



Medical Math



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|-------------------------------|--|-------------------------|--|
| Date | February 21, 2025 | Orientation Time | 8 AM (CLOSED to instructors) |
| Location | Mid-East CTC - Zanesville 400 Richards Road Zanesville, OH 43701 Room 5017 | Contest Time | Immediately following orientation (CLOSED contest) |
| Scope of Contest | <p>Competitors will demonstrate their ability to solve math problems that deal with the following areas:</p> <ul style="list-style-type: none">• Measurements including vital signs, temperature conversions, and height and weight• Metric and household measurements• Conversions• Ratio and proportion• Percentage• Intake and output• Roman numerals• Dosage calculations <p>The test will be comprised of problems that will evaluate competitors on their problem-solving skills as well as their mathematical ability.</p> <p>The competitors will have two and a half hours (150 minutes) 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.</p> <p>All the items listed in the appendix on the bottom of 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. They are to be used as a reference prior to the competition, but are NOT allowed in the competition area.</p> | | |
| Testing | Yes | | |
| Eligibility | 1 contestant for every 500 paid members | | |
| Clothing | <ul style="list-style-type: none">• Clothing Classification Guide – CLASS A, B or F | | |
| Provided by Contestant | <ul style="list-style-type: none">• Professional Resume – must be typed and physically produced as a hard copy• Emergency Medical Form (Contestants must have this to compete)• No. 2 pencils and eraser• Basic hand-held calculator (no graphing or scientific calculators); with fraction keys will be permitted | | |
| Contest Skilled | 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 | | |

| <p>Performance Standards</p> <p>Appendix</p> | <table border="1" data-bbox="415 226 1263 533"> <thead> <tr> <th>Term</th> <th>Abbreviation</th> </tr> </thead> <tbody> <tr><td>millimeter</td><td>mm</td></tr> <tr><td>centimeter</td><td>cm</td></tr> <tr><td>meter</td><td>m</td></tr> <tr><td>foot/feet</td><td>ft</td></tr> <tr><td>inch</td><td>in</td></tr> <tr><td>gram</td><td>G</td></tr> <tr><td>milligram</td><td>mg</td></tr> </tbody> </table> <table border="1" data-bbox="415 564 1263 1530"> <tbody> <tr><td>microgram</td><td>mcg</td></tr> <tr><td>kilogram</td><td>kg</td></tr> <tr><td>pound</td><td>lb</td></tr> <tr><td>ounce</td><td>oz</td></tr> <tr><td>degrees Fahrenheit</td><td>°F</td></tr> <tr><td>degrees Celsius (Centigrade)</td><td>°C</td></tr> <tr><td>cubic centimeter</td><td>cc</td></tr> <tr><td>milliliter</td><td>ml or mL</td></tr> <tr><td>liter</td><td>L</td></tr> <tr><td>unit</td><td>U</td></tr> <tr><td>pint</td><td>pt</td></tr> <tr><td>quart</td><td>qt</td></tr> <tr><td>gallon</td><td>gal</td></tr> <tr><td>tablespoon</td><td>tbsp</td></tr> <tr><td>teaspoon</td><td>tsp</td></tr> <tr><td>drop or drops</td><td>gtt or gtts</td></tr> <tr><td>minim</td><td>minim</td></tr> <tr><td>dram</td><td>dr</td></tr> <tr><td>milliequivalent</td><td>mEq</td></tr> <tr><td>grain</td><td>gr</td></tr> <tr><td>intravenous</td><td>IV</td></tr> <tr><td>tablet</td><td>tab</td></tr> <tr><td>capsule</td><td>cap</td></tr> <tr><td>suspension</td><td>susp</td></tr> <tr><td>intake and output</td><td>I & O</td></tr> </tbody> </table> <p>CONVERSION CHART</p> <p>Length</p> <p>1 meter = 100 centimeters = 1,000 millimeters</p> <p>10 millimeters = 1 centimeter</p> | 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 |
|--|--|------|--------------|------------|----|------------|----|-------|---|-----------|----|------|----|------|---|-----------|----|-----------|-----|----------|----|-------|----|-------|----|--------------------|----|------------------------------|----|------------------|----|------------|----------|-------|---|------|---|------|----|-------|----|--------|-----|------------|------|----------|-----|---------------|-------------|-------|-------|------|----|-----------------|-----|-------|----|-------------|----|--------|-----|---------|-----|------------|------|-------------------|-------|
| 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 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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

$^{\circ}\text{C} = (^{\circ}\text{F} - 32) \frac{5}{9}$ or 0.5556

$^{\circ}\text{F} = (^{\circ}\text{C}) \frac{9}{5}$ 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) |