

Business Mathematics
Class notes
Personal Income Tax (section 13.2)

What is your taxable income? How much do you owe the government?

We will be figuring how much people owe the IRS come tax day.

Finding Your Tax Liability:

Step 1: Find your adjusted gross income (AGI) for the year.

Step 2: Find your taxable income.

Step 3: Find the tax that is due to the government.

Step 4: Check to see if a refund is coming or money is still owed to the government.

We will need some definitions first.



Definition: Adjusted gross income (AGI): This is the salary plus other incomes (royalties, interest earned, dividends, etc.) *minus* adjustments (such as regular IRA (individual retirement account) contributions or alimony payments).

The W-2 form shows a person's paid wages and taxes withheld. The 1099 form may show interest earnings, dividends, or self-employment income.

Definition: Taxable income: This is the AGI minus deductions for personal exemptions (currently \$4,050 for each family member), and the standard deduction (a set amount depending on if you are single, married, head of household, or filing jointly) *or* itemized deductions (for example, interest paid on a house loan, medical expenses, charitable contributions, etc.), whichever is higher.

You always deduct for personal exemptions (currently \$4,050 for each family member). Deduct *whichever is higher* between the standard *or* itemized deductions.

Our formula is



Taxable income = AGI – Personal exemptions deductions – Standard *or* itemized deductions

Now, your **personal income tax** is determined by your **taxable income** using tables that are reminiscent of those tax tables we used in a previous chapter. They are organized by whether you are single, married filing jointly, married filing separately, or head of household.

★ **Definition: Head of household:** This designation is used for single people with other people (dependents) in the household.

2016 Tax Rate Schedules

These do change year to year.

SINGLE

Taxable Income	Find the Tax
\$0–\$9,275	10%
\$9,276–\$37,650	\$927.50 plus 15% of the amount over \$9,275
\$37,651–\$91,150	\$5,183.75 plus 25% of the amount over \$37,650
\$91,151–\$190,150	\$18,558.75 plus 28% of the amount over \$91,150
\$190,151–\$413,350	\$46,278.75 plus 33% of the amount over \$190,150
\$413,351–\$415,050	\$119,934.75 plus 35% of the amount over \$413,350
\$415,051 or more	\$120,529.75 plus 39.6% of the amount over \$415,050

MARRIED FILING JOINTLY

Taxable Income	Find the Tax
\$0–\$18,550	10%
\$18,551–\$75,300	\$1,855 plus 15% of the amount over \$18,550
\$75,301–\$151,900	\$10,367.50 plus 25% of the amount over \$75,300
\$151,901–\$231,450	\$29,517.50 plus 28% of the amount over \$151,900
\$231,451–\$413,350	\$51,791.50 plus 33% of the amount over \$231,450
\$413,351–\$466,950	\$111,818.50 plus 35% of the amount over \$413,350
\$466,951 or more	\$130,578.50 plus 39.6% of the amount over \$466,950

#4.

MARRIED FILING SEPARATELY

Taxable Income	Find the Tax
\$0–\$9,275	10%
\$9,276–\$37,650	\$927.50 plus 15% of the amount over \$9,275
\$37,651–\$75,950	\$5,183.75 plus 25% of the amount over \$37,650
\$75,951–\$115,725	\$14,758.75 plus 28% of the amount over \$75,950
\$115,726–\$206,675	\$25,895.75 plus 33% of the amount over \$115,725
\$206,676–\$233,475	\$55,909.25 plus 35% of the amount over \$206,675
\$233,476 or more	\$65,289.25 plus 39.6% of the amount over \$233,475

HEAD OF HOUSEHOLD

Taxable Income	Find the Tax
\$0–\$13,250	10%
\$13,251–\$50,400	\$1,325 plus 15% of the amount over \$13,250
\$50,401–\$130,150	\$6,897.50 plus 25% of the amount over \$50,400
\$130,151–\$210,800	\$26,835 plus 28% of the amount over \$130,150
\$210,801–\$413,350	\$49,417 plus 33% of the amount over \$210,800
\$413,351–\$441,000	\$116,258.50 plus 35% of the amount over \$413,350
\$441,001 or more	\$125,936 plus 39.6% of the amount over \$441,000

For instance, $tax = 1325 + 0.15 \cdot (taxable\ income - 13,250)$

The book has many examples of the various tax forms (1040 A, W-2, 1099, etc.) that are used. However we will *not* need them for the homework.

expl 1: Find the adjusted gross income (AGI) for this family.

Income from jobs: \$33,650

Interest (earned): \$722

Miscellaneous income: \$375

Dividend income: \$218

Adjustments to income: \$473

We add everything
and then subtract
the adjustments.

Adjustments might
be alimony payments
or IRA contributions.

$$\text{AGI} = \$34,492$$

Finding the Standard Deduction:

Use the following amounts.

\$6,300 for single taxpayers

\$12,600 for married taxpayers filing jointly

\$6,300 for married taxpayers filing separately

\$9,300 for head of household

expl 2: Find the amount of taxable income and the tax owed.

Name and filing status: P. Jong, head of household

Number of exemptions: 4

AGI: \$162,370

Total (itemized) deductions: \$15,800

Is the itemized deductions
amount higher than the
standard deduction for a
head of household?

Use the formula
at the bottom of
page 1.

$$\begin{aligned} \text{taxable income} &= \text{AGI} - \text{personal exempt deduction} \\ &\quad - \text{standard or itemized deduct} \end{aligned}$$

$$= 162,370 - 4 \times 4050 - 15,800$$

$$\text{tax income} = \$139,370$$

Once we know the
taxable income, use
the table from page 2.

$$\begin{aligned} \text{tax due} &= \$26,835 + 28\% \text{ of amt over } \$130,150 \\ &= 26,835 + 0.28 (139,370 - 130,150) \end{aligned}$$

$$\text{tax due} = \$26,896.60$$

expl 3: Diana had an AGI of \$34,975 last year. She had deductions of \$971 for state income tax, \$1,864 for property tax, \$3,820 in mortgage interest, and \$235 in contributions. She claims one exemption and files as a single person. Find the tax she owes by following these steps.

a.) Add her (itemized) deductions. Is the sum more than the standard deduction allowed for a single person?

$$971 + 1864 + 3820 + 235 = \$6,890 \text{ (item. deduct)}$$

So use this itemized deduct.

Is the amount for itemized deductions *higher* than the standard deduction (given on page 3) for a single person?

(more than \$6300 for stand deduct)

b.) Find her taxable income.

Use the formula at the bottom of page 1.

Once we know the taxable income, use the tables on page 2.

tax income

$$= 34975 - 4050 - 6890$$

$$= \$24,035$$

c.) Find the tax owed. Use the reproduced table to circle the appropriate line.

SINGLE

Taxable Income	Find the Tax
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tax owed

$$= 927.50 + 0.15(24035 - 9275)$$

$$= \$3141.50$$

expl 4: Find the tax refund or tax due. Follow these steps. Assume a 52-week year and that married people file jointly. The letter after the name is the person's marital status.

Name and marital status: The Fungs, M

Taxable income: \$38,238

Federal income tax withheld from checks: \$119.27 weekly

a.) Look up the taxable income on the tables on page 2. How much tax is owed?

$$\begin{aligned}\text{tax due} &= 1855 + 0.15(38238 - 18550) \\ &= \$4808.20\end{aligned}$$

b.) They paid, for taxes, \$119.27 weekly for 52 weeks. So how much did they pay in taxes this last year?

$$\text{taxes paid} = 119.27 * 52 = \$6202.04$$

We will compare what they owe to what they have already paid.

c.) So do they owe the government more or are they due a refund? How much?

$$\begin{aligned}6202.04 - 4808.20 \\ &= \$1393.84 \text{ refund}\end{aligned}$$

Worksheet: Ricko's Personal Income Tax:

This worksheet will find Ricko's tax, and whether he owes more or is due a refund, using step-by-step instructions.