

# TRAILWAYS CONFERENCE MATH CONTEST COMMON TOPICS

## 1. ALGEBRA

- A. Properties of exponents
- B. Coordinate planes
- C. Square root
- D. Scientific notation
- E. Systems of linear equations
- F. Properties of real numbers, equality and inequality
- G. Number lines, inequalities and absolute values
- H. Division by zero
- I. Simple area problems involving rectangles
- J. Order of operations
- K. Evaluating algebraic expressions
- L. Opposites and reciprocals
- M. Translating word expressions to algebraic expressions and sentences
- N. Simplification of linear expressions
- O. Solving linear equations and inequalities
- P. Simplifying rational expressions without the use of trinomial factoring
- Q. Ratios and proportions
- R. Common “percents”, decimals and fractions
- S. Linear equations and slope
- T. Parallel and perpendicular lines, their slopes and equations
- U. Trinomial Factoring, Difference of Two Squares
- V. Slope, graphing lines
- W. Finding an equation of a line
- X. Solving equations in quadratic form

## 2. GEOMETRY

- A. Common topics from Algebra
- B. Midpoint and distance
- C. Common notations of point, line, plane, ray, segment, angle, congruence, medians, altitudes and bisectors
- D. If-Then Statements
- E. Perpendicular lines
- F. Parallelism
- G. Congruent triangles
- H. Triangle inequality
- I. Pythagorean Theorem, but not special right triangles
- J. Supplements and complements
- K. Isosceles triangles
- L. Quadrilaterals
- M. Similarity and circles
- N. Coordinate Geometry including distance and midpoint
- O. Apply given formulas
- P. Special right triangles
- Q. Polygons
- R. Similarity
- S. Right Triangle Trigonometry

### **3. ALGEBRA 2**

- A. Common topics from Algebra
- B. Common topics from Geometry
- C. Functions, composite functions
- D. Variations
- E. Zero and negative exponents
- F. Irrational numbers
- G. Solving systems of equations in 2 and 3 variables
- H. Systems of linear inequalities
- I. Compound inequalities, absolute value inequalities
- J. Logarithm and the number  $e$
- K. Complex Numbers
- L. Rational exponents

### **4. ADVANCED MATH**

- A. Common topics from Algebra
- B. Common topics from Geometry
- C. Common Topics from Algebra 2
- D. Trigonometry
- E. Factor theorem
- F. Sequence and Series
- G. Graphing polynomial functions
- H. Probability
- I. Matrices