

MA 6E	Mathematics Embedded Credit
Cape Career & Technology Center	Last Update: April 2017
Topic: Basic Algebra	Focus: Word Problems

Show-Me Standards: MA1, MA2, MA4	MO Grade Level Expectations: N2C10, A2A10, A2C9	NCTM Standards: 4A, 4B, 5B, 5C, 5E
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OBJECTIVE: Students will apply basic algebra skills to word problems to find solutions.

Introduction:

Working through word problems in basic algebra is dependent on the student's ability to generate, remember, or locate formulas. Once the formula is established, the student must solve for the stated value that will complete the problem.

EXAMPLES:

The XYZ Manufacturing Company produces a dual-cache processor. During the first day of production of the processor they had a failure rate of 498 out of 2594 processors. What is the company's expected number of failures if they are running a production of 10,250 processors, rounded to the nearest whole number?

STEP 1: Develop a formula.

$$\frac{498}{2594} = \frac{x}{10250}$$

STEP 2: Solve for the variable.

$$\begin{aligned} \frac{498}{2594} &= \frac{x}{10250} \\ 2594x &= (498)(10250) \\ 2594x &= 5104500 \\ \frac{2594x}{2594} &= \frac{5104500}{2594} \\ x &= 1967.8 \\ x &= 1968 \end{aligned}$$

Ohm's Law states that the relationship between the current in amperes (I), the voltage in volts (V), and the resistance in ohms (R), in an electrical circuit is $I = \frac{V}{R}$. If a given circuit has a current of 3 amperes and uses an 18-volt system what is the resistance in ohms?

STEP 1: Develop a formula.

$$I = \frac{V}{R}$$
$$3 = \frac{18}{R}$$

STEP 2: Solve for the variable.

$$3 = \frac{18}{R}$$
$$\frac{3}{18} = \frac{18}{R} * \frac{1}{18}$$
$$\frac{3}{18} = \frac{1}{R}$$
$$\frac{R}{1} * \frac{3}{18} = \frac{1}{R} * \frac{R}{1}$$
$$\frac{R}{1} * \frac{3}{18} * \frac{18}{3} = 1 * \frac{18}{3}$$
$$R = \frac{18}{3}$$
$$R = 6ohms$$

Solve the following.

1. Of 29,897 employees at your workplace, the management states that 12.5% are scheduled to receive raises during the month of January. How many employees will get a raise in January, rounded to the nearest employee?
2. You are given the following question by the physical therapist at your workplace. She states that jogging one mile uses about 125 calories. If a serious jogger jogs 13 miles each day, how many calories, to the nearest 100 calories, does the jogger use jogging each week?
3. A computer printer prints 430 characters per second. How long, to the nearest minute, will it take to print 8 pages that have about 2500 characters per page?
4. The standard dosage for a certain medicine is 30 cubic centimeters. The current supply bottle contains 800 cubic centimeters. About how many doses are left?

5. The weight limit for an elevator in your workplace is posted at "2000 pounds capacity". While going to work one morning you ask yourself: "How many 150-pound persons could the elevator hold and still remain below the capacity limit?"

6. Ring binders for your company's documents are stored on a 36" bookshelf. If each binder is $1\frac{3}{4}$ " thick, how many binders can fit on one shelf?

7. XYZ's Company financial statement reports total annual sales of \$276 million. This number has been rounded to the nearest million. Before rounding, what could the lowest dollar number for the exact annual sales have been?

8. The instructions for a prescription are to take two tablets, three times a day. If there are 28 tablets remaining, how many full days of medication are left?