Advanced Algebra 1.5

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Content	Skills	Learning Targets	Assessment	Standards Reference	Resources & Technology
CEQ: ● **WHAT PRIOR KNOWLEDGE DO STUDENTS NEED TO BE SUCCESSFUL IN ADVANCED ALGEBRA 1.5?** ● **HOW DO WE OPERATE WITH RADICAL EXPRESSIONS AND EQUATIONS?** ● **HOW DO WE OPERATION WITH RATIONAL EXPRESSIONS AND EQUATIONS?** ● **HOW ARE PROBABILITIES, PERMUTATION**	**A. Linear Equations** A1. Calculate slope using points, line, or table. A2. Write equation of a line in slope-intercept form. A3. Identify *x*- and *y*-intercepts. A4. Graph linear function. **B. Systems of Equations** B1. Solve a system of equations by graphing. B2. Solve a system of equations using substitution. B3. Solve a system of equation using elimination.	**A. Linear Equations** LT1. I can calculate slope using two points, a line, or a table of values. LT2. I can write a linear equation of a line in slope-intercept form. LT3. I can identify *x*- and *y*-intercepts. LT4. I can graph a linear function. **B. Systems of Equations** LT1. I can identify if a point is a solution to a system. LT2. I can solve a system of linear equations by graphing. LT3. I can solve a	**A. Linear Equations** **B. Systems of Equations** **C. Exponents** CSA: TEST on Review Topics (A, B, C) **D. Operations with Polynomials** CSA: Chapter 8 Test (D) **E. Quadratic Functions &**	**Review Topics:** MN State Standard 8.1.1.4 MN State Standard 8.2.2.1 MN State Standard 8.2.2.2 MN State Standard 8.2.4.1 MN State Standard 8.2.4.3 MN State Standard 8.2.4.7 MN State Standard 8.2.4.8	**Required: TI-84 or Equivalent Graphing Calculator**

S, AND COMBINATIONS CALCULATED? Chapters 1-9 and Lesson 10-1 were completed in Advanced Math 8. However, important concepts will be reviewed during the first few weeks of the Advanced Algebra 1.5 course. **A. Linear Equations** A1. Slope A2. Slope-intercept form A3. Standard form A4. Point-slope form **B. Systems of Equations** B1. Solving by graphing B2. Solving by substitution B3. Solving by elimination	**C. Exponents** C1. Simplify expressions with positive, negative, and/or zero exponents. C2. Multiply powers with the same base. C3. Raise a power to a power and a product to a power. C4. Divide powers with the same base. C5. Raise a quotient to a power. **D. Operations with Polynomials** D1. Classify polynomials by degree and by number of terms. D2. Add and subtract polynomials by combining like terms. D3. Multiply polynomials of various degree and with different numbers of terms. D4. Factor a	system of linear equations using substitution. LT4. I can solve a system of linear equations using elimination. **C. Exponents** LT1. I can simplify expressions with positive, negative, and zero exponents. LT2. I can multiply powers with the same base. LT3. I can simplify a power to a power and a product to a power. LT4. I can divide powers with the same base. LT5. I can raise a quotient to a power. **D. Operations with Polynomials** LT1. I can write a polynomial in standard form.	**Equations** CSA: Chapter 9 TEST (E) **F. Radical Expressions and Equations** CSA: Chapter 10 TEST (F) **G. Rational Expressions and Functions** CSA: Chapter 11 TEST (G) CFA: Chapter 11 QUIZ (11-1 to 11-3) CFA: Chapter 11 QUIZ (11-4 to 11-5) **H. Displays in**	MN State Standard 9.2.2.1 MN State Standard 9.2.2.3 MN State Standard 9.2.4.4 **Chapter 8:** MN State Standard 9.2.3.2 MN State Standard 9.2.3.3 **Chapter 9:** MN State Standard 9.2.1.4 MN State Standard 9.2.1.5 MN State Standard 9.2.1.6 MN State Standard 9.2.1.9	

C. Exponents C1. Multiplication of expressions containing exponents C2. Division of expressions containing exponents *UEQ (Chap 8):* *•How are polynomials categorized by degree and by number of terms?* *• How are polynomials added, subtracted, and multiplied?* *• How are polynomials factored?* **D. Operations with Polynomials** D1. Classification of polynomials D2. Addition and subtraction of polynomials D3. Multiplication of polynomials D4. Factorization of a	monomial from a polynomial (GCF). D5. Factor a difference of squares. D6. Factor a trinomial into two binomials. D7. Factor a polynomial with four or more terms by grouping. **E. Quadratic Functions & Equations** E1. Identify vertex of parabola. E2. Identify axis of symmetry of parabola. E3. Graph quadratic function and inequality with at least five points of accuracy. E4. Solve quadratic equation by using square roots. E5. Solve quadratic equation by graphing the corresponding function. E6. Solve quadratic	LT2. I can classify polynomials by degree and by number of terms. LT3. I can add and subtract polynomials by combining like terms. LT4. I can multiply polynomials by distributing. LT5. I can multiply polynomials by using FOIL. LT6. I can factor out a Greatest Common Factor (GCF). LT7. I can factor a difference of squares. LT8. I can factor a trinomial with a leading coefficient of 1. LT9. I can factor a trinomial with a leading coefficient not equal to 1. LT10. I can factor a polynomial with four terms by grouping.	**Interpretation of Data** CSA: Statistics TEST **I. Probability and Odds** CSA: Probability TEST **CSA: Final Exam (parts 1 & 2)**	MN State Standard 9.2.2.1 MN State Standard 9.2.2.3 MN State Standard 9.2.4.1 MN State Standard 9.2.4.8 **Chapter 10:** MN State Standard 8.2.4.9 MN State Standard 9.2.1.3 MN State Standard 9.2.1.9 MN State Standard 9.2.2.6 MN State Standard 9.2.4.7	

polynomial *UEQ (Chp 9)* • *How are quadratic equations graphed?* • *How can quadratic equations be solved?* • *How is data best modeled using linear, exponential, or quadratic equations?* **E. Quadratic Functions & Equations** E1. Identification of vertex of parabola E2. Identification of axis of symmetry of parabola E3. Graph of quadratic function & inequality E4. Use of square roots to solve E5. Use of graphs to solve E6. Use of factoring to solve E7. Use of completing the square to solve	equation by factoring and using zero-product property. E7. Solve quadratic equation by completing the square. E8. Solve quadratic equation by using the quadratic formula. E9. Interpret what the discriminant reveals about the number of solutions. **F. Radical Expressions and Equations** F1. Simplify radicals involving products and quotients and by rationalizing denominators. F2. Operate with radical expressions by simplifying sums, differences, products, and quotients. F3. Solve equations containing radicals and eliminate extraneous solutions.	**E. Quadratic Equations and Functions** LT1. I can identify the vertex of parabola. LT2. I can identify the axis of symmetry of a parabola. LT3. I can graph a quadratic function with at least five points of accuracy. LT4. I can graph a quadratic inequality with at least five points of accuracy. LT5. I can solve a quadratic equation by graphing the corresponding function. LT6. I can solve a quadratic equation by using square roots. LT7. I can solve a quadratic equation by factoring and using zero-product property. LT8. I can solve a quadratic equation by completing the square. LT9. I can solve a quadratic equation by		**Chapter 11:** MN State Standard 8.2.4.1 MN State Standard 9.2.1.3 MN State Standard 9.2.2.6 MN State Standard 9.2.3.1 MN State Standard 9.2.3.4 **Displays and Interpretation of Data:** MN State Standard 8.4.1.1 MN State Standard 8.4.1.2 MN State Standard 8.4.1.3	

E8. Use of quadratic formula to solve E9. Interpretation of discriminant  *UEQ (Chp 10)* **How do we simplify and combine radicals?* **How do we solve radical equations?* **How do we graph radical functions?* **How can we use right triangle trigonometry?* **F. Radical Expressions and Equations** F1. Simplification of radicals F2. Operations with radical expressions F3. Solving of radical equations F4. Graphing of square root functions	F4. Graph square root functions using tables and transformations. **G. Rational Expressions and Functions** G1. Simplify rational expressions. G2. Multiply & divide rational expressions. G3. Divide polynomials by a monomial and by using long division. G4. Add & subtract rational expressions with like and unlike denominators. G5. Solve rational equations including proportions. G6. Graph rational functions. G7: Solve direct and inverse variation equations.	using the quadratic formula. LT10. I can interpret what the discriminant reveals about the number of solutions. **F. Radical Expressions and Equations** LT1. I can simplify radicals involving products and quotients and by rationalizing denominators. LT2. I can simplify radical expressions by using sums and differences. LT3. I can simplify radical expressions by using distributive property and/or FOIL. LT4. I can solve equations containing radicals and eliminate extraneous solutions. LT5. I can rationalize the denominator of a radical expression by using the conjugate.		MN State Standard 9.4.1.1 MN State Standard 9.4.1.3 **Probability & Odds:** MN State Standard 9.4.3.1 MN State Standard 9.4.3.2 MN State Standard 9.4.3.5 MN State Standard 9.4.3.6 MN State Standard 9.4.3.7	

UEQ (Chp 11): **How do we graph rational functions?* **How do we simplify rational functions?* **How do we solve radical equations?* **When do we use the fundamental counting principle?* **How do we find permutations and combinations?* **How do we solve direct and inverse variation equations?* **G. Rational Expressions and Functions** G1. Simplifying of rational expressions G2. Multiplication & division of rational expressions G3. Division of polynomials G4. Addition & subtraction of rational expressions	**H. Displays and Interpretation of Data** H1. Construct and interpret frequency tables. H2. Construct and interpret bar graphs and histograms. H3. Construct and interpret line plots. H4. Construct and interpret stem-and-leaf plots. H5. Identify measures of central tendency and dispersion. H6. Construct and interpret line graphs. H7. Construct and interpret scatterplots. H8. Find the line of best fit. H9. Construct and interpret box-and-whisker plots. H10. Construct and interpret circle graphs.	LT 6. I can graph square root functions and translate graphs of square root functions. **G. Rational Expressions and Functions** LT1. I can simplify rational expressions. LT2. I can multiply & divide rational expressions. LT3. I can divide polynomials by a monomial. LT4. I can divide polynomials by using long division. LT5. I can add & subtract rational expressions using common denominators. LT6. I can solve rational equations. LT7. I can graph rational functions. LT8. I can solve direct and inverse variation equations.			

G5. Solving of rational equations G6. Graphing of rational functions G7: Writing and solving of direct and inverse variation equations *UEQ (Chp 12)* **What are some ways to display and interpret data?* **How are probability and odds calculated?* **How do we find permutations and combinations?* **H. Displays and Interpretation of Data** H1. Frequency Table H2. Bar Graph & Histogram H3. Line Plot H4. Stem-and-Leaf Plot H5. Measures of	**I. Probability and Odds** I1. Calculate experimental probability or theoretical probability of event occurring. I2. Calculate the odds of event occurring. I3. Calculate the probability of compound events - both mutually exclusive and overlapping. I4. Use counting methods including the fundamental counting principle. I5. Find permutations. I6. Find combinations. I7. Calculate binomial probabilities.	**H. Displays and Interpretation of Data** LT1. I can construct and interpret frequency tables. LT2. I can construct and interpret bar graphs and histograms. LT3. I can construct and interpret line plots. LT4. I can construct and interpret stem-and-leaf plots. LT5. I can identify mean, median, mode, and range. LT6. I can construct and interpret line graphs. LT7. I can construct and interpret scatterplots. LT8. I can find the equation of the line of best fit. LT9. I can construct and interpret			

Central Tendency and Dispersion H6. Line Graph H7. Scatterplot H8. Line of Best Fit H9. Box-and-Whisker Plot H10. Circle Graph **I. Probability and Odds** I1. Calculation of Probability I2. Calculation of Odds I3. Compound Events I4. Counting methods I5. Permutations I6. Combinations I7. Binomial Probability		box-and-whisker plots. LT10. I can construct and interpret circle graphs. **I. Probability and Odds** LT1. I can calculate experimental probability of event occurring. LT2. I can calculate theoretical probability of event occurring. LT3. I can find the odds of an event occurring. LT4. I can find the probability of mutually exclusive events. LT5: I can find the probability of overlapping events. LT6. I can use the counting method. LT7. I can find permutations. LT8. I can find combinations.			

		LT9: I can find binomial probabilities.			