



Tax Season! Slicing Through Tax Brackets

Project Goals:

- 1) Understand how marginal tax rates are calculated using bracket ranges with increasing percentages.
- 2) Create a functional program to calculate someone's 2018 Federal Tax Total and "average" tax as a percentage of your overall income

Standard:

[CCSS.MATH.CONTENT.7.RP.A.3](#)

Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.

Student Guide

Teacher Guide:

Estimated Lesson Time:

We recommend planning 60 minutes for this lesson if your students have some exposure to programming in Scratch.

Start by placing students in groups of 2. One student is in charge of having the student guide directions open and leading the discussion on the concepts being programmed. The second student is in control of creating the code in Scratch. It's often good to have student switch these roles half way between the lesson. (In this case after task 2)

Solutions are linked below and may be displayed after student have had time to wrestle with it themselves. Remember code doesn't always have to match your to be correct.

#CSandMath



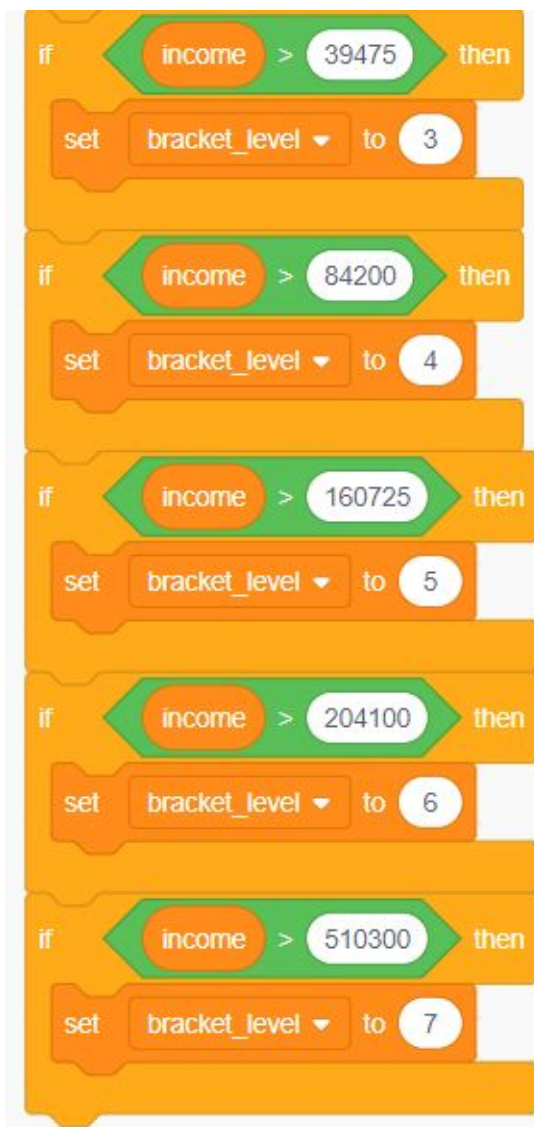
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[Link to the Spreadsheet of Tax Bracket Values](#)

[Link to Online Calculator to check accuracy to Federal Tax](#)

Solutions:

Task 2, Step 2:

A vertical stack of five Scratch code blocks. Each block is an 'if-then' statement. The 'if' part is a green flag icon with the text 'income > [value]'. The 'then' part is an orange 'set' block with the text 'bracket_level to [value]'. The values are: 39475, 84200, 160725, 204100, and 510300. The 'bracket_level' variable is set to 3, 4, 5, 6, and 7 respectively for each threshold.

```
if income > 39475 then
  set bracket_level to 3
if income > 84200 then
  set bracket_level to 4
if income > 160725 then
  set bracket_level to 5
if income > 204100 then
  set bracket_level to 6
if income > 510300 then
  set bracket_level to 7
```

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Task 3

```
when clicked
ask "What was your total taxable income for 2019?" and wait
set income to answer
set federal_tax to 0
Bracket_Level
Calculate_Taxes
```

```
if bracket_level = 4 then
set federal_tax to .24 * income - 84200
change federal_tax by 14382.5
if bracket_level = 5 then
set federal_tax to .32 * income - 160725
change federal_tax by 32748.5
if bracket_level = 6 then
set federal_tax to .35 * income - 204100
change federal_tax by 46620.5
if bracket_level = 7 then
set federal_tax to .37 * income - 510300
change federal_tax by 153790.5
```



Task 4

```
when clicked
ask "What was your total taxable income for 2019?" and wait
set income to answer
set federal_tax to 0
Bracket_Level
Calculate_Taxes
say join "You will pay" join federal_tax "dollars in Federal Income Tax in 2019" for 5 seconds
say join "Your average tax rate will be" join "100 * federal_tax / income" "% for 2019 :)" for 5 seconds
```

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