

## Finance

### Reminder on Percentages:

A percentage represents a proportion of a quantity.

- Write the following percentages in decimal form:

$$12\% = 0.12$$

$$5\% = 0.05$$

$$3,2\% = 0.032$$

$$21,4\% = 0.214$$

- Calculate the percentage of each of the following quantities:

$$15\% \text{ of } \$10000 = 0.15 \times 10\,000 = 1500$$

$$3,5\% \text{ of } \$15000 = 0.035 \times 15\,000 = 525$$

- Increase or decrease the quantities by the given percentages:

$$\text{Increase } 150 \text{ by } 20\% : 1.2 \times 150 = 180$$

$$\text{Increase } 200 \text{ by } 3\% : 1.03 \times 200 = 206$$

$$\text{Decrease } 150 \text{ by } 10\% : 0.9 \times 150 = 135$$

$$\text{Decrease } 200 \text{ by } 5\% : 0.95 \times 200 = 190$$

increase :  $1 + \%$

decrease :  $1 - \%$

### Gross and Net Revenue:

When we have a revenue (income), we must pay taxes or duties to contribute to government expenses for society. We differentiate between net and gross revenue.

**Gross Revenue:** the revenue that someone receives before deductions (taxes).

This includes:

- Base salary: when an employee receives the same amount of money each time they are paid
- Salary per hour: this includes supplementary hours.
- Commissions: when an employee receives a percentage of sales for example
- Bonus
- Reimbursements for travel, accommodation and meals
- Tips

The salary can be paid:

- Monthly = paid 1 time per month (12 times per year)
- Semi-monthly = paid 2 times per month (24 times per year)
- Every 2 weeks (26 times each year)
- Weekly = paid each week (52 times per year)

Examples :

- a) Bob gains 526\$ per week. If he works 50 weeks per year, what is his gross revenue?

$$526 \times 50 = 26300$$

Gross Revenue : \$26300 / year

- b) Morris earns 34.25\$ hour. What is his gross revenue if he works 40 hours per week for 50 weeks every year?

$$34.25 \times 40 \times 50 = 68500$$

Gross Revenue : \$68500 / year

When Morris works <sup>extra time</sup> supplementary hours (after 40h per week), he is paid one and a half times for each hour. What is his gross revenue if he works 43 hours per week?

$$\text{regular hours: } 34.25 \times 40 \times 50 = 68500$$

$$\text{extra time: } 34.25 \times 1.5 \times 3 \times 50 = 7706.25$$

$$\text{Total: } 68500 + 7706.25 = \boxed{\$76206.25}$$

- c) Jill works at a store and gets 8% of sales. If the store sells \$565000 this year, what is her gross revenue?

$$0.08 \times 565000 = 45200$$

Gross Revenue : \$45200

- d) Terry works at a restaurant for 10.45\$ per hour and receives 35\$ in tips every day. If he works 8 hours per day, 3 days a week, what is his gross revenue each week?

$$10.45 \times 8 \times 3 + 3 \times 35 = \underline{\$355.8 / \text{week}}$$

Gross Revenue

- e) Troy has 2 work offers. Store A offers a salary of 10,45\$ per hour. Store B offers 1100\$ per month plus 4% of commissions on his sales. Both stores want Troy working 160 hours per month. How much money in sales does Troy need to make store B's offer more advantageous?

$$\text{Store A: } 10.45 \times 160 = \$1672 / \text{month}$$

$$\text{Store B: } 1100 + 0.04x \quad (x : \text{amount of sales per month})$$

$$1100 + 0.04x = 1672$$

$$0.04x = 572$$

$$x = \frac{572}{0.04} = 14300$$

If he sells more than \$14300 then store B is better.

**Net Revenue:** the revenue that remains after deductions.

The deductions include:

- Taxes
- Employment Insurance (EI)
- Canadian Pension plan (CPP)
- Union fees
- Medical insurance
- Other deductions.

$$\boxed{\text{Net Revenue} = \text{Gross Revenue} - \text{Deductions}}$$

**Ex :** Jasmine is a person that makes 60000\$ per year in C.B. Her provincial and federal taxes are 10 491\$, Pension 2544\$, AE 955\$, Medical insurance 900\$. What is her net revenue every 2 weeks?

$$60\,000 - 10\,491 - 2\,544 - 955 - 900 = \$45\,110 \text{ /year net}$$

$$\frac{45\,110}{26} = \$1\,735$$

Net Revenue : \$1735 every 2 weeks.

**Homework:** worksheet + p. 286 #1-7 (Theory and Problem 10- Mickelson)

## Deductions

All deductions like AE or RPC, except for federal or provincial income tax, are calculated from gross income (often as a percentage).

In this lesson, unless otherwise mentioned, we will use the rates from 2019.

### Federal EI premium rates and maximums

Year	Maximum annual insurable earnings	Rate (%)	Maximum annual employee premium	Maximum annual employer premium
2020	\$54,200	1.58	\$856.36	\$1,198.90
2019	\$53,100	1.62	\$860.22	\$1,204.31

### CPP contribution rates, maximums and exemptions

Year	Maximum annual pensionable earnings	Basic exemption amount	Maximum contributory earnings	Employee and employer contribution rate (%)	Maximum annual employee and employer contribution	Maximum annual self-employed contribution
2020	\$58,700	\$3,500	\$55,200	5.25	\$2,898.00	\$5,796.00
2019	\$57,400	\$3,500	\$53,900	5.10	\$2,748.90	\$5,497.80

Examples :

- a) Angie's gross revenue every two weeks is 1160\$. Calculate the deductions in EI and CPP.

$$\text{Annual Gross Revenue} : 1160 \times 26 = \$ 30160$$

$$\text{Exemption} : 30160 - 3500 = \$ 26660$$

$$\text{CPP} : 0.051 \times 26660 = \$ 1359.66 \quad (\text{less than } \$ 2748.90 \Rightarrow \text{OK!})$$

$$\therefore 1359.66 \div 26 = \boxed{\$ 52.29 \text{ every 2 weeks}}$$

$$\text{EI} : 0.0162 \times 30160 = \$ 488.59 \quad (\text{less than } \$ 860.22 \Rightarrow \text{OK!})$$

$$\therefore 488.59 \div 26 = \boxed{\$ 18.79 \text{ every 2 weeks.}}$$

- b) Lucie's gross revenue every two weeks is 2500\$. Calculate the deductions in EI and CPP by the payment sheet in 2019.

Annual Gross Revenue :  $2500 \times 26 = \$65000$  (more than \$57400)  
 $\therefore$  CPP : \$2748.90 /year i.e \$105.73 every 2 weeks  
 $\$65000 > \$53100$  .. EI \$860.22 /year i.e \$33.09 every 2 weeks

Other deductions before taxes exist, like union fees or personal additional pension plans or other familial deductions.

### Federal and Provincial/Territorial taxes

To calculate taxes on revenue, you must first calculate the taxable income.

This means to calculate the portion of revenue that we will have to pay taxes on.

To find this portion, we must subtract all the deductions before taxes from the gross revenue as well as the personal exemptions.

The federal and territorial/provincial exemptions change each year.

In this lesson, we will use the one from 2019, which is \$11 635 for the federal and \$10 207 for the territorial/provincial one.

Example: Alina gets \$1020 gross per week, but she pays 6.50\$ in union fees and 85\$ towards her pension plan (RRSP). What is her gross taxable revenue?

$$\text{annual gross income: } 1020 \times 52 = 53040$$

$$\text{EI: } 53040 \times 0.0162 = \$ 859.25$$

$$\text{CPP: } (53040 - 3500) \times 0.051 = \$ 2526.54$$

$$\text{other deductions: } (6.5 + 85) \times 52 = \$ 4758$$

$$\begin{aligned} \text{Federal taxable income: } & 53040 - 859.25 - 2526.54 - 4758 - 11635 \\ & = \boxed{\$ 33261.21} \end{aligned}$$

$$\begin{aligned} \text{Territorial taxable income: } & 53040 - 859.25 - 2526.54 - 4758 - 10207 \\ & = \boxed{\$ 34689.21} \end{aligned}$$

The Canadian tax system is a progressive system.

We divide taxable income into several different slices and the tax rate on each slice is different. However, everyone pays the same percentage of tax on each tax slice.

ex : Federal Taxes

2019 Federal tax rates and income thresholds

Annual taxable income (A) More than – Not more than (\$)	Rate (R)	Constant (\$) (K)
0 – 47,630	0.150	0
47,630 – 95,259	0.205	2,620
95,259 – 147,867	0.260	7,859
147,867 – 210,371	0.290	12,209
210,371 – and over	0.330	20,704

ex : Territorial or Provincial Taxes

Yukon

6.4% on the first \$47,630 of taxable income, +  
 9% on the next \$47,629, +  
 10.9% on the next \$52,408, +  
 12.8% on the next \$352,333, +  
 15% on the amount over \$500,000

British Columbia

5.06% on the first \$40,707 of taxable income, +  
 7.7% on the next \$40,709, +  
 10.5% on the next \$12,060, +  
 12.29% on the next \$20,030, +  
 14.7% on the next \$40,394, +  
 16.8% on the amount over \$153,900

The more money we make, the more taxes we pay.

Examples :

a) Determine the provincial and federal taxes on an imposable revenue of 70 000 \$ in CB.

$$\begin{array}{l} \text{Federal : } 47630 \times 0.15 = 7144.50 \\ \quad \underbrace{22370}_{70000 - 47630} \times 0.205 = 4585.85 \end{array} \quad \left. \vphantom{\begin{array}{l} \text{Federal : } 47630 \times 0.15 = 7144.50 \\ \quad \underbrace{22370}_{70000 - 47630} \times 0.205 = 4585.85 \end{array}} \right\} \boxed{\$ 11\,730.35}$$

$$\begin{array}{l} \text{Provincial : } 40707 \times 0.0506 = 2059.77 \\ \quad \underbrace{29293}_{70000 - 40707} \times 0.077 = 2255.56 \end{array} \quad \left. \vphantom{\begin{array}{l} \text{Provincial : } 40707 \times 0.0506 = 2059.77 \\ \quad \underbrace{29293}_{70000 - 40707} \times 0.077 = 2255.56 \end{array}} \right\} \boxed{\$ 4315.33}$$

b) Determine the territorial and federal taxes on an imposable revenue of 70 000 \$ in Yukon.

$$\text{Federal : same : } \boxed{\$ 11\,730.35}$$

$$\begin{array}{l} \text{Territorial : } 47630 \times 0.064 = 3048.32 \\ \quad \underbrace{22370}_{70000 - 47630} \times 0.09 = 2013.30 \end{array} \quad \left. \vphantom{\begin{array}{l} \text{Territorial : } 47630 \times 0.064 = 3048.32 \\ \quad \underbrace{22370}_{70000 - 47630} \times 0.09 = 2013.30 \end{array}} \right\} \boxed{\$ 5061.62}$$

**Tax Credits :**

There are situations where you can get some money back. We won't cover it in this lesson.

**Homework:** worksheet

**Calculating Net Income:**

This is a simplified version because there are a multitude of exceptions and special cases that we will not take into consideration...

In order to calculate net income, we must calculate all of the deductions.

1. Determine the Annual Gross Income
2. Determine EI and CPP
  - don't forget the exemption for CPP
  - don't forget to look at the max values
3. Determine the other deductions before taxes
  - (union fees, addition pension plans..)
  - make sure everything is annual
4. Federal Taxes
  - Federal Taxable Income
    - = Gross – EI – CPP – other deduction – federal personal exemption
  - Then use the federal tax brackets
5. Territorial or Provincial Income taxes
  - Territorial Taxable Income
    - = Gross – EI – CPP – other deduction – territorial personal exemption
  - Then use the territorial tax brackets

$\text{Net} = \text{Gross} - \text{EI} - \text{CPP} - \text{deductions before taxes} - \text{Territorial and Federal Taxes}$
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**Examples:**

a) Matisse lives in BC. Elle gets \$27.80 per hour and works 37.5 hours every week. She pays 5% of her earnings to her company's pension plan and \$960 each year in union fees. Determine her net revenue if she works 50 weeks a year.

- Gross revenue :  $27.80 \times 37.5 \times 50 = \$52125$

- CPP :  $(52125 - 3500) \times 0.051 = \$2479.88$

- EI :  $52125 \times 0.0162 = \$844.43$

- Other deductions before taxes :  $960 + 0.05 \times 52125 = \$3566.25$

- Federal taxable income :  $52125 - 2479.88 - 844.43 - 3566.25$   
 $- 11635 = \$33599.44$

- Federal taxes :  $33599.44 \times 0.15 = \$5039.92$

- Provincial taxable income :  $52125 - 2479.88 - 844.43 - 3566.25$   
 $- 10207 = \$35027.44$

- Provincial taxes :  $35027.44 \times 0.0506 = \$1772.39$

NET REVENUE

$$52125 - 2479.88 - 844.43 - 3566.25 - 5039.92 - 1772.39$$

$$= \boxed{\$38422.13}$$

5042

b) Nellie lives in Yukon. She gets a gross monthly salary of ~~\$3425~~ 5042. Each month, in addition to mandatory payments to EI et CPP, she pays \$45 in union fees and \$225 towards an additional pension plan. Determine her monthly net revenue.

• Gross Revenue:  $5042 \times 12 = \$ 60504$

• CPP: \$ 2748.90 (max)

• EI: \$ 860.22 (max)

• Other deductions before taxes:  $(45 + 225) \times 12 = \$ 3240$

• Federal taxable income:  $60504 - 2748.90 - 860.22 - 3240 - 11635$   
 $= \$ 49219.88$

Federal taxes:  $47630 \times 0.15 + 1589.88 \times 0.205 = \$ 7470.43$

• Territorial taxable income:  $60504 - 2748.90 - 860.22 - 3240 - 10207$   
 $= \$ 50647.88$

Territorial taxes:  $47630 \times 0.064 + 3017.88 \times 0.09 = \$ 3319.93$

**NET REVENUE**

$60504 - 2748.90 - 860.22 - 3240 - 7470.43 - 3319.93$

$= \$ 50064.52$

monthly:  $\frac{50064.52}{12} = \$ 4172.04$

Note: Since taxes are taken before you receive your salary, it is not always possible to know the credits that you are intitled to. Therefore, at the end of each year, your tax return will ensure that you haven't paid too much (or too little) and will allow you to be reimbursed the difference...

**Homework** : worksheet