What the WorkKeys® Applied Math Test Measures

The Applied Math test is one of three WorkKeys® assessments used with the National Career Readiness Certificate program. This assessment measures critical thinking, mathematical reason and problem solving techniques for situations that actually occur in today's workplace. While individuals may use calculators and conversion tables to help with the problems on the assessment, math skills are needed to think them through.

There are five levels of difficulty. Level 3 is the least complex, and Level 7 is the most complex. The levels build on each other, each incorporating the skills assessed at the previous levels. For example, at Level 5, individuals need the skills from Levels 3, 4, and 5. Examples are included with each level description.

Level	Characteristics of Items	Skills
3	• Translate easily from a word problem to a math equation • All needed information is presented in logical order • No extra information	• Solve problems that require one type of mathematical operation. They add or subtract either positive or negative numbers. They multiply or divide using only positive numbers • Convert a familiar fraction and convert from a decimal to a common fraction; OR convert between decimals to percentages • Convert between familiar units of money and time • Add the prices of several products together to find the total, and calculate the correct change for a customer
Level	Characteristics of Items	Skills
4	• Information may be presented out of order • May include extra, unnecessary information • May include a simple chart, diagram, or graph	• Solve problems that require one or two mathematical operations. They can add, subtract, or multiply using positive or negative numbers and they can divide positive numbers • Calculate the average or mean of a set of numbers. For this, they may use whole numbers and decimals • Figure out simple ratios, simple proportions, or rates • Add commonly known fractions, decimals, or percentages • Add or subtract fractions with a common denominator

		• Multiply a mixed number by a whole number or a decimal • Put information in the right order before performing calculations
Level	Characteristics of Items	Skills
5	• Problems require several steps of logic and calculation (e.g., problem may involve completing an order form by totaling the order and then computing tax)	• Decide what information, calculations, or unit conversions to use to find the answer to a problem • Add and subtract fractions with unlike denominators • Convert units within or between systems of measurement where the conversion factor is given either in the problem or in the formula sheet • Solve problems that require mathematical operations using mixed units • Identify the best deal using one or two step calculations that meet the stated conditions • Calculate the perimeter or circumference of a basic shape, or calculate the area of a basic shape. • Calculate a given percentage of a given number and then use that percentage to find the solution to a problem • Identify where a mistake occurred in a calculation
Level	Characteristics of Items	Skills
6	• May require considerable translation from verbal form to mathematical expression • Generally require considerable setup and involve multiple-step calculations	• Use fractions with unlike denominators and calculate reverse percentages. • Convert units within or between systems of measurement (e.g., time, measurement, and quantity) where multiple-step conversions are required and the formulas are provided such as converting from kilometers to meters to feet. • Identify why a mistake occurred in a solution. • Find the best deal from a group of solutions and then use the result for another calculation.

		• Find the area of basic shapes when it may be necessary to rearrange a formula, convert units of measurement in the calculations, or use the result in further calculations. • Calculate the volume of rectangular solids (e.g., cubes). • Calculate rates, productions rates, rate by time (such as, production rate is 59 cups produced per hour, how many will be produced in an 8 hour shift). • Identify the correct equation for solving a problem.
Level	Characteristics of Items	Skills
7	• Content or format may be unusual • Information may be incomplete or implicit • Problems often involve multiple steps of logic and calculation	• Solve problems that include ratios, rates, or proportions with at least one of the quantities is a fraction • Identify the reason for a mistake • Convert between units of measurement using fractions, mixed numbers, decimals, and percentages • Calculate volumes of spheres, cylinders, or cones • Calculate the volume when it may be necessary to rearrange the formula, convert units of measurement in calculations, or use the result in further calculations • Set up and manipulate ratios, rates, or proportions where at least one of the quantities is a fraction • Determine the better economic value of several alternatives by using graphics, or determining the percentage difference, or by determining unit cost • Apply basic statistical concepts for example calculate the weighted mean, interpret measures of central tendency, or interpret measure of spread and tolerance