

2.4 - An Introduction to Problem Solving

How to Solve Word Problem?

1. Understand the problem by:
 - a. Read, read and _____ the problem again and again
 - b. Choose a _____
 - c. If necessary, draw a sketch.
2. Translate the problem into an _____
3. Solve the equation
4. Interpret and _____. Verify units.

Number Problems

Three times the difference of a number and 5 is the same as twice the number decreased by 3. Find the number.

If the difference of a number and four is doubled, the result is $\frac{1}{4}$ less than the number. Find the number.

An 18-foot wire is to be cut so that the longer piece is 5 times longer than the shorter piece. Find the length of each piece.

Over the past few years the satellite Voyager II has passed by the planet Saturn, Uranus, and Neptune, continually updating information about these planets, including the number of moons for each. Uranus is now believed to have 13 more moons than Neptune. Also, Saturn is now believed to have 2 more than twice the number of moons of Neptune. If the total number of moons for these planets is 47, find the number of moons for each planet.

Through the year 2000, the state of California had 22 more electoral votes for president than the state of Texas. If the total electoral votes for these two states was 86, find the number of electoral votes for each state.

Usage Problems

Enterprise Car Rental charges a daily rate of \$34 plus \$0.20 per mile. Suppose that you rent a car for a day and your bill (before taxes and insurance) is \$104. How many miles did you drive?

A plumber gave an estimate for the renovations of a kitchen. Her hourly pay is \$27 per hour and the plumber's parts will cost \$80. If her total estimate is \$404, how many hours does she expect this job to take?

Geometry Problems

The measure of the second angle of a triangle is twice the measure of the smallest angle. The measure of the third angle of the triangle is three times the measure of the smallest angle. Find the measures of the angles.

Two angles are complementary if their sum is 90° . Given that angle A and B are complementary and that angle A measures $(2x - 3)^\circ$ and that angle B measures x° ; find the measure of each angle.

Decision or Comparison Problems (Break-Even)

The coastline Racquet Club has two payment plans for its members. Greg bought plan 1 that has a monthly fee of \$20 plus \$8 per hour court rental time. Jonathan bought plan 2 that has no monthly fee, but court time is \$16.25 per hour. If court time is rented in 1-hour intervals, how many hours would you have to play per month so that Greg and Jonathan spent the same amount of money?

Jason O'Connor is considering buying the building where he has his office. His monthly rent for his office is \$890. If he makes a \$31,350 down payment on the building, his monthly mortgage payments would be \$560. How many months would it take for his down payment plus his monthly mortgage payments to equal the amount he spends on rent?