

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. 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, 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 below. 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.

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

Description of Level 4 problems

At Level 4, problems may provide information out of order and may include extra, unnecessary information. The problem may include a simple chart, diagram, or graph. In addition to demonstrating the skills at Level 3, individuals with Level 4 skills can:

- Solve problems that require one or two operations. They may add, subtract, or multiply using several positive or negative numbers (such as 10, or -2), and they may divide positive numbers (such as 10). (Division of negative numbers is not covered until Level 5.)
- Figure out averages (such as $(10+11+12)/3$), simple ratios (such as $3/4$), simple proportions, (such as 10/100 cases), or rates (such as 10 mph). For this they use whole numbers and decimals.
- Add commonly known fractions, decimals, or percentages (such as $1/2$, 0.75, or 25%).
- Add three fractions that share a common denominator (such as $1/8 + 3/8 + 7/8$).
- Multiply a mixed number by a whole number or decimal.
- Put the information in the right order before they perform 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 B. 7.0 C. 7.2 D. 9.0 E. 36.0

Why this is a Level 4 problem:

- There is more than one step of logic and calculation.
- Examinees must divide using positive numbers.
- Examinees must figure out averages.

Level 5 Sample Item

Quik Call charges \$0.18 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 B. \$41.48 C. \$41.87 D. \$54.00 E. \$54.54

Level 6 Sample Item

You are preparing to tile the floor of a rectangular room that is $15\frac{1}{2}$ feet by $18\frac{1}{2}$ 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 B. 12 C. 34 D. 59 E. 287

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 hold 7.48 gallons, about how many gallons of oil are left in the tank?

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