

**Epitome:** Algebraic rules and principles are better understood within the context of real-world problems.

1 Money problems are solved using transformations because their solutions contain one and two step equations.

1.1 Money problems whose equations contain the operation of either addition or subtraction can be solved using the transformations of addition or subtraction .

1.1.1 The transformations of addition and subtraction involve applying the inverse operation.

1.2 Money problems whose equations contain the operation of either multiplication or division can be solved using the transformations of multiplication or division.

1.2.1 The transformations of multiplication and division involve applying the inverse operation.

1.3 Money problems whose equations contain more than one operation can be solved using several transformations.

1.3.1 The properties of several transformations involve applying the inverse operations in opposite order.

1.4 Money problems are solved by combining their appropriate formulas to create equations.

1.4.1 Cost problems are based on applications of the cost formula.

1.4.2 Income problems are based on applications of the income formula.

1.4.3 Value problems are based on applications of the total value formula.

2 Uniform motion and area problems can be solved using operations performed on polynomials.

2.1 Uniform motion and area problems that contain equations with either addition and/or subtraction can be solved using the principles of adding and subtracting polynomials.

2.1.1 Addition and subtraction of polynomials involve applications of the principles of like terms.

2.2 Uniform motion and area problems that contain equations with the operation of multiplication can be solved using the principles of multiplication of polynomials.

2.2.1 Multiplication of polynomials involve applications of the distributive property.

2.3 Uniform motion and area problems that contain quadratic or cubic equations can be solved using the principles for factoring polynomials.

2.3.1 Polynomials must be factored completely in order to obtain their solution.

2.3.1.1 Factoring completely involves applying several methods of factoring.

2.3.2 The number of possible solutions of a polynomial is determined by the degree of the polynomial equation.

2.3.2.1 The degree of the polynomial equation is determined by the term with the greatest degree.

2.4 Uniform motion and area problems are solved by combining the appropriate formulas to create equations.

2.4.1 Uniform motion problems are based on applications of the distance formula.

2.4.2 Area problems are based on applications of the geometric formulas for triangles, rectangles, squares, and circles.

3 Mixture, investment, and rate of work problems contain fractions and are solved using operations performed on algebraic fractions.

3.1 Mixture, investment, and rate of work problems that contain fractions being multiplied are

solved by applying the multiplication rule for fractions.

3.2 Mixture, investment, and rate of work problems that contain fractions being division are

solved by applying the division rule for fractions.

3.3 Mixture, investment, and rate of work problems that contain the operations of addition and/or

subtraction are solved by applying the rules for addition and subtraction of fractions.

3.3.1 Least common denominators are needed in order to use the rules for addition and

subtraction of fractions.

3.4 Mixture, investment, and rate of work problems are solved by combining the appropriate

formulas.

3.4.1 Mixture problems that involve grocery related information use a modified cost

formula.

3.4.2 Mixture problems that involve chemistry related information use the chemistry

mixture formula.

3.4.3 Investment problems use the interest formula.

3.4.4 Rate of work problems are based on applications of the work formula.