WorkKeys®

Unlock the Power of Your Workforce

Applied Mathematics

The WorkKeys Applied Mathematics test measures the skills people use when they apply mathematical reasoning and problem-solving techniques to work-related problems. The test questions require the examinee to set up and solve the types of problems and do the types of calculations that actually occur in the workplace. This test is designed to be taken with a calculator. A formula sheet that includes all formulas required for the assessment is provided. While individuals may use calculators and conversion tables to help with the problems, they still need to use math skills 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. All test items are multiple choice and a small number of problems are included for developmental purposes. Answers to these developmental questions do not count toward the examinee's score.

ACT®

Characteristics of Level 3 Skills

Individuals with Level 3 skills can:

- Solve problems that require a single type of mathematics operation (addition, subtraction, multiplication, and division) using whole numbers
- Add or subtract negative numbers
- Change numbers from one form to another using whole numbers, fractions, decimals, or percentages
- Convert simple money and time units (e.g., hours to minutes)

Level 3 Sample Item

In your job as a cashier, a customer gives you a $20 bill to pay for a can of coffee that costs $3.84. How much change should you give back?

A. $15.26
B. $16.16
C. $16.26
D. $16.84
E. $17.16

Characteristics of Level 4 Skills

In addition to demonstrating the skills at Level 3, individuals with Level 4 skills can:

- Solve problems that require one or two operations
- Multiply negative numbers
- Calculate averages, simple ratios, simple proportions, or rates using whole numbers and decimals
- Add commonly known fractions, decimals, or percentages (e.g., ½, .75, 25%)
- Add three fractions that share a common denominator
- Multiply a mixed number by a whole number or decimal
- Put the information in the right order before performing calculations

Level 4 Sample Item

Over the last 5 days, you made the following number of sales calls: 8, 7, 9, 5, and 7. On the average, how many calls did you make each day?

A. 5.8 DO YOUR FIGURING HERE
B. 7.0
C. 7.2
D. 9.0
E. 36.0

Characteristics of Level 5 Skills

In addition to demonstrating the skills at the previous levels, individuals with Level 5 skills can:

- Decide what information, calculations, or unit conversions to use to solve the problem
- Look up a formula and perform single-step conversions within or between systems of measurement
- Calculate using mixed units (e.g., 3.5 hours and 4 hours 30 minutes)
- Divide negative numbers
- Find the best deal using one- and two-step calculations and then comparing results
- Calculate perimeters and areas of basic shapes (rectangles and circles)
- Calculate percentage discounts or markups

Level 5 Sample Item

Quik Call charges 18¢ per minute for long-distance calls. Econo Phone totals your phone usage each month and rounds the number of minutes up to the nearest 15 minutes. It then charges $7.90 per hour of phone usage, dividing this charge into 15-minute segments if you used less than a full hour. If your office makes 5 hours 3 minutes worth of calls this month using the company with the lower price, how much will these calls cost?

A. $39.50 DO YOUR FIGURING HERE
B. $41.48
C. $41.87
D. $54.00
E. $54.54

Characteristics of Level 6 Skills

In addition to demonstrating the skills at the previous levels, individuals with Level 6 skills can:

- Use fractions, negative numbers, ratios, percentages, or mixed numbers
- Rearrange a formula before solving a problem
- Use two formulas to change from one unit to another within the same system of measurement
- Use two formulas to change from one unit in one system of measurement to a unit in another system of measurement
- Find mistakes in items that belong at Levels 3, 4, and 5
- Find the best deal and use the result for another calculation
- Find areas of basic shapes when it may be necessary to rearrange the formula, convert units of measurement in the calculations, or use the result in further calculations
- Find the volume of rectangular solids
- Calculate multiple rates

Level 6 Sample Item

You are preparing to tile the floor of a rectangular room that is 15½ feet by 18½ feet in size. The tiles you plan to use are square measuring 12 inches on each side, and are sold in boxes that contain enough tile to cover 25 square feet. How many boxes of tile must you order to complete the job?

A. 11 DO YOUR FIGURING HERE
B. 12
C. 34
D. 59
E. 287

Characteristics of Level 7 Skills

In addition to demonstrating the skills at the previous levels, individuals with Level 7 skills can:

- Solve problems that include nonlinear functions and/or that involve more than one unknown
- Find mistakes in Level 6 items
- Convert between systems of measurement that involve fractions, mixed numbers, decimals, and/or percentages
- Calculate multiple areas and volumes of spheres, cylinders, or cones
- Set up and manipulate complex ratios or proportions
- Find the best deal when there are several choices
- Apply basic statistical concepts

Level 7 Sample Item

The farm where you just started working has a cylindrical oil tank that is 2.5 feet across on the inside. The depth of the oil in the tank is 2 feet. If 1 cubic foot of space holds 7.48 gallons, about how many gallons of oil are left in the tank?

A. 37
B. 59
C. 73
D. 230
E. 294

DO YOUR FIGURING HERE

WorkKeys®

The WorkKeys System

For answers to the sample questions and a more extensive overview of WorkKeys, visit WorkKeys online at www.workkeys.com or call 800/WORKKEY (967-5539)

WorkKeys is a job skills assessment system measuring "real world" skills that employers believe are critical to job success. These skills are valuable for any occupation—skilled or professional—and at any level of education. The WorkKeys system is centered around three major components—Assessments, Job Analysis, and Training.

WorkKeys has been developed by ACT, an international leader in educational assessment and workforce development services for more than forty years, best known for the ACT Assessment college entrance exam. Over the past decade, ACT has completed WorkKeys job and occupational profiles for thousands of jobs across every employment field and has administered millions of WorkKeys assessments. The system is used by thousands of companies and schools across the United States and internationally.

ACT endorses the *Code of Fair Testing Practices in Education* and the *Code of Professional Responsibilities in Educational Measurement*, guides to the conduct of those involved in educational testing. ACT is committed to ensuring that each of its testing programs upholds the guidelines in each *Code*. A copy of each *Code* may be obtained free of charge from ACT Customer Services (68), P.O. Box 1008, Iowa City, IA 52243-1008, 319/337-1429.

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