

RELATED TECHNICAL MATH



PURPOSE

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

First, refer to General Regulations, Page 9.

CLOTHING REQUIREMENT

For men: Official white polo shirt with black dress slacks, black socks and black shoes.

For women: Official white polo shirt with black dress slacks or skirt, black sheer or skin-tone hose and black shoes.

These regulations refer to clothing items that are pictured and described at: www.skillsusastore.org. If you have questions about clothing or other logo items, call 800-401-1560 or 703-956-3723.

Note: Contestants must wear their official contest clothing to the contest orientation meeting.

ELIGIBILITY

Open to active SkillsUSA members.

OBSERVER RULE

Observers will be allowed to view the test. No talking or gesturing with contestants or any disruptive noise will be permitted.

EQUIPMENT AND MATERIALS

1. Supplied by technical committee:
 - a. Tables and chairs
 - b. Test problems and instructions
 - c. Scratch paper and pencils
 - d. Formula sheets and conversion tables/charts
2. Supplied by the contestant:
 - a. Hand-held calculator
 - b. All competitors must create a one-page résumé using a word processor and submit the résumé electronically at:

www.skillsusa.org/compete/updates.shtml. Check the Web site for further instructions.

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

SCOPE OF THE CONTEST

Knowledge Performance

A written knowledge test will be 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 contest.

Skill Performance

There is no skill performance component of this contest.

Contest Guidelines

1. The written knowledge test contains 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 the opportunity to demonstrate their problem-solving skills, not just their 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

The Standards and Competencies for this contest will be completed by the national technical committee in the 2009 edition of the Technical Standards.

Committee Identified Academic Skills

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

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 percents
- 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

Source: NCTM Principles and Standards for School Mathematics. To view high school standards, visit: standards.nctm.org/document/chapter7/index.htm. Select “Standards” from menu.

Science Standards

- Understands the nature of scientific inquiry

Source: McREL compendium of national science standards. To view and search the compendium, visit: www.mcrel.org/standards-benchmarks/.

Language Arts Standards

None Identified

Source: IRA/NCTE Standards for the English Language Arts. To view the standards, visit: www.readwritethink.org/standards/index.html.

Related Technical Math Scorecard

Items Evaluated	Possible Points	Contestant Number						
		1	2	3	4	5	6	7
Written Test	1,000							
Résumé Penalty	0 or -50 only							
Clothing Penalty	0 to -50							
Total Possible Points	1,000							