IGNITE YOUR POTENTIAL 2024-2025

NYS SkillsUSA Standards

MEDICAL MATH

PURPOSE

To evaluate the students' ability to understand and solve mathematical problems commonly used in the various health care settings.

ELIGIBILITY

Open to active NYS SkillsUSA members enrolled in a healthcare science technology program.

CLOTHING REQUIREMENTS

NYS SkillsUSA 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 tone 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, and safety assurance form.**

EQUIPMENT AND MATERIALS

1. Supplied by the technical committee:
   a. Test problems and instructions
   b. Scratch paper
2. Supplied by the competitor:
   a. Basic hand-held calculator (no graphing or scientific calculators [with fraction keys] will be permitted)
   b. No. 2 pencil
   c. All competitors must create a one-page resume. See "Resume Requirement" below for guidelines.

Note: No watches/smartwatches/cellphones or other timing devices are permitted in the competition area.

Note: No reference materials may be brought into the competition area.

RESUME REQUIREMENT

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

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 COMPETITION

KNOWLEDGE PERFORMANCE

The test questions will be taken from problems encountered in the medical field and are selected from the area that might be used in real world applications. Competitors are required to take the NYS SkillsUSA professional development test at orientation.

SKILLS PERFORMANCE

1. Competitors will demonstrate their ability to solve math problems that deal with the following areas:
   a. Measurements including vital signs, temperature conversions, and height and weight
   b. Metric and household measurements
   c. Conversions
   d. Ratio and proportion
   e. Percentage
   f. Intake and output
   g. Roman numerals
   h. Dosage calculations
2. The test will comprise 100 or more problems that will allow competitors the opportunity to use their problem-solving skills as well as their mathematical ability.
3. The competitors will have two and a half hours to complete the test. No bonus points will be given for early completion of the test, and no competitor will be allowed to go in or out of the testing site during the testing.
4. All the items listed on this page are suggested references. The test items are not limited to this material. This is just a basic reference of things that may be required knowledge for the competition.
5. Suggested references: "Standardized Medical Abbreviations."

MEDICAL ABBREVIATIONS

The following list is to be used as a reference ***prior to the competition***, but it is ***not*** allowed in the competition area.

This list of terms and abbreviations is a sample of abbreviations taken from Diversified Health Occupations (Simmers, Louise). Please use that reference for other abbreviations related to medical math that could be used in the competition.

Term	Abbreviation
millimeter	mm
centimeter	cm
meter	m
foot/feet	ft
inch	in
gram	G
milligram	mg

microgram	mcg
kilogram	kg
pound	lb
ounce	oz
degrees Fahrenheit	°F
degrees Celsius (Centigrade)	°C
cubic centimeter	cc
milliliter	ml or mL
liter	L
unit	U
pint	pt
quart	qt
gallon	gal
tablespoon	tbsp
teaspoon	tsp
drop or drops	gtt or gtts
minim	minim
dram	dr
milliequivalent	mEq
grain	gr
intravenous	IV
tablet	tab
capsule	cap
suspension	susp
intake and output	I & O

CONVERSION CHART

(To be used as reference ***prior to the competition*** but ***not*** allowed in the competition area.)

Length
1 meter = 100 centimeters = 1,000 millimeters
10 millimeters = 1 centimeter

Weight
1 gram = 1,000 milligrams
1 milligram = 1,000 micrograms
1 kilogram = 1,000 grams
1 grain = 60 milligrams

Volume for Solids
1,000 cubic millimeters = 1 cubic centimeter
1,000 cubic centimeters = 1 cubic decimeter
1,000 cubic decimeters = 1 cubic meter

Volume for Fluids
1 liter = 1,000 milliliters
1 milliliter = 1 cubic centimeter
10 centiliters = 1 deciliter
10 deciliters = 1 liter

Weight Conversion
1 kilogram = 2.2 pounds
1 pound = 16 ounces
1 ounce = 0.028 kilograms

Temperature Conversion
°C = (°F-32) 5/9 or 0.5556
°F = (°C) 9/5 or 1.8 + 32

Metric/Household Equivalents
(Note: 1 cc = 1 mL)

1 cc or 1 mL	15 gtts (drops)
0.914 meters	3 feet (1 yard)
0.3048 meters	12 inches (1 foot)
2.54 centimeters	1 inch
5 mL or cc	1 tsp (teaspoon)
15 mL or cc	1 tbsp (tablespoon)
30 mL or cc	1 oz. (ounce)
240 mL or cc	1 cup (8 oz.)
480 mL or cc	1 pt (pint) (16 ounces)
960 mL or cc	1 qt (quart) (32 ounces)
1 meter	39.37 inches (3.281 feet)