Related Technical Math

Description

The NYC SkillsUSA Related Technical Math contest is developed to evaluate the competitor's understanding and ability to solve mathematical problems commonly found in the skilled trades, professional and technical occupations.

Clothing Requirements

- NYC SkillsUSA T-Shirt
- Black Dress Slacks (accompanied by black dress socks or black or skin-tone seamless hose) or black dress skirt (knee-length, accompanied by black or skin-tone seamless hose).
- Black leather shoes that are not backless or open toe

Equipment and Materials

1. **Supplied by NYC chair/committee:**
   a. Tables and chairs
   b. Test problems and instructions
   c. Scratch paper
   d. Formula sheets and conversion tables/charts

2. **Supplied by contestant:**
   a. Hand-held calculator
   b. No.2 Pencil
   c. All competitors must create a one-page resume.

Scope of the Competition

Competitors will demonstrate their ability to solve math problems that deal with skilled technical real-world scenarios.

1. The written knowledge test comprises 50 problems applicable to any career and technical field. It covers applications of the fundamental operations of whole numbers, fractions and decimals, including applications of percentages, ratio and proportion, averages, areas and volumes.
2. The written knowledge test will provide the student with the opportunity to demonstrate his or her problem-solving skills, not just mathematical ability.
3. Students have two hours to complete the problems and check their answers.
4. Hand-held calculators may be used. Competitors need nothing more than a simple scientific calculator that can be purchased for about $10–$15. A graphing calculator is not necessary. The test is based on real-world mathematical applications and reasoning — not theoretical mathematics.
5. No bonus will be given for early completion of the written knowledge test.

STANDARDS AND COMPETENCIES

1. **Math Skills**
   - Use fractions to solve practical problems
   - Use proportions and ratios to solve practical problems
   - Simplify numerical expressions
   - Use scientific notation
   - Solve practical problems involving percentages
   - Solve single variable algebraic expressions
   - Solve multiple variable algebraic expressions
   - Measure angles
   - Apply Pythagorean Theorem
   - Graph linear equations
   - Solve problems using proportions, formulas and functions
   - Find slope of a line
   - Use laws of exponents to perform operations
   - Solve quadratic equations
   - Solve practical problems involving complementary, supplementary and congruent angles
   - Solve problems involving symmetry and transformation
   - Use measures of interior and exterior angles of polygons to solve problems
   - Find arc length and the area of a sector

2. **Connection to National Standards**
   - State-level academic curriculum specialists identified the following connections to national academic standards.
   - **Math Standards**
     - Numbers and operations
     - Algebra
     - Geometry
     - Measurement
     - Data analysis and probability
     - Problem-solving
     - Communication
     - Connections
     - Representation