

# Table of Contents

1	Exponents & Radicals	7
	Laws of exponents	
	Evaluating expressions with exponents	
	Solving equations with exponents	
	Simplifying square roots	
2	Percent	15
	Percent change	
	Compound interest	
	Percent word problems	
3	Exponential vs. Linear Growth	23
	Linear growth and decay	
	Exponential growth and decay	
	Positive and negative association	
4	Rates	32
	Conversion factors	
5	Ratio & Proportion	38
6	Expressions	44
	Combining like terms	
	Expansion and factoring	
	Combining, dividing, and splitting fractions	
7	Constructing Models	52
8	Manipulating & Solving Equations	57
	Common mistakes to avoid	
	Tools for isolating variables	
	Strategies for solving complicated equations	
9	More Equation Solving Strategies	71
	Matching coefficients	
	Infinitely many solutions	
	No solutions	
	Clearing denominators	
10	Systems of Equations	78
	Substitution	
	Elimination	
	Systems with no solutions and infinite solutions	
	Word problems	
	More complex systems	
	Graphs of systems of equations	

11	<b>Inequalities</b>	91
	How to solve inequalities	
	Inequality word problems	
	Graphs of inequalities	
12	<b>Word Problems</b>	100
13	<b>Minimum &amp; Maximum Word Problems</b>	109
14	<b>Lines</b>	117
	Slope and $y$ -intercept	
	Equations of lines: slope-intercept form and point-slope form	
	Finding the intersection of two lines	
	Parallel and perpendicular lines	
	Horizontal and vertical lines	
15	<b>Interpreting Linear Models</b>	126
16	<b>Functions</b>	132
	What is a function?	
	When is a function undefined?	
	Composite functions	
	Finding the solutions to a function	
	Identifying function graphs	
	Function transformations	
17	<b>Quadratics</b>	146
	Tactics for finding the roots	
	Completing the square	
	The vertex and vertex form	
	The discriminant	
	Quadratic models	
18	<b>Synthetic Division</b>	161
	Performing synthetic division	
	Equivalent expressions	
	The remainder theorem	
19	<b>Complex Numbers</b>	170
20	<b>Absolute Value</b>	174
21	<b>Angles</b>	180
	Exterior angle theorem	
	Parallel lines	
	Polygons	

22	<b>Triangles</b>	187
	Isosceles and equilateral triangles	
	Right triangles	
	Special right triangles	
	Similar triangles	
	Parallel Lines and Proportionality	
	Radians	
23	<b>Circles</b>	207
	Area and circumference	
	Arc length	
	Area of a sector	
	Central and inscribed angles	
	Equations of circles	
24	<b>Trigonometry</b>	216
	Sine, cosine, and tangent	
	Trigonometric identities	
	Evaluating trigonometric expressions	
25	<b>Reading Data</b>	225
26	<b>Probability</b>	234
27	<b>Statistics I</b>	244
	Mean, median, and mode	
	Range and standard deviation	
	Histograms and dot plots	
	Word problems involving averages	
	Boxplots	
28	<b>Statistics II</b>	254
	Statistical sampling	
	Using and interpreting the line of best fit	
	Margin of error	
	Confidence intervals	
	Experimental design and conclusions	
29	<b>Volume</b>	267
30	<b>Answers to the Exercises</b>	272