Chapter 6 Notes

It is in this chapter that we talk about “the price that everyone must pay to live in a civilized society”: TAXES.

Figure 1

Source: Tax Foundation calculations based on data from the Bureau of Economic Analysis, Congressional Budget Office and Joint Committee on Taxation.
Chapter 6 - Overview

- Taxes is one of the debts that almost all must pay—those who don't and are supposed to, find themselves in major trouble!

- Figure 1 on the slide previous shows “Tax Freedom Day” for the past 30 years

- Notice that the average American pays roughly one-third of their income in taxes

- As some may have noticed in the recent news, taxes play a major role in both budgeting and political debates
Chapter 6, Section 1: Sales Tax
--Objectives--

1) Understand how sales tax is determined

2) Find sales tax and the total sale

3) Find selling price when sales tax is known

4) Find the amount of the sale when the total price including tax is known

5) Define excise tax

6) Find the total cost, including sales and excise tax
Some small stores may still use "tax tables" to figure out the sales tax on an item, but most businesses utilize a cash register that figures it for them.

This is great for them, but you need to know how to find sales tax on your own.

The formula for sales tax is the PBR formula:
\[
\text{Sales Tax} = \text{Sale Amount} \times \text{Tax Rate}
\]
\[
P = B \times R
\]

What is Ohio's sales tax rate? Well, it varies by county—Lancaster's is 6.5%
Example:
Suppose Mike buys a new television for $585.99. Find the sales tax for his purchase if the sales tax 6.2%. What would his total sale be (Sale Price + Sales Tax)?
Now, one trend that we will use throughout this class is finding one of the right side pieces of information in a formula, rather than the left.

Consider the following example:

Suppose sales tax paid on a new Stihl chainsaw is $17.23. If the sales tax rate where the power tool is purchased is 6.45%, find the price that the chainsaw sells for.
Chapter 6, Section 1: Sales Tax
--Objective 4--

Now, recall that if I have 3 pizzas (denote each one by \( p \)), and I add one more, I have 4 total: \( 3p + p = 4p \). This notation and technique is useful for the following reason: If the total price (TP) of an item includes sales tax (ST), then the tax paid depends on the sale price (SP) and the tax rate (R). That is:

\[
TP = SP + ST \\
= SP + R \times SP \\
= (1 + R) \times SP
\]

Thus, we can find the sale price by dividing both sides by \((1 + R)\). Use this technique to find the cost of a piece of farm equipment that had a total price of $32,540 and a sales tax of 5%.
Excise Tax: An additional tax that is charged by state, federal, and/or local governments for items that are not necessarily essential, but require special transit method, trade agreements, etc. Commonly taxed items are gasoline, tires, luxury cars, alcohol, cigarettes, firearms, and more. The tax is not always a percentage rate, sometimes it is a flat rate, and other times it is a combination of the two.
Finally, an example where we find the total price on excised item:

Suppose Kate Wilson needs to buy 4 new tires for her Red, 1988 Case IH 9100 tractor. The sales tax in her county is 7.1%. In addition to a sales tax, there is an excise tax on tires that is prescribed in the following way: Under 30 lbs → No tax; 30 – 55 lbs → $0.23 per pound over 30; 56 – 70 lbs → $5.80 plus $0.40 per pound over 56; and, 71 lbs or more → $12.30 plus $0.52 per pound over 71. If 2 of the tires weigh 45 pounds, and 2 of them weigh 75 pounds, find the total cost of buying the tires.
Chapter 6, Section 1: Sales Tax
--Final Remarks--

Suggested HW exercises:
1 – 28 (p. 225 and 226), 33 – 44 (p. 226 and 227)
Chapter 6, Section 2: Property Tax

--Overview--

Virtually everywhere in the nation, owners of real property—homes and land—pay a property tax every year that is based on the value of their home and their tax rate.

Many areas also tax personal property—boats, mobile homes, and other non-real estate items.

These taxes are used to fund schools, local civil services, parks, and more.
Chapter 6, Section 2: Property Tax
--Objectives--

In this section we will discuss:
1) Understanding fair market value and finding assessed valuation
2) Using the tax rate formula
3) Using the property tax formula
4) Expressing tax rates in percent, dollars per $100, dollars per $1000 and mills
5) Reworking the tax formula to find other values
Chapter 6, Section 2: Property Tax
--Objective 1--

**Fair Market Value:** The appraised value of a home/land which is found by a local official.

**Assessed Valuation:** The taxable amount which is found by multiplying the FMV by a certain percent (the *Assessment Rate*).

Some areas use an AR of 25%, while others use 40%, 60%, or even 100%!

**Example:**
If a home has a FMV of $250,000 and the AR is 50%, the Assessed Valuation of the home is $250,000 \times 0.5 = $125,000.
Chapter 6, Section 2: Property Tax

--Objective 2--

In order for the levying agency to determine the property tax rate, they use the following formula:

Tax Rate = (Total Tax Needed) / (Total Assessed Value)

That is, the agency determines how much revenue they need for their budget divide the amount by the total assessed value of all the taxable properties in the district.

Example
Suppose District 1 needs $685,234 for their annual budget and the total assessed value of District 1 is $30,459,204. Find the tax rate in percentage form, rounded to the nearest tenth of a percent.
Chapter 6, Section 2: Property Tax
--Objective 3--

The property tax for a given property is always found with the PBR method:

\[
P = B \times R
\]

Example:
If a homeowner's property has a FMV of $370,000 and the assessment rate is 65% and the local property tax rate is 4%, then the property tax they would pay is

\[
P = ($370,000 \times 0.65) \times 0.04
\]

\[
= $240,500 \times 0.04
\]

\[
= $9,620.
\]
Chapter 6, Section 2: Property Tax

--Objective 4--

Moving from percentage rates to decimals is nothing new, but Dollars per $100 (referred to as simply Hundreds), Dollars per $1000 (Thousands), and mills (one-thousandth of a dollar) may not be as familiar to you

Hundreds: If the tax rate is given in Hundreds, we need to express the assessed valuation in Hundreds as well. To do this, all we need to do is divide the AV by 100 (move the decimal two places left).

Thousands: Same as with Hundreds, except divide AV by 1000

Mills: To find the property tax when the rate is given in Mills (say 40 mills), divide the AV by 1000 and multiply by the number of Mills
Chapter 6, Section 2: Property Tax
--Objective 4--

Examples:
Find the property tax of a home with FMV of $430,500 and an AR of 80% if the tax rate is
(a) 3.4%
(b) $15.50 per $100
(c) $83.34 per $1000
(d) 57 mills
To find other values, if we know certain parts of our formula, we only need to rearrange the PBR equation.

So, if we know the tax rate and the property tax, the assessed value is given by

\[ AV = \frac{Tax}{Tax\ Rate} \]

All we did was divide both sides by the Tax Rate.

Similarly, if we know the property tax and the assessed value, than the tax rate is given by

\[ Tax\ Rate = \frac{Tax}{Assessed\ Valuation} \]

Here, all we did was divide both sides by the Assessed Valuation.
Chapter 6, Section 2: Property Tax

--Final Remarks--

Suggested HW Problems:
1 – 41 (odds only, p. 232 - 234)
Chapter 6, Section 3: Personal Income Tax

--Overview--

Personal income taxes are one of the most important subjects we discuss for many reasons—what reasons can you think of that they are important?

Personal income tax accounts for roughly 50% of the US government's income...67.3% of that 50% is paid by the wealthiest 10% of Americans while the bottom 50% of income earners only contribute around 3.9%

Many of today's debates in Congress focus on income taxes and how they can be used to save us from our growing national debt

Our current overall debt is over $14 trillion dollars—this works out to each citizen's share being over $45,000. The national debt grows by roughly $4.1 billion dollars each day!
Chapter 6, Section 3: Personal Income Tax

--Overview--

Source: U.S. National Debt Clock
http://www.brillig.com/debt_clock/
While this could never happen, if the federal government had break-even years (no surplus, no deficit) for the next 8 years, and there was an additional 5% tax applied to the 2.5% of Americans who earn more than $250,000 a year, our national debt would disappear.
Chapter 6, Section 3: Personal Income Tax

--Objectives--

We will discuss the following in this section:

1) Determining tax liability and Adjusted Gross Income
2) Standard deduction amounts
3) Tax Rates and finding income tax
4) Using itemized deductions
5) Determining balance due or refund from the IRS

The part of this section deals with preparing a 1040A and a Schedule 1 (tax forms). If you are interested in doing these things, feel free to read over their example and ask me any questions you may have.
Chapter 6, Section 3: Personal Income Tax
--Objective 1--

There are 4 steps to determining an person's tax liability:

1) Find the Adjusted Gross Income
2) Find the taxable income
3) Find the tax
4) Check for a refund or balance due

To find your AGI, you need any W-2 forms and 1099 forms sent to you

W-2 forms deal with income from your employer; 1099 forms are for interest earned, dividends (Ch. 18), and self-employment income

Each form will have boxes for Income Earned, Income Tax paid, SSA tax paid, Medicare paid, etc.
To find your AGI, you need to do the following

1) Add up all wages, dividends, interest earned, unemployment compensation, tips, and other employment compensations

2) From the sum in step 1, subtract any adjustments such as contributions to a regular IRA or alimony payments

Example:
As a manager at Ted's Bargain Bonanza, Nichole earned $31,345.53 last year and another $2,320.11 as a self-employed florist. She also contributed $2,825.00 to her IRA. Find her AGI.
Chapter 6, Section 3: Personal Income Tax
--Objective 2--

After finding your AGI, most taxpayers are almost done with filling out their tax forms.

Next, we must subtract either the standard deduction or itemized deductions (Obj. 4), whichever is greater, from the AGI.

Standard Deductions based on filing status:
- $5,700 for single taxpayers or married persons filing separately
- $8,400 for head of household
- $11,400 for married persons filing jointly

You need to also subtract the TRUE value of personal exemptions.

Personal exemptions are granted for yourself, your spouse, and any dependent children or other dependent.

For each exemption, deduct $3,650—I.E. For 5 exemptions deduct $18,250.
Chapter 6, Section 3: Personal Income Tax
--Objective 3--

To find the tax a person/household owes, we need the AGI, deductions, and exemptions.

Once we know this, we can look in the table at the following website:
http://www.ustaxtips.net/taxrates/taxrates2010.htm

Find the taxable income and tax for the following 2 persons:
1) Jerry Newsom, 2 exemptions, head of household, AGI = $43,852
2) The Eichmans, 7 exemptions, filing jointly, AGI = $134,588.92
Possible Itemized Deductions are:

**Medical/Dental Expenses:** Only expenses greater than 7.5% of AGI. Insurance reimbursements are not deductible

**Taxes:** State, local, real estate, and property taxes can be deducted (not federal or gasoline)

**Interest:** Mortgage interest on primary and qualified secondary residences can be deducted (credit card interest is not deductible)

**Contributions:** Charitable donations can be deducted

Most taxpayers find the standard deduction to far exceed possible itemizations
Chapter 6, Section 3: Personal Income Tax
--Objective 5--

To determine a balance due or refund owed, we need to compare the income tax owed with the income tax paid.

Example:
Determine the balance due or refund owed for the following scenario.
Shelly Myers works at an investment firm and had an AGI of $148,562. Her husband works as an architect and had an AGI of $96,293.04. Shelly had $450 withheld from her pay each week for federal income taxes, and her husband paid $8,905 in income taxes last year. They have 3 daughters that live in their home and the Myers file jointly.

Note that they would file a 1040 since their income is greater than $100,000. Pages 243 and 244 discuss the three 1040 forms and the qualifications for each.
Chapter 6, Section 3: Personal Income Tax

--Overview--

Suggested HW exercises:
1 – 33 (odds, p. 248 - 250)