

Word Problems in Math

Unless you find yourself in a science, technology, engineering, and mathematics (STEM) focused career, you may not need to use more advanced mathematics on a daily basis. But the difference is that advanced proficiency in mathematics to qualify for STEM careers is an absolute requirement, and by excelling, you will find yourself in demand.

However, most people use simple mathematical processes on a daily basis regardless of their careers. Even artists must calculate dimensions, purchase supplies, and sell work in a marketplace. Further, everyone is a consumer and will benefit from the ability to responsibly handle their personal finances, paychecks, budgets, credit, and purchases. The basic academic discipline informs our decisions and helps promote our financial independence and health.

The problem is with our ability to recognize the need for a mathematic solution for everyday problems and to apply the correct calculation. And that is because, unless we think we are good at it, we resist math problems, have not learned the calculations, or fail to understand how words, ideas, needs, and valuations can be boiled down into simple equations.

The first thing is to be able to recognize when math is required. The second thing is that when you recognize it, you don't resist it. Keep in mind a calculator is available on your assessment (for the CTECS Workplace Readiness Skills test) to help you make calculations. Most folks also have a calculator handy in the real world, especially if they rely on it to accurately do their jobs.

Tips on Understanding Word Problems in Math

1. Recognize that it may be a math problem if it has numbers or values in the question. Or, might it have durations or measurements (i.e., time and space)?
2. Read it twice to make sure you know what the question is. On the test, there will only be one question and answer.
3. What is known (the numbers/values, the rate, the total, etc.), and what is unknown? This will identify the single question you need to answer.
4. Quickly estimate the answer. This estimate should be used against your final calculation. It may not give you the accurate answer, but it will give you a range and may help to eliminate some of the incorrect answers.
5. What is the best way to solve the question? It's probably a simple calculation (addition, subtraction, multiplication, division), but it may require multiple calculations.
6. What does the equation look like? Use the calculator to enter the calculation. Check your answer against your previous estimate and the logic of the question.
7. Locate your answer among the four choices.

Simple Applied Math Tips

Multiplication: How many "times" is one value added to itself to get the sum of those values.

Calculate the Mean: mean is just another word for "average." To find the average of a group of numbers, add the values together for a subtotal and divide the total by the number of independent values.

Calculate Retail Discounts (items on sale) and Tips (gratuities): Tips should be added onto the subtotal and are calculated as a percentage of the total. A percentage is calculated by putting the decimal point in front of the percentage and multiplying it by the subtotal of the check. But you also need to add that amount onto the subtotal to get the check total. **Note: The tip is only the extra amount left for a check and it is totally up to the consumer or customer.**

Make Change for a customer during a cash transaction: This is simple subtraction. Take the amount given to you by the customer and subtract the total owed. Return the difference to the customer. **Note: In retail, one would never assume that anything over the value of a service or merchandise is a tip or gratuity. Customers always expect to get back the correct change, unless they tell you to keep it.**

The connection between fractions and percentages: Fractions are percentages written differently. In a fraction it is simply numerator over denominator. The numerator is divided by the denominator to get a percentage. In a percentage, the total is always based on a value of 100. This can be written in fraction form as the number over 100. It's good to know the common fractions: $\frac{1}{4}$ (one-quarter = 0.25), $\frac{1}{3}$ (one-third = 0.333), $\frac{1}{2}$ (one-half = 0.50), $\frac{2}{3}$ (two-thirds = 0.666), $\frac{3}{4}$ (three quarters = 0.75). Notice that every percentage equivalent is under 1.0 (with 1.0 represented as 100%) and that's because fractions are a percentage or part of a specified unit or one whole. To calculate a fractional amount of a whole number, multiply the top part of the fraction by the whole number and divide the total by the denominator (bottom part) of the fraction.

To Improve

Practice, practice, practice. The more you do it, the better you will be, just like anything else. The more word problems you read, the better you will get at understanding them clearly.

Exercise

There are some excellent questions here based on method of computation or equation:

<https://www.prodigygame.com/blog/math-word-problems/>

Work with a peer to answer the questions in the following 10 areas in RED:

- Addition
- Subtraction
- Multiplication
- Division
- Mixed Operations
- Ordering and Number Sense
- Fractions
- Decimals
- Comparing and Sequencing
- Time and Money
- Physical Measurement
- Ratios and Percentages
- Probability and Data Relationships
- Geometry
- Variables

Bring to your teacher those questions that you could not answer correctly or did not understand or for which you could not explain the calculation.