE: 290-294, 296-299, 300-303, 308
5g	Apply the Pythagorean Theorem to solve real-life problems.	SE: 132-136, 137-140, 148 #37-#41, 267-268, 650 #8-#13
<b>6</b>	<b>Model and apply the four basic operations of integers. (P, M, G, N)</b>	
6a	Recognize and write integers and determine their absolute value and additive inverse.	SE: 4, 17-21, 25, 38-48
6b	Use models including the number line to compare and order integers.	SE: 17-20, 27 #48-#50, 67-70, 109
6c	Add, subtract, multiply, and divide integers with and without manipulatives.	SE: 23-27, 28-31, 34-38, 55-56, 61, 617, 648
6d	Graph ordered pairs on a coordinate plane.	SE: 142-145, 148, 159 #38-#41, 164 #24, 194-196, 290-294, 296-299, 301 #1, 308, 614, 650
<b>7.</b>	<b>Create and simplify algebraic expressions and solve linear equations and inequalities. (P, G, N)</b>	
7a	Convert among word phrases or sentences and algebraic expressions.	SE: 39-42, 49 #49-#50, 53 #49-#50, 56 #42-#45, 80 #49, 618, 648 #10, #11
7b	Simplify and/or evaluate numerical and algebraic expressions.	SE: 11-15, 21 #64-#66, 29 #5, #6, 30 #34-#41, 36 #7, 38 #49-#56, 73 #4, 74 #24-#27, 89 #4, 469-473, 477 #48-#51, 481 #34-#37, 616, 640, 657
7c	Solve linear equations with and without manipulatives.	SE: 522-525, 529 #34-#35, 533-536, 544-547, 618
7d	Write and solve equations that represent problem-solving situations.	SE: 40 #4, 48-49, 51 #3, 53, 93 #5, 117 #4, 478-481, 648 #15, 657

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7e	Write corresponding real-life situations from an algebraic expression or equation.	The following references can be used to meet this standard. <i>WebQuest</i> 3, 253, 371, 465
7f	Graph simple linear equations with and without a calculator.	SE: 522-525, 643, 658 #5-#7
<b>8.</b>	<b>Use concepts of ratio, proportion, and percent to solve application problems. (P, D, G, N)</b>	
8a	Convert between ratio and percents.	SE: 206-209, 214 #74-#77, 246, 652 #1, #14, #16
8b	Solve problems involving proportions.	SE: 170-173, 182 #22, #26, #27, 184-187, 188-191, 194-197, 199, 625, 626, 651
8c	Determine unit rates, discounts, sale prices, sales tax, and simple interest.	SE: 156-159, 169 #24, 233 #4, 238, 240 #37, 241-244, 248, 260 #42, 265 #40, 624, 629, 652 #14
8d	Determine the percent of a number.	SE: 216-219, 232-235, 240 #37-#41, 247, 248, 652
8e	Solve problems for rate, base, and part.	SE: 216-219, 232-235, 244 #31-#32, 247, 248, 652
8f	Find the percent of increase and decrease.	SE: 236-240, 260 #43-#46, 652 #15
8g	Write and use percents to solve application problems.	SE: 206-209, 214, 219 #40-#41, 223 #38-#43, 229 #7, 237-238, 241-242, 244, 260 #42, 652