



# NYS SkillsUSA Standards



## RELATED TECHNICAL MATH



### PURPOSE

To evaluate the competitor's understanding and ability to solve mathematical problems commonly found in the skilled trades, professional and technical occupations.

### ELIGIBILITY

Open to active NYS SkillsUSA members. Each state may send one high school competitor.

### CLOTHING REQUIREMENTS

#### SkillsUSA NYS Official Attire:

- Official red blazer, NYS Black Jacket, the older red national windbreaker or older red sweater and the Black or red Jacket from Nationals.
- Button up, collared, white dress shirt (accompanied by a plain, solid black tie), white blouse (collarless or small-collared) or white turtleneck, with any collar not to extend into the lapel of the outer layer coats
- Black dress slacks accompanied by black dress socks or black or skin tones seamless hose) or black dress skirt (knee- length, accompanied by black or skin- tone seamless hose).
- Black shoes, that are not backless or open toe.

*Note:* Contestants must wear their contest clothing to the contest orientation meeting. Also bring #2 pencil, resume, safety assurance form and Conference Program.

## EQUIPMENT AND MATERIALS

1. Supplied by technical committee:
  - a. Tables and chairs
  - b. Test problems and instructions
  - c. Scratch paper
  - d. Formula sheets and conversion tables/charts
2. Supplied by the competitor:
  - a. Hand-held calculator
  - b. No. 2 pencil
  - c. All competitors must create a one-page resume. See “Resume Requirement” below for guidelines.

*Note:* No reference materials may be used other than those provided by the technical committee.

### **RESUME REQUIREMENT**

Competitors must create a one-page resume to submit at orientation.

### **PROHIBITED DEVICES**

Cell phones or other electronic devices not approved by the NYS Chairperson will be collected by the contest chair during the competition. Chairpersons will announce their acceptance by listing it on their standard or at the orientation meeting. In case of emergencies advisors should allow the competitors to take their phones to the contest areas.

If the competitor uses their device in a manner which compromises the integrity of the competition, the competitor's score may be penalized.

## **SCOPE OF THE COMPETITION**

### **KNOWLEDGE PERFORMANCE**

A written knowledge test is required. A sound knowledge of geometry, algebra, trigonometry and basic statistics will prepare the students to exhibit their problem-solving skills for this part of the competition. Competitors are also required to take the NYS SkillsUSA Professional Development test online.

### **SKILL PERFORMANCE**

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

### **COMPETITION GUIDELINES**

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.

## **COMMITTEE IDENTIFIED ACADEMIC SKILLS**

The technical committee has identified that the following academic skills are embedded in this competition.

### **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

### **Science Skills**

None identified

### **Language Arts Skills**

None identified

## **CONNECTIONS 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

### **Language Arts Standards**

None identified