

TEACHING NOTES

Tax Retirement Savings Decisions Using an Excel Spreadsheet Approach

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I. SUGGESTED SOLUTIONS

In these teaching notes, we provide the following items: (1) suggested solutions for the 2019 tax year; and (2) a suggested grading rubric. In the supplemental materials, we also include the following files:

- PowerPoint presentation introducing retirement concepts
- PowerPoint presentation of the Excel concepts associated with the case
- PowerPoint presentation of the solutions
- Excel template file with 2018 tax data (starting file for assignment)
- Excel template file with 2019 tax data
- Optional student handout: Excel tips for creating the MFJ formulas
- Updated Excel workbook containing the solutions, as well as correctly performing the analysis for questions 3, 12c, 15, and 16 for the 2019 tax year
- Suggested grading rubric (Excel version)

Solutions (2019 Tax Year)

Update the provided Excel spreadsheet for 2019 tax rates and limitations, and for the “Married Filing Jointly” (MFJ) status. Use the spreadsheet and your knowledge of time value of money concepts to answer the following questions.

Scenario 1

- Jill (25) is single, does not have any dependents, and expects to retire at 60. Her annual salary is \$60,000 per year.
 1. Assuming Jill takes the standard deduction and does **not** make any contributions to any IRA or a 401(k), how much in Federal income taxes will she owe for the current tax year?
\$6,375

We acknowledge the valuable work of the anonymous reviewers, Michaele Morrow (editor), and Valaria P. Vondryk (editor). We also thank Megan Burke for her valuable assistance.

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Please do not make the Teaching Notes available to students or post them on websites.

Supplemental materials can be accessed by clicking the links in Appendix A.

Editor’s note: Accepted by Valaria P. Vondryk.

Submitted: January 2019
Accepted: May 2020
Published Online: August 2020

2. Assuming Jill makes the maximum allowable contributions to a **traditional IRA** and a **401(k)**, how much in Federal taxes will she owe for the current tax year?
\$2,542
3. Assuming Jill makes the maximum allowable contributions to a **Roth IRA** and a **401(k)**, how much in Federal taxes will she owe for the current tax year? (No contribution to a traditional IRA, maximum contribution to a Roth IRA.)
\$3,262
4. If Jill saves a total of \$25,000 per year in her 401(k) (\$19,000) and in her deductible traditional IRA (\$6,000) accounts for the next 35 years (retiring at 60) and her investments grow by 5 percent per year, what will be the future value? (Assume it is an ordinary annuity payment.)
\$2,258,008
5. Based on the future value calculated in question 4 above, and assuming Jill will receive annual payments for 20 years (at the beginning of each year) in retirement, how much annual after-tax income will Jill receive in retirement? (Assume a 20 percent tax bracket and that her retirement investments will grow by 5 percent per year.)
\$138,048
6. If Jill saves a total of \$25,000 per year in her 401(k) (\$19,000) and Roth IRA (\$6,000) accounts for the next 35 years (retiring at 60) and her investments grow by 5 percent per year, what will be the future value? (Assume it is an ordinary annuity payment.)
\$2,258,008
7. Based on the future value calculated in question 6 above, and assuming Jill will receive annual payments for 20 years (at the beginning of each year) in retirement, how much annual after-tax income will Jill receive in retirement? (Assume a 20 percent tax bracket and that her retirement investments grow by 5 percent per year.)
\$146,331
8. Based on your answers above, would you recommend Jill contribute currently to a Roth IRA or traditional IRA? Why? Roth IRA—some mention of the growth within a Roth IRA escaping tax.

Scenario 2

- Zach is 40, married with a non-working spouse (Sarah, 40), has no dependents, and expects to retire at 65. His current salary is \$125,000. He is covered by a retirement plan at Big 4. Sarah is not covered by a retirement plan and has no income for the year.
9. Assuming Zach makes the maximum contribution to his 401(k), how much is Zach eligible to deduct if he contributes to a traditional IRA? (In other words, what is Zach's maximum eligible deductible IRA contribution?)
\$5,100
 10. Assuming Zach makes the maximum contribution to his 401(k), what is the maximum eligible deductible traditional IRA contribution for Sarah?
\$6,000
 11. Assuming Zach makes the maximum contribution to his 401(k) and that Zach and Sarah do **not** contribute to a traditional IRA, what is the maximum amount Zach and Sarah could contribute to a Roth IRA?
\$6,000/\$6,000
 12. How much will Zach and Sarah owe in Federal taxes and how much will be their annual take-home pay (not including State and Employment taxes) if:
 - a. Zach does **not** contribute to an IRA or 401(k) and does **not** make a contribution on behalf of Sarah to a Spousal IRA.
\$13,849/\$111,151
 - b. Zach contributes the maximum amount to both a 401(k) and to a traditional IRA and makes the maximum contribution on behalf of Sarah to a Spousal traditional IRA. The contributions to the traditional IRA are the maximum deductible contribution for which Zach and Sarah are eligible. Zach and Sarah do not make any nondeductible contributions.
\$8,072/\$86,828
 - c. Zach contributes the maximum amount to both a 401(k) and to a Roth IRA and makes the maximum contribution on behalf of Sarah to a Spousal Roth IRA.
\$9,669/\$84,331
 13. Assume Zach and Sarah contribute the maximum deductible amounts you calculated in questions 9 and 10 above, as well as any allowed non-deductible traditional IRA contributions calculated, to a **traditional IRA** annually for the next 25 years. Remember that Zach is 40 years old and will retire when he is 65 (in 25 years) and that he made the

maximum contribution to his 401(k). Assuming a growth rate of 7 percent per year, what will be the future value of their total retirement accounts?

\$1,960,720

14. Based on the future value calculated in question 13 above, and assuming Zach and Sarah will receive annual payments for 20 years (at the beginning of each year) in retirement, how much annual after-tax income will they receive in retirement? (Assume a 25 percent tax bracket and a growth rate of 7 percent per year.)

\$130,224

15. Assume Zach and Sarah contribute the maximum contributions you calculated in question 11 above to a Roth IRA annually for the next 25 years. Remember that Zach made the maximum contribution to his 401(k). Assuming a growth rate of 7 percent per year, what will be the future value?

\$1,960,720

16. Based on the future value calculated in 15 above, and assuming Zach and Sarah will receive annual payments for 20 years (at the beginning of each year) in retirement, how much annual after-tax income will they receive in retirement? (Assume a 25 percent tax bracket and a growth rate of 7 percent per year.)

\$146,467

17. Based on your answers above, would you recommend Zach and Sarah contribute currently to a Roth IRA or traditional IRA? Why?

Roth IRA—some mention of the growth within a Roth IRA escaping tax.

Grading Rubric

The following is a suggested grading rubric.

Item	Points
Questions	
1,2,3,4,5,6,7,8,9,10, 11,13,14,15,16,17 (3 points each)	48
12a, 12b, 12c (4 points each)	12
Excel Workbook	
IRS Data Worksheet: Spreadsheet updated with current tax year rates and limitations	10
Usage of named variables in worksheets	4
Formula correct for the below calculations for MFJ (Tax Calculation Worksheet)	
401(k) Calculations	
Contribution Amount	2
Eligible Contribution	2
Traditional IRA Calculation	
Modified AGI	2
Maximum Eligible IRA Contribution (Employee)	2
Maximum Eligible IRA Contribution (Spouse)	2
Roth IRA Calculations	
Modified AGI	2
Maximum Roth IRA Contribution (Employee)	2
Maximum Roth IRA Contribution (Spouse)	2
Federal Tax Calculation	
Base Amount from Table	2
Federal Tax Bracket	2
Marginal amount applicable to bracket	2
Plus %	2
Total Tax	2
Total Points	100

APPENDIX A

Student_Case: <http://dx.doi.org/10.2308/iace-52857tn.s01>

iace-52857tn_Retirement Concepts: <http://dx.doi.org/10.2308/iace-52857tn.s02>

iace-52857tn_Excel Concepts Review: <http://dx.doi.org/10.2308/iace-52857tn.s03>

iace-52857tn_Solutions: <http://dx.doi.org/10.2308/iace-52857tn.s04>

iace-52857tn_2018 Tax Data: <http://dx.doi.org/10.2308/iace-52857tn.s06>

iace-52857tn_2019 Tax Data: <http://dx.doi.org/10.2308/iace-52857tn.s08>

iace-52857tn_Excel Help with MFJ Formulas: <http://dx.doi.org/10.2308/iace-52857tn.s10>

iace-52857tn_Excel Workbook with Solutions: <http://dx.doi.org/10.2308/iace-52857tn.s11>

iace-52857tn_Grading Rubric: <http://dx.doi.org/10.2308/iace-52857tn.s12>

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