

Lecture Week 25

Simplification of LPP & Tax Calculation

Using MS-Excel

Simplification of LPP Using Excel..

Dear Students,

We will now solve LPP using MS –Excel for that you need to add on one tool called Solver add in MS Excel .

Follow the following steps to ass the solver add in .

- Go to **File** menu in excel template
- Choose the **Option menu** and then choose **Add-ins**.
- You can see **Solver add in** in the screen and click on it to install the solver .
- You can check whether or not the **solver** add in is installed or not by clicking **data** button in excel template.

Choose File button and click option

The screenshot displays the Microsoft Excel interface. The ribbon at the top is labeled 'Info' (which is the 'File' menu in desktop versions). The left sidebar contains the following options: Home, New, Open, Info (selected), Save, Save As, Print, Share, Export, Publish, Close, Account, Feedback, and Options (highlighted with a red circle). The main area shows the 'Info' tab with sections for 'Protect Workbook', 'Inspect Workbook', 'Manage Workbook', and 'Browser View Options'. The right sidebar shows 'Properties' and 'Related Dates'.

Info

Protect Workbook
Control what types of changes people can make to this workbook.

Inspect Workbook
Before publishing this file, be aware that it contains:
■ Author's name and absolute path

Manage Workbook
There are no unsaved changes.

Browser View Options
Pick what users can see when this workbook is viewed on the Web.

Properties

Size: Not saved yet
Title: Add a title
Tags: Add a tag
Categories: Add a category

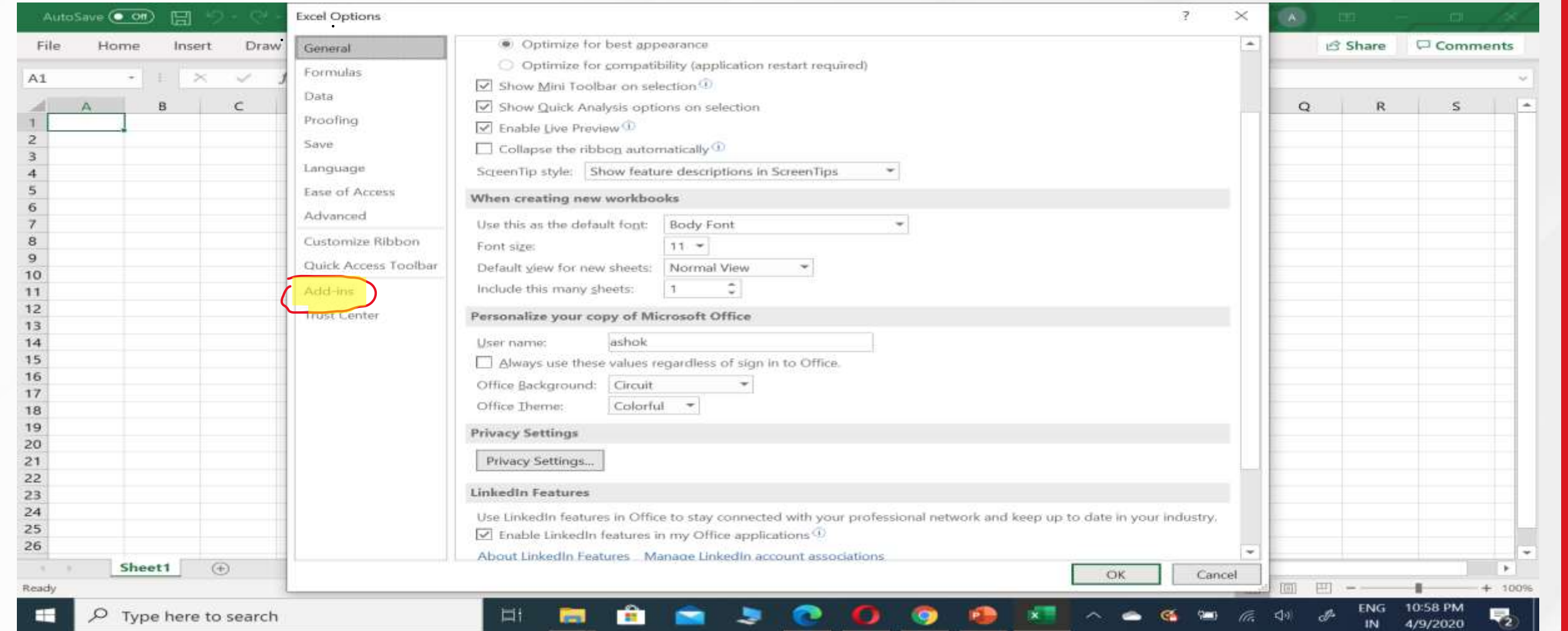
Related Dates

Last Modified: Today, 10:47 PM
Created: Today, 10:47 PM
Last Printed:

Related People

Author: ashok
Add an author
Last Modified By: Not saved yet
[Show All Properties](#)

Choose Add-ins..



Click on Solver Add-in

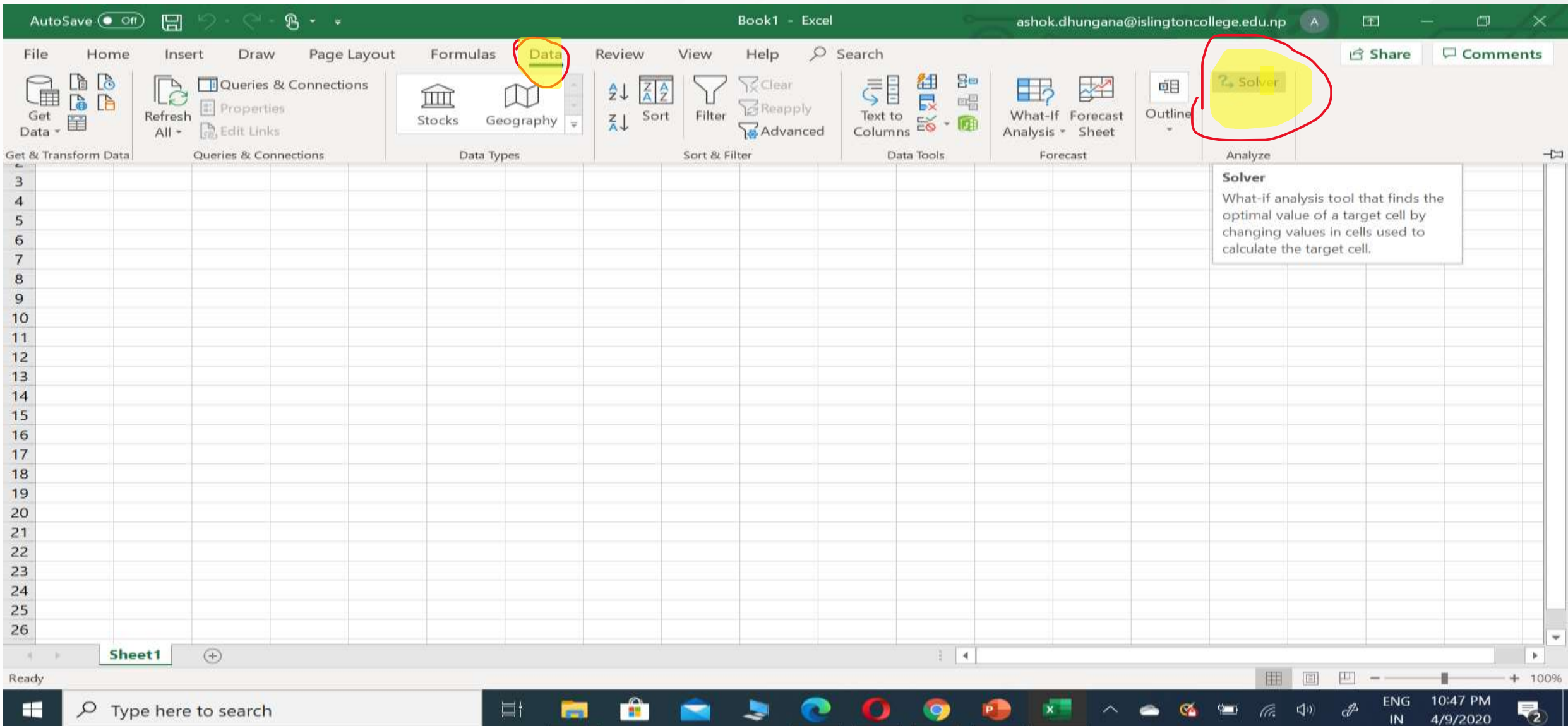
The screenshot displays the 'Excel Options' dialog box, specifically the 'Add-ins' tab. The 'Add-ins' list is divided into three sections: 'Active Application Add-ins', 'Inactive Application Add-ins', and 'Document Related Add-ins'. The 'Solver Add-in' is highlighted in the 'Active Application Add-ins' section. The 'Location' column shows the path 'C:\...t\Office16\Library\SOLVER\SOLVER.XLAM' and the 'Type' is 'Excel Add-in'. Below the list, the 'Document Related Add-ins' section shows 'No Document Related Add-ins'. The 'Manage' dropdown is set to 'Excel Add-ins'.

Name	Location	Type
Active Application Add-ins		
Solver Add-in	C:\...t\Office16\Library\SOLVER\SOLVER.XLAM	Excel Add-in
Inactive Application Add-ins		
Analysis ToolPak	C:\...t\Office16\Library\Analysis\ANALYS32.XLL	Excel Add-in
Analysis ToolPak - VBA	C:\...ffice16\Library\Analysis\ATPVBAEN.XLAM	Excel Add-in
Date (XML)	C:\...es\Microsoft Shared\Smart Tag\MOFL.DLL	Action
Euro Currency Tools	C:\...e\root\Office16\Library\EUROTOOL.XLAM	Excel Add-in
Inquire	C:\...rosoft Office\Office16\DCF\NativeShim.dll	COM Add-in
Microsoft Actions Pane 3		XML Expansion Pack
Microsoft Data Streamer for Excel	C:\...rosoftDataStreamerforExcel.vsto\vslocal	COM Add-in
Microsoft Power Map for Excel	C:\...Map Excel Add-in\EXCELPLUGINSHELL.DLL	COM Add-in
Microsoft Power Pivot for Excel	C:\...cel Add-in\PowerPivotExcelClientAddin.dll	COM Add-in
Microsoft Power View for Excel	C:\...xel Add-in\AdHocReportingExcelClient.dll	COM Add-in
Document Related Add-ins		
No Document Related Add-ins		
Add-in:	Solver Add-in	
Publisher:		
Compatibility:	No compatibility information available	
Location:	C:\Program Files\Microsoft Office\root\Office16\Library\SOLVER\SOLVER.XLAM	
Description:	Tool for optimization and equation solving	

Manage: Excel Add-ins Go...

OK Cancel

Check for solver by clicking data..



Simplification of LPP using Excel...

Once the solver is installed, we can solve the LP problems using MS Excel .

Let's try to solve ..

1. Minimize $Z = 50x + 150y + 100z$

Subjected to:

$$5x + 5y + 5z \geq 2500$$

$$5x + 10y + 15z \geq 3500$$

$$3x - y + 3z \leq 0$$

$$x \geq 0, y \geq 0, z \geq 0$$

Let's open the excel and try to solve

Simplification of LPP using Excel...

Question 2 : (Try this by yourself)

Solve the following LPP,

Maximize $Z = 4x + 7y + 2z$

Subjected to the constraints,

$$x + y + z \leq 60$$

$$2x + 3y + 7z \geq 150$$

$$3x + 6y + 4z = 200$$

$$x, y, z \geq 0$$

LPP Using Excel :

Question : (Past Year Course Work Question)

Martin and Son's company wants to manufacture a mixture containing three contents X, Y and Z. The cost of X, Y and Z are \$5, \$4 and \$3 respectively. The company prepares the mixture to meet out the demand of the costumers in the following manner.

The quantity of X cannot be more than 200 kgs in the mixtures.

The quantity of Y used should be at least 300 kgs.

The content of Z cannot be more than 400 kgs.

Find the optimal combination of the three contents for a mixture of 1000 kgs, so that the total cost is minimum.

LPP Using Simplex Method :

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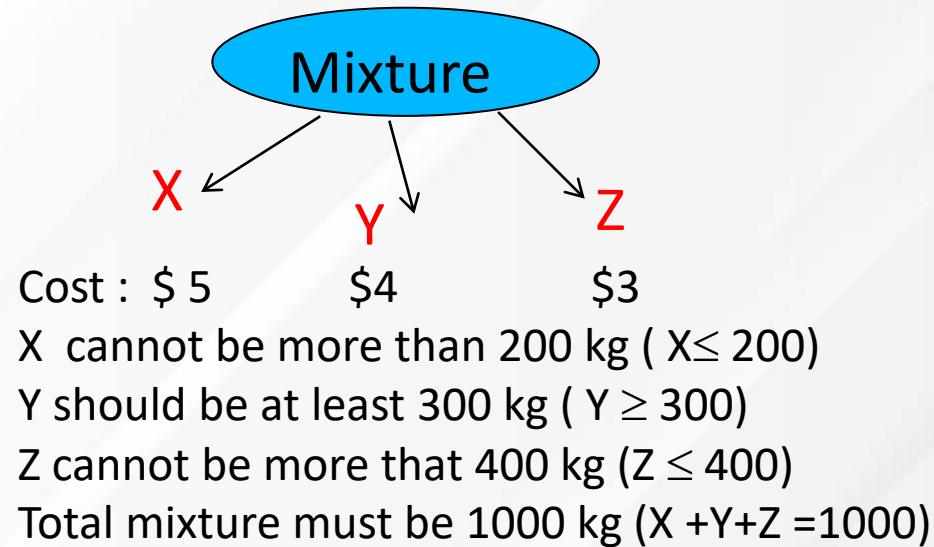
The quantity of X cannot be more than 200 kgs in the mixtures.

The quantity of Y used should be at least 300 kgs.

The content of Z cannot be more than 400 kgs.

Find the optimal combination of the three contents for a mixture of 1000 kgs, so that the total cost is minimum.

Problem Analysis:



LPP Using Excel :

Mathematical Formulation :

For Decision Variables

Let x kg, y kg and z kg of mixture X, Y and Z should be purchased and mix together to form 1000 kg of mixture in order to minimize the cost.

For Objective Function

Total cost = $5x + 4y + 3z$

Let $C = 5x + 4y + 3z$

Minimize $C = 5x + 4y + 3z$

For Constraints

$x \leq 200$ (Mixture X constraint)

$y \geq 300$ (Mixture Y constraint)

$z \leq 400$ (Mixture Z constraint)

$x + y + z = 1000$ (Total Mixture constraint)

$x, y, z \geq 0$

Solve it Now !!!

Tax Calculation Using Excel....

Tax Calculation Using MS - Excel

Write a procedure, **tax**, to calculate (**to the nearest Rupees**) the tax a person owes, depending on his/her yearly income and permissible deductions. Calculate the tax using the table below:

Income Tax rates	
Tax rate	Taxable income
Basic rate 10%	Rs 0 to Rs 75,000
Medium rate 25%	Rs 75,000 to Rs 4,50,000
Higher rate 35%	Rs 4,50,000 to Rs 25,00,000
Additional rate 50%	Over Rs 25,00,000

Calculate the tax calculation for the person having yearly income ,

- i. Rs.38000
- ii. Rs.425000
- iii. Rs.2025000
- iv. Rs.4500000
- v. – (Rs.37,500)

(For Negative value should show error message)

Thank you