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Chapter 1 : Investment Word Problems

Investment problems usually involve simple annual interest (as opposed to compounded interest), using the interest formula I = Prt, where I stands for the interest on the original investment, P stands for the amount of the original investment (called the "principal"), r is the interest rate (expressed in decimal form), and t is the time.

This is a candidate for Solver. This post will walk us through the solution to the problem using Solver. It uses Solver and screen shots from Excel All versions of Excel have solver available. Users should note that the screen shots may not match your version although the functionality will, some of the functions appear in different locations in different versions of Solver. This goal may be to minimse, maximise, or achieve some target value. It solves the problem by adjusting a number of input cells according to a set of criteria or constraints which are defined by the user. Where is Solver Solver is an Excel add-in supplied with Excel, but not enabled by default. Defining the Problem Mdsuhair had a series of 8 Items each which had a value: He wants to know which items should be combined so that the sum of the values of the items is nearly equal. To do this we need to assign each item into a Bucket. Namely Bucket A and Bucket B. Now we can place values of 1 in the buckets manually and Excel will show us the value of each Bucket and the Difference between them in Cell G The problem is that there are 28 or combinations of answers, and to test them all manually at 1 every 5 seconds would take This is where solver comes to the fore. Applying Solver To apply solver we need to define a series of requirements, rules and constraints. These requirements, rules and constraints guide solver and set limits which allow solver to quickly narrow in on the answer. What are our rules Our main requirement is to minimise the difference between the value of the 2 buckets. The difference between the 2 buckets in our example is cell G11, the sum of Bucket 2 values minus the Sum of Bucket 1 values. We want to have G11 as low as possible but greater than or equal to 0. We will discuss how these constraints are used in the next section The Solver Window This section will explain the solver window and its use in defining the problem within solver. This is the Target cell which is the cell which you are trying to solve the problem for. We want to achieve the same value in each Bucket and so the difference between the Buckets will be 0. A minimal value will be achieved when all the Items are placed in Bucket A, as our equation for G11 will then have 0 â€” Total which is â€”Total, which is more minimal than 0. We want to let Solver change the number of items in each bucket, this is the range: You can try the Guess button next to the Range Reference and Solver will take a Guess at what cells the problem is dependent on. Always check this if you use it, especially in complex models. Subject to the Constraints: Constraints are the rules which define the limits of the possible solutions to the problem We will add several constraints for our rules: The Total column must be equal to 1 for each Item 2. The Bucket Value must be an Integer 3. The total contents of the 2 buckets must be 8 items 4. You could add a further constraint that each Bucket should hold the same number of items Hint: As a general Rule, Under Constrain rather than over constrain! You can always add more constraints later. To do this we will use the Add Constraint Button 1. We need to add a constraint for each cell in the Range E2: We need to add a constraint for each cell in the Range C2: D9 that it is only allowed to be an integer This constraint must be applied for each cell in the range C2: The Save Model saves the parameters in a Range of cells as shown below. Setup one constraint using solver then Save the model. Edit the model on the worksheet and re-load the model as required. This means you can edit them to change the Constraints and Parameters as required and re-load them into solver. I have included 3 sets of Parameters for our model. Base Case â€” Forces bucket values to be equal, Allows uneven bucket counts Equal Sized Buckets â€” Forces each bucket to contain the same number of items Force an error â€” Which forces an error in the solver model Load each model and try them at your leisure. Running the Solver Model Warning: Solver is a computationally complex add-in, so once your model is setup, Save your Workbook. Prior to running the model there are a few parameters we should look at to ensure the model solves correctly. On the main Solver window select the Options button. Solver in Excel will return a better answer without these 2 parameters enabled by default The other 2 parameters which you may need to change from time to time is Precision: Precision is a number from 0 to 1 and higher means more precise Tolerance: Tolerance shows how far away from a Number, an Integer constraint is allowed to be

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The use of the Estimates, Derivatives and Search parameters are beyond the scope of this post. I direct you to the Excel Help on these subjects, by selecting the Help button. The main status bar in Excel will flash up a number of statistics about the internal workings of the Solver add-in. Generally these flash by and are too fast to read. Solver generally recovers from these problems itself. If it has found a solution, the worksheet cells will be changed to show the solution You now have 4 options:

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Chapter 2 : Simple Interest Calculator with step by step explanations

Students learn to solve "interest" word problems, such as the following. Pam invested $ She earned 14% on part of her investment and 6% on the rest.

Define and solve a problem On the Data tab, in the Analysis group, click Solver. If the Solver command or the Analysis group is not available, you need to activate the Solver add-in. How to activate the Solver add-in. In the Set Objective box, enter a cell reference or name for the objective cell. The objective cell must contain a formula. Do one of the following: If you want the value of the objective cell to be as large as possible, click Max. If you want the value of the objective cell to be as small as possible, click Min. If you want the objective cell to be a certain value, click Value of, and then type the value in the box. In the By Changing Variable Cells box, enter a name or reference for each decision variable cell range. Separate the non-adjacent references with commas. The variable cells must be related directly or indirectly to the objective cell. You can specify up to variable cells. In the Subject to the Constraints box, enter any constraints that you want to apply by doing the following: In the Solver Parameters dialog box, click Add. In the Cell Reference box, enter the cell reference or name of the cell range for which you want to constrain the value. If you click int, integer appears in the Constraint box. If you click bin, binary appears in the Constraint box. If you click dif, alldifferent appears in the Constraint box. To accept the constraint and add another, click Add. To accept the constraint and return to the Solver Parameters dialog box, click OK. You can change or delete an existing constraint by doing the following: In the Solver Parameters dialog box, click the constraint that you want to change or delete. Click Change and then make your changes, or click Delete. Click Solve and do one of the following: To keep the solution values on the worksheet, in the Solver Results dialog box, click Keep Solver Solution. To restore the original values before you clicked Solve, click Restore Original Values. You can interrupt the solution process by pressing Esc. Excel recalculates the worksheet with the last values that are found for the decision variable cells. To create a report that is based on your solution after Solver finds a solution, you can click a report type in the Reports box and then click OK. The report is created on a new worksheet in your workbook. To save your decision variable cell values as a scenario that you can display later, click Save Scenario in the Solver Results dialog box, and then type a name for the scenario in the Scenario Name box. Step through Solver trial solutions After you define a problem, click Options in the Solver Parameters dialog box. In the Options dialog box, select the Show Iteration Results check box to see the values of each trial solution, and then click OK. In the Solver Parameters dialog box, click Solve. In the Show Trial Solution dialog box, do one of the following: To stop the solution process and display the Solver Results dialog box, click Stop. To continue the solution process and display the next trial solution, click Continue. Enter a cell range for the model area, and click either Save or Load. When you save a model, enter the reference for the first cell of a vertical range of empty cells in which you want to place the problem model. When you load a model, enter the reference for the entire range of cells that contains the problem model. You can save the last selections in the Solver Parameters dialog box with a worksheet by saving the workbook. Each worksheet in a workbook may have its own Solver selections, and all of them are saved. You can choose any of the following three algorithms or solving methods in the Solver Parameters dialog box: You should enable the Solver add-in first. For more information, see Load the Solver add-in. Example of a Solver evaluation In the following example, the level of advertising in each quarter affects the number of units sold, indirectly determining the amount of sales revenue, the associated expenses, and the profit. Solver can change the quarterly budgets for advertising decision variable cells B5:

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Chapter 3 : Word Problems Involving Systems of Linear Equations

This example shows how to use the linprog solver in Optimization ToolboxÂ® to solve an investment problem with deterministic returns over a fixed number of years T. The problem is to allocate your money over available investments to maximize your final wealth.

How much do they have left to invest in stocks? How much should he invest in each rate? How much did the credit union loan out at each rate? Show Step-by-step Solutions How to solve interest problems using the simple interest formula? If you have a saving account, the interest will increase your balance based upon the interest rate paid by the bank. If you have a loan, the interest will increase the amount you owe based upon the interest rate charged by the bank. What will the new balance be? Note that this problem requires a chart to organize the information. The chart is then used to set up the equation. Show Step-by-step Solutions How to solve word problems with two simple interest rates? Johnny is a shrewd eight-year-old. For Christmas, his grandparents gave him ten thousand dollars. Johnny decides to invest some of the money in a savings account that pays two percent per annum and the rest in a stock fund that pays ten percent per annum. Johnny wants his investments to yield seven percent per annum. How much should he put in each account? How to solve a real life problem involving interest? How much was invested into each account rounded to the nearest cent? Show Step-by-step Solutions Simple Interest Discounted Loan A discounted loan is a loan that collects interest from the amount of the loan or face value of the loan when the loan is made. The deducted interest is the discount. What is the loan discount? Determine the net amount of money that you will actually receive. Show Step-by-step Solutions Rotate to landscape screen format on a mobile phone or small tablet to use the Mathway widget, a free math problem solver that answers your questions with step-by-step explanations. You can use the free Mathway calculator and problem solver below to practice Algebra or other math topics. Try the given examples, or type in your own problem and check your answer with the step-by-step explanations. We welcome your feedback, comments and questions about this site or page. Please submit your feedback or enquiries via our Feedback page.

Chapter 4 : Solve linear programming problems - MATLAB linprog

Define and solve a problem On the Data tab, in the Analysis group, click Solver. Note: If the Solver command or the Analysis group is not available, you need to activate the Solver add-in.

Did you know that Amazon is offering 6 months of Amazon Prime - free two-day shipping, free movies, and other benefits - to students? One of the biggest obstacles to correctly solving time value of money problems is identifying the cash flows and their timing. On this page I will offer some tips that I hope will be helpful. There are Always Five Variables Every time value of money problem has five variables: In many cases, one of these variables will be equal to zero, so the problem will effectively have only four variables. You will always know the values of all but one of these, and it is that missing value for which you will be solving. Thanks to the principle of value additivity , we can think of uneven cash flow streams as a series of lump sum cash flows. If necessary, you can always deal with each cash flow separately, and then add up your results in the end. Identify The Variables The most important thing is to be able to identify the variables that you have been given, and the one that you are looking for. What makes this difficult, sometimes, is that you are given a problem sometimes a long one and you have to identify the variables amidst a bunch of words. Furthermore, the words that are used and the order in which the variables are given is never the same. That leads us to the first tip: When reading through a time value of money problem you should always stop when you come to a number. Write down and label that number to the side of the problem. That way, you will have separated the values from the text. As noted above, there are up to five variables in every problem. Here are some general ideas about how to identify them: Present Value Any value that occurs at the beginning of the problem or the beginning of a part of the problem is a present value. The key is that the present value occurs before any other cash flows. Usually, when a present value is given, it will be surrounded by words indicating that an investment happens today. Future Value The future value is usually the last cash flow. Obviously, it is a cash flow that occurs at some time period in the future. The future value is a single cash flow. If it occurs more than once, then it is probably an annuity payment. Annuity Payment An annuity payment is a series of two or more equal payments that occur at regular time periods. Each payment, if taken alone, is a future value, but the key point is that the annuity payment is a recurring payment. That is, there are more than one of them in a row. Interest Rate The interest rate is the growth rate of your money over the life of the investment. It is usually the only percentage value that is given. However, some problems will have different interest rates for different time frames. For example, problems involving retirement planning will often give pre-retirement and post-retirement interest rates. Frequently, when you are being asked to solve for the interest rate, you will be asked to find the compound average annual growth rate CAGR. Number of Periods The number of periods is the total length of time that the investment will be held. Typically, it is given as a number of years, though it will often need to be adjusted to some other time scale. For example, if you are told that the investment pays interest quarterly 4 times per year then you must adjust N so that it reflects the total number of quarterly not annual time periods. The interest rate, number of periods, and annuity payment variables must all agree on the length of a time period a day, a week, a month, a year, etc. That is, i is always the interest rate per period, N is always the total number of periods, and PMT is always the amount of the payment per period. Very often, it is necessary to make adjustments to the values given in a problem. For example, interest rates are usually given as annual rates. However, if payments occur monthly, then the interest rate must be adjusted to a monthly rate typically by dividing the annual rate by Similarly, the number of years would have to be changed to the number of months. Draw a Time Line Even after you have successfully identified the cash flows, it can be difficult to track the timing of the cash flows in your head. This is where time lines are so important. A time line is a graphical representation of the size and timing of the cash flows. When you are first learning to solve time value problems, drawing time lines is a very good idea. The time line helps you to see exactly when each cash flow occurs, and therefore how many periods it needs to be moved either forward or backwards in time. As the problems that you are solving become more complex, the importance of drawing time lines increases. Break the Problem into Smaller Pieces Very often time value problems are pretty straightforward. It may involve only a single lump sum cash flow, or a simple annuity. For more complicated problems, it can be very helpful to break the problem into several pieces and solve them separately. In the end, just add up the answers from each piece of the problem this is known as the Principle of Value Additivity. Keep in mind that we almost always want to know the answer as of some point in time, so all of the cash flows need to be moved to that time period before they can be added together. The time line shown above is a good example of a problem that can be solved in two or six, if you want pieces. The final step would be to add the two present values to get the present value of the entire stream of cash flows. Sometimes you have no choice but to break the problem into pieces. For example, when solving problems relating to future retirement income needs. Very often this type of problem involves two time periods before retirement and after retirement , and perhaps also more than one interest rate usually lower during retirement. In this situation, you need to treat it as two problems. First solve the "after retirement" problem, and then solve the "before retirement" problem using the results from the first part. Try to Estimate the Answer One final important tip is to always try to estimate what your final answer should be. You just want to be able to identify obviously incorrect answers. This is especially true when using financial calculators or spreadsheets. Always remember the old saying, "garbage in, garbage out. There are relationships between the variables that you should understand, and that can help you when estimating the answers. Here is an analogy that may help: Think of the problem as a road trip. The present value is your starting point, and the future value is your destination. The number of periods is the distance to be traveled, and the interest rate is the average speed that you will be traveling. Using that analogy, however imperfect it may be, we can identify several important relationships between the variables: The future value is always bigger than the present value. From any given present value starting point , the longer you drive N or the faster you go i , the bigger the future value will be. If you slow down use a lower interest rate , it will take longer larger N to get from the present value to the future value. If you speed up higher interest rate , you will get there faster lower N. If you drive for less time lower N , you will have to go faster higher i to reach the same destination FV. There are endless variations, and annuity payments add to them. The point is that you need to understand how the variables interrelate if you want to be able to estimate answers. Ultimately, the best way to get good at solving problems is to solve a lot of them, so practice is very important.

Chapter 5 : Excel Solver tutorial with step-by-step examples

USING EXCEL SOLVER IN OPTIMIZATION PROBLEMS At least 30% of the funds should go in tax-free investments, and at least 40% of the total return should be tax free.

This is machine translation Translated by Mouseover text to see original. Click the button below to return to the English version of the page. This page has been translated by MathWorks. Click here to see To view all translated materials including this page, select Country from the country navigator on the bottom of this page. MathWorks does not warrant, and disclaims all liability for, the accuracy, suitability, or fitness for purpose of the translation. The problem is to allocate your money over available investments to maximize your final wealth. This example uses the solver-based approach. Each bond pays an interest rate that compounds each year, and pays the principal plus compounded interest at the end of a maturity period. The objective is to maximize the total amount of money after T years. You can include a constraint that no single investment is more than a certain fraction of your total capital. This example shows the problem setup on a small case first, and then formulates the general case. You can model this as a linear programming problem. Therefore, to optimize your wealth, formulate the problem for solution by the linprog solver. Introductory Example Start with a small example: The time period T is 5 years. The number of bonds N is 4. Entry k of vector Maturity represents the maturity period of bond k. Entry k of vector InterestRates represents the interest rate of bond k. Visualize this problem by horizontal bars that represent the available purchase times and durations for each bond. Upon maturity, the payout for investment x k is Define as the total return of bond k: From the plot, you see that investments are collected at various intermediate years and reinvested. At the end of year T, the money returned from investments 5, 7, and 8 can be collected and represents your final wealth: To place this problem into the form linprog solves, turn this maximization problem into a minimization problem using the negative of the coefficients of x j: Starting with year 1, you can invest the initial capital in the purchase options and , so: Then for the following years, you collect the returns from maturing bonds, and reinvest them in new available bonds to obtain the system of equations: Write these equations in the form , where each row of the matrix corresponds to the equality that needs to be satisfied that year: No Borrowing Because each amount invested must be positive, each entry in the solution vector must be positive. Include this constraint by setting a lower bound lb on the solution vector. There is no explicit upper bound on the solution vector. Thus, set the upper bound ub to empty. The interior-point algorithm can be used to solve this type of linear programming problem. Visualize the Solution The exit flag is 1, indicating that the solver found a solution. The value -fval, returned as the second linprog output argument, corresponds to the final wealth. Plot your investments over time. You obtain the following system of inequalities: To set up the system of inequalities, first generate a matrix yearlyReturns that contains the return for the bond indexed by i at year j in row i and column j. Represent this system as a sparse matrix. Plot the resulting purchases. Notice that your final wealth is less than the investment without this constraint. Optimization completed because the objective function is non-decreasing in feasible directions, to within the selected value of the function tolerance, and constraints are satisfied to within the selected value of the constraint tolerance. This setup results in a linear programming problem with decision variables. The system of equality constraints is represented by a sparse matrix Aeq of dimension by and the system of inequalities is represented by a sparse matrix A of dimension by This performance discrepancy is partially caused by dense columns in the inequality system shown in matrix A. These columns correspond to bonds with a long maturity period, as shown in the following graph. To speed up the solver, try the dual-simplex algorithm, which is less sensitive to column density. Elapsed time is 0. You can also compute the equivalent interest rate corresponding to your final wealth. Your final wealth corresponds to a 5.

Chapter 6 : Mathway | Algebra Problem Solver

Interest Problems. Ann invested $12, in two bank accounts. One of the accounts pays 6% annual interest, and the other account pays 5% annual interest.

Word Problems Involving Systems of Linear Equations Many word problems will give rise to systems of equations that is, a pair of equations like this: You can solve a system of equations in various ways. To review how this works, in the system above, I could multiply the first equation by 2 to get the y-numbers to match, then add the resulting equations: If I plug into , I can solve for y: The first few problems will involve items coins, stamps, tickets with different prices. But notice that these examples tell me what the general equation should be: The number of items times the cost or value per item gives the total cost or value. This is where I get the headings on the tables below. If there are twice as many nickels as pennies, how many pennies does Calvin have? So Calvin has cents total. Let p be the number of pennies. There are twice as many nickels as pennies, so there are nickels. Be sure you understand why the equations in the pennies and nickels rows are the way they are: The number of coins times the value per coin is the total value. If the words seem too abstract to grasp, try some examples: The total value of the coins is the value of the pennies plus the value of the nickels. So I add the first two numbers in the last column, then solve the resulting equation for p: Calvin has 80 pennies. Therefore, he has nickels. The number of things will go in the first column. This might be the number of tickets, the time it takes to make a trip, the amount of money invested in an account, and so on. The value per item or rate will go in the second column. This might be the price per ticket, the speed of a plane, the interest rate in percent earned by an investment, and so on. The total value or total amount will go in the third column. This might be the total cost of a number of tickets, the distance travelled by a car or a plane, the total interest earned by an investment, and so on. But they are convenient for organizing information and they give you a pattern to get started with problems of a given kind e. In some cases, you add the numbers in some of the columns in a table. In other cases, you set two of the numbers in a column equal, or subtract one number from another. There is no general rule for telling which of these things to do: You have to think about what the problem is telling you. The first and third columns give the equations Multiply the second equation by 10 to clear decimals: Solve the equations by multiplying the first equation by 25 and subtracting it from the second: How many of each kind of ticket were sold? The first and third columns give the equations Multiply the first equation by 15 and subtract equations: An investor buys a total of shares of two stocks. How many shares of each stock did the investor buy? The first and third columns give Multiply the first equation by 45, then subtract the second equation: Since , I have. The next problem is more complicated than the others, since it involves solving a system of three equations with three variables. They involve representing the equations using matrices. Phoebe has some cent stamps, some cent stamps, and some 3-cent stamps. The number of cent stamps is 10 less than the number of cent stamps, while the number of 3-cent stamps is 5 less than the number of cent stamps. How many of each stamp does she have? I will do everything in cents. The last column says The number of cent stamps is 10 less than the number of cent stamps, so The number of 3-cent stamps is 5 less than the number of cent stamps, so I want to get everything in terms of one variable, so I have to pick a variable to use.

Chapter 7 : Newest Word Problem Questions | Wyzant Ask An Expert

The Excel Solver add-in is especially useful for solving linear programming problems, aka linear optimization problems, and therefore is sometimes called a linear programming solver. Apart from that, it can handle smooth nonlinear and non-smooth problems.

Excel Solver algorithms What is Excel Solver? Excel Solver belongs to a special set of commands often referred to as What-if Analysis Tools. It is primarily purposed for simulation and optimization of various business and engineering models. The Excel Solver add-in is especially useful for solving linear programming problems, aka linear optimization problems, and therefore is sometimes called a linear programming solver. Apart from that, it can handle smooth nonlinear and non-smooth problems. Please see Excel Solver algorithms for more details. For example, it can help you maximize the return of investment, choose the optimal budget for your advertising campaign, make the best work schedule for your employees, minimize the delivery costs, and so on. How to add Solver to Excel The Solver add-in is included with all versions of Microsoft Excel beginning with , but it is not enabled by default. To add Solver to your Excel, perform the following steps: In the Excel Options dialog, click Add-Ins on the left sidebar, make sure Excel Add-ins is selected in the Manage box at the bottom of the window, and click Go. Where is Solver in Excel , , or ? In the modern versions of Excel, the Solver button appears on the Data tab, in the Analysis group: Where is Solver in Excel ? After the Solver Add-in is loaded to Excel , its command is added to the Tools menu: The examples discussed in this tutorial use Solver in Excel If you have another Excel version, the screenshots may not match your version exactly, although the Solver functionality is basically the same. How to use Solver in Excel Before running the Excel Solver add-in, formulate the model you want to solve in a worksheet. Supposing, you are the owner of a beauty salon and you are planning on providing a new service to your clients. Calculate the minimal cost per service that will let you pay for the new equipment within the specified timeframe. Define the problem The Solver Parameters window will open where you have to set up the 3 primary components: Objective cell Variable cells Constraints Exactly what does Excel Solver do with the above parameters? It finds the optimal value maximum, minimum or specified for the formula in the Objective cell by changing the values in the Variable cells, and subject to limitations in the Constraints cells. Objective The Objective cell Target cell in earlier Excel versions is the cell containing a formula that represents the objective, or goal, of the problem. The objective can be to maximize, minimize, or achieve some target value. Variable cells Variable cells Changing cells or Adjustable cells in earlier versions are cells that contain variable data that can be changed to achieve the objective. Excel Solver allows specifying up to variable cells. In this example, we have a couple of cells whose values can be changed: Projected clients per month B4 that should be less than or equal to 50; and Cost per service B5 that we want Excel Solver to calculate. Or, type the ranges manually, separated with commas. Constraints The Excel Solver Constrains are restrictions or limits of the possible solutions to the problem. To put it differently, constraints are the conditions that must be met. To add a constraint s , do the following: In the Constraint window, enter a constraint. Continue entering other constraints. After you have entered the final constraint, click OK to return to the main Solver Parameters window. Excel Solver allows specifying the following relationships between the referenced cell and the constraint. Less than or equal to, equal to, and greater than or equal to. You set these relationships by selecting a cell in the Cell Reference box, choosing one of the following signs: If the referenced cell must be an integer, select int, and the word integer will appear in the Constraint box. If each cell in the referenced range must contain a different value, select dif, and the word AllDifferent will appear in the Constraint box. If you want to limit a referenced cell either to 0 or 1, select bin, and the word binary will appear in the Constraint box. The int, bin, and dif relationships can only be used for constraints on Variable cells. To edit or delete an existing constraint do the following: In this example, the constraints are: Depending on the model complexity, computer memory and processor speed, it may take a few seconds, a few minutes, or even a few hours. The Solver Result window will close and the solution will appear on the worksheet right away. If the Excel Solver has been processing a certain problem for too long, you can interrupt the process by pressing the Esc key. Excel will recalculate the worksheet with the last values found for the Variable cells. The report will be created on a new worksheet: Excel Solver examples Below you will find two more examples of using the Excel Solver addin. First, we will find a solution for a well-known puzzle, and then solve a real-life linear programming problem. Excel Solver example 1 magic square I believe everyone is familiar with "magic square" puzzles where you have to put a set of numbers in a square so that all rows, columns and diagonals add up to a certain number. For instance, do you know a solution for the 3x3 square containing numbers from 1 to 9 where each row, column and diagonal adds up to 15? Our part of the job is to properly define the problem. To begin with, enter the numbers from 1 to 9 in a table consisting of 3 rows and 3 columns. The Excel Solver does not actually need those numbers, but they will help us visualize the problem. What the Excel Solver add-in really needs are the SUM formulas that total each row, column and 2 diagonals: With all the formulas in place, run Solver and set up the following parameters: We want to populate numbers in cells B2 to D4, so select the range B2: The following conditions should be met: Finally, click the Solve button, and the solution is there! Excel Solver example 2 linear programming problem This is an example of a simple transportation optimization problem with a linear objective. More complex optimization models of this kind are used by many companies to save thousands of dollars each year. You want to minimize the cost of shipping goods from 2 different warehouses to 4 different customers. Each warehouse has a limited supply and each customer has a certain demand. Minimize the total shipping cost, not exceeding the quantity available at each warehouse, and meeting the demand of each customer. Source data Here is how our transportation optimization problem looks like: What decisions are to be made? We want to calculate the optimal quantity of goods to deliver to each customer from each warehouse. These are Variable cells B7: What are the constraints? The supplies available at each warehouse I7: I8 cannot be exceeded, and the quantity ordered by each customer B E10 should be delivered. These are Constrained cells. What is the goal? The minimal total cost of shipping. And this is our Objective cell C The next thing for you to do is to calculate the total quantity shipped from each warehouse G7: G8 , and the total goods received by each customer B9: You can do this with simple Sum formulas demonstrated in the below screenshot. To make our transportation optimization model easier to understand, create the following named ranges:

Chapter 8 : Systems of Linear Equations and Word Problems â€“ She Loves Math

Free math problem solver answers your algebra homework questions with step-by-step explanations.

Chapter 9 : Define and solve a problem by using Solver - Office Support

Retirement Investment Calculator - powered by WebMath. This page will show you how your retirement savings is going. Fill in the boxes, and take a look!