KEY

Foundations of Math & Pre-Calculus 10
Chapter 8 ~ Financial Literacy

Lesson F1 ~ Calculate Gross Pay for Various Types of Income

Ways of Earning Income

hourly wage	a fixed payment for each hour of work Examples: store clerk, fast-food restaurant worker
wage and tips	an hourly wage plus varying amounts in tips for services provided Examples: taxi driver, hotel worker
salary	a regular fixed payment for work, usually expressed as an amount per year but paid regularly (e.g., every two weeks or monthly) Examples: firefighter, teacher
commission	a payment based on a percentage of the worker's sales Examples: real estate agent, car salesperson
royalty	a payment for a piece of work that is marketed and sold. The amount is based on a percentage of sales Examples: author, musician
piecework	a payment based on the number of items created or completed Examples: sewing machine operator, cable TV installer
contract	a payment for a fixed period of time and/or a fixed amount of money Examples: electrical contractor, editor

Remember:

- There are 365 days or 52 weeks per year.
- Annual means per year.
- A month has between 4 and 5 weeks…so you will need to find annual income before you can find monthly income.
- Semi-monthly means twice per month and 24 times per year (2 x 12).
- Bi-weekly means every two weeks and 26 times per year (52 ÷ 2).
- There are 60 minutes in an hour…so 42 minutes is $\frac{42}{60} = 0.7$ hours.

Wages and Salaries

1) A person earns \$12.40 per hour and works 32 hours a week. Determine the:
   a. gross weekly earnings.
   $12.40 \times 32 = \$396.80$
   b. gross annual earnings
   $396.80 \times 52 = \$20\,633.60$
   c. gross monthly earnings
   $20\,633.60 \div 12 = \$1719.47$

2) A person earns \$17.95 per hour and works 37.5 hours a week. Determine the:
   a. gross weekly earnings.
   $17.95 \times 37.5 = \$673.13$
   b. gross annual earnings
   $673.13 \times 52 = \$35\,002.76$
   c. gross monthly earnings
   $35\,002.76 \div 12 = \$2916.90$

3) A person works full time in a salaried position and gets paid \$1240 semi monthly. Determine the annual income.
   $1240 \times 24 = \$29\,760$
   ↑
   # of pay periods in one year
   (2×12)

4) A person works full time in a salaried position and earns \$1080 bi weekly. Determine the annual income.
   $1080 \times 26 = \$28\,080$
   ↑
   # of pay periods in one year
   $(52 \div 2)$

5) A person works full time in a salaried position and earns \$2850 bi-weekly. Determine the average monthly income.
   $2850 \times 26 = \$74\,100$ / year
   $74\,100 \div 12 = \$6175$ / month

6) A person earns \$1300 a week and works 20 hours a week. Determine his hourly pay.
   $\frac{\text{pay} \times \cancel{26}}{\cancel{26}} = \frac{1300}{20}$
   pay = \$65/hour

7) A person earns \$13852.80 a year and works 18 hours a week. Determine his hourly pay.
   $13852.80 \div 52 = \$266.40$/week
   $266.40 \div 18 = \$14.80$/hour

8) A person is paid time and a half overtime pay when she works more than 8 hours in a day. Her regular wage is \$18.00. Determine her overtime hourly wage and the amount she is paid if she works 10 hours in one day.
   $8 \times 18 = \$144$ reg. pay
   $18 \times 1.5 = \$27$/hour OT
   $2 \times 27 = \$54$ OT pay
   $144 + 54 = \$198$

9) A person is paid time and a half overtime when he works more than 8 hours in a day. His regular wages are $17.30. Determine his overtime hourly wage and the amount he earns if he works 11.75 hours in one day.

$17.30 \times 1.5 = \$25.95$ /hour

$(8 \times 17.30) + (3.75 \times 25.95)$

$= \$235.71$

10) A person is paid time and a half overtime when he works more than 8 hours in a day. His regular wages are $14.95. He works 10.25 hours per day, 5 days per week. Determine his daily, weekly, annual, and monthly incomes.

$(8 \times 14.95) + (2.25 \times 14.95 \times 1.5) = \$170.06$/day

$170.06 \times 5 = \$850.30$/week

$850.30 \times 52 = \$44\,215.60$/year

$44\,215.60 \div 12 = \$3684.63$/month

11) A person earns $17.90 per hour. She does such a great job, her boss gives her a 3.5% raise. Determine her new hourly wage.

$17.90 \times 0.035 = \$0.63$ raise

$17.90 + 0.63 = \$18.53$/hour

12) A person has an annual salary of $68400. He does such a poor job, his boss gives him a 2.7% pay cut. Determine his new annual wage.

$68\,400 \times 0.027 = \$1846.80$ cut

$68\,400 - 1846.80 = \$66\,553.20$

13) A person has an hourly wage, plus time and a half for all hours over 8 in a day. One day she works 11 hours and earns $178.13. Determine her regular hourly wage

$(8 \times \text{pay}) + (3 \times \text{pay} \times 1.5) = 178.13$

$(8 \times \text{pay}) + (4.5 \times \text{pay}) = 178.13$

$\frac{\cancel{12.5} \times \text{pay}}{\cancel{12.5}} = \frac{178.13}{12.5}$

pay $= \$14.25$ /hour

BONUS:

14) A person has 2 after school jobs with 2 different hourly wages. One week he works 12 hours at job A and 7 hours at job B and earns $271.40. The next week he works 8 hours at job A and 15 hours at job B and earns $344.20. Determine the 2 hourly wages.

Let A = hourly wage @ Job A
B = hourly wage @ Job B

Then $(12A + 7B = 271.40) \times 2$
$(8A + 15B = 344.20) \times 3$

$$\begin{array}{r} 24A + 14B = 542.80 \\ -(24A + 45B = 1032.60) \\ \hline -31B = -489.80 \end{array}$$

$\frac{-\cancel{31}B}{-\cancel{31}} = \frac{-489.80}{-31}$

$B = \$15.80$/hour

$12A + 7(15.80) = 271.40$

$12A = 160.80$

$A = \$13.40$/hour

Pay Sheet Practice

1. Jim earns $10.50 per hour, plus time and a half for all hours over 40 in one week. Determine his gross pay for the week.

M	T	W	T	F	S	S	Reg Hours	OT Hours	Gross Pay
7	5	0	0	8	4	5	29	0	

29 x 10.50 = $304.50

2. Betty earns $12.75 per hour, plus time and a half for all hours over 40 in one week. Determine her gross pay for the week.

M	T	W	T	F	S	S	Reg Hours	OT Hours	Gross Pay
8	8	8	10	9	0	4	40	7	

(40 x 12.75) + (7 x 12.75 x 1.5) =

$643.88

3. Rebecca earns $9.15 per hour, plus time and a half for all hours over 40 in one week. Determine her gross pay for the week.

M	T	W	T	F	S	S	Reg Hours	OT Hours	Gross Pay
9	10.25 10h15min	12	11.25 11h15min	13	5.5 5h30min	6	40	27	

(40 x 9.15) + (27 x 9.15 x 1.5) =

$736.58

4. Karen earns $32.58 per hour, plus time and a half for all hours over 40 in one week. Determine her gross pay for the week.

M	T	W	T	F	S	S	Reg Hours	OT Hours	Gross Pay
8h 30min	8h 15min	7h 45min	7h 45min	0	6h 45min	7h 15min	40	6.25	
8.5	8.25	7.75	7.75		6.75	7.25			

$(40 \times 32.58) + (6.25 \times 32.58 \times 1.5)$

$= \$1608.64$

5. Wanda earns $14.25 per hour, plus time and a half for all hours over 40 in one week. Determine her gross pay for the week.

M	T	W	T	F	S	S	Reg Hours	OT Hours	Gross Pay
5h 20min	7h 10min	8h 5min	6 40m	9h 35min	0	5h 50min	40	$2.\bar{6}$	

160 min = $2.\bar{6}$ h

$(40 \times 14.25) + (2.\bar{6} \times 14.25 \times 1.5)$

$= \$627$

BONUS:

6 Wendy earns $17.85 per hour, plus time and a half for all hours over 40 in one week. Determine her gross pay for the week.

Day	M	T	W	T	F	S	S
Start	7:53am	8:04am	10:37am		9:43am	10:08am	11:56am
Finish	4:12pm	3:51pm	7:19pm		10:25pm	9:16pm	4:42pm
Hours	8 h 19 min	7 h 47 min	8 h 42 min		12 h 42 min	11 h 8 min	4 h 46min

50 h 204 min

= 50 h + 3.4 h

= 53.4 h = 40 + 13.4

$(40 \times 17.85) + (13.4 \times 17.85 \times 1.5) = \$1072.79$

Alternative Ways to Earn Money

1) A ~~sales~~ person earns a 5% commission on his sales. One week he has \$2800 in sales. Determine his gross income.

$2800 \times 0.05 = \$140$

2) A sales person earns a 3.8% commission on her sales. One week she has \$18700 in sales. Determine her gross annual and monthly income, assuming she sells the amount each month.

$18700 \times 0.038 = \$710.60$ /week

$710.60 \times 52 = \$36\,951.20$ /year

$36\,951.20 \div 12 = \$3079.27$ /month

3) A sales person earns a 4.7% commission on his sales, plus a base salary of \$200 per week. One week he has \$23000 in sales. Determine his gross income for the week.

$23000 \times 0.047 = \$1081$

$1081 + 200 = \$1281$

4) A sales person earns a 2.04% commission on his sales, plus a base salary of \$8 per hour. One week he has \$32700 in sales and works 26 hours. Determine his gross income for the week.

$32700 \times 0.0204 = \$667.08$

$26 \times 8 = \$208$

$667.08 + 208 = \$875.08$

5) A sales person earns a 0.47% commission on his sales, plus a base salary of \$11 per hour, plus time and a half for hours over 40 in a week. One week he has \$89436 in sales and works 48 hours. Determine his gross income for the week.

$89\,436 \times 0.0047 = \$420.35$

$(40 \times 11) + (8 \times 11 \times 1.5) = \$572$

$420.35 + 572 = \$992.35$

BONUS:

6) A sales person earns a commission on her sales, plus \$12.80 per hour, plus time and a half for hours over 40 in a week. One week she works 43 hours and has \$21 872 in sales and earns \$853.94. Determine her commission percentage.

$(40 \times 12.80) + (3 \times 12.80 \times 1.5) = \$569.60$

$853.94 - 569.60 = \$284.34$

$\dfrac{\cancel{21\,872} \times \text{percent}}{\cancel{21\,872}} = \dfrac{284.34}{21\,872}$

$0.013 = \text{percent}$

$\times 100$

$= 1.3\%$

7) A person repairs electronic gadgets. He gets $25 per gadget he fixes, plus $8.75 per hour. One day he works 7h42min and fixes 9 gadgets. Determine his gross pay for the day.

$25 \times 9 = \$225$

$\frac{42}{60} = 0.7$ h

$7.7 \times 8.75 = \$67.38$

$225 + 67.38 = \$292.38$

8) A salesperson gets a 2.08% commission, plus an hourly wage of $12.65 per hour, plus time and a half for hours over 40 in a week. One week he works 47 hours and 37 minutes and has $46 984 in sales. Determine his weekly and monthly incomes, assuming he works and sells the same every week.

$\frac{37}{60} = 0.61\overline{6}$ h

$46\,984 \times 0.0208 = \$977.27$

$(40 \times 12.65) + (7.61\overline{6} \times 12.65 \times 1.5)$
$= \$650.53$

$977.27 + 650.53 = \$1627.80$/week

$1627.80 \times 52 \div 12 = \$7053.80$/month

BONUS:

9) A person is offered 2 jobs. Job A pays $14.75 per hour and he would work 35 hours per week. Job B pays a 2.8% commission on sales. How much would he need to sell at job B to earn more in a week?

$35 \times 14.75 = \$516.25$

$\frac{\text{sales} \times \cancel{0.028}}{\cancel{0.028}} = \frac{516.25}{0.028}$

sales = $18 438

10) A salesperson earns a 2% commission on her sales. She wants to make $1200 per week. How much will she need to sell?

$\frac{\text{sales} \times 0.02}{0.02} = \frac{1200}{0.02}$

sales = $60 000

BONUS:

11) A salesperson earns a 1.35% commission on his sales. He wants to make $80000 per year. How much will she need to sell every month?

$80\,000 \div 12 = \$6666.67$/month

$\frac{\text{sales} \times 0.0135}{0.0135} = \frac{6666.67}{0.0135}$

sales = $493 827.16

BONUS:

12) A salesperson earns a 0.25% commission on his sales. He wants to make $6500 per month. How much will he need to sell every week?

$6500 \times 12 \div 52 = \$1500$/week

$\frac{\text{sales} \times \cancel{0.0025}}{\cancel{0.0025}} = \frac{1500}{0.0025}$

sales = $600 000

Assignment 8.1

1) Jimmy earns $13.85 per hour, plus time and a half for hours over 40 in a week. One week he works 46.25 hours. Determine his:

   Gross weekly income

   Gross Annual Income

   Gross Monthly Income

2) Jimmy earns $16.38 per hour, plus time and a half for hours over 40 in a week. One week he works 43h35m. Determine his:

   Gross weekly income

   Gross Annual Income

   Gross Monthly Income

OMIT

3) Jimmy works 28h24m one week and earns $536.76. Determine his hourly pay.

4) Jimmy works 35 hours per week and is paid $970.67, semi monthly. Determine his hourly pay.

5) Jimmy has an annual salary of $42 800. He receives a 3.5% raise. Determine his new bi-weekly income.

6) Jimmy has an hourly wage, plus time and a half for hours over 40 in a week. One week he works 45h36m and earns $600.16. Determine his hourly wage.

7) Jimmy has 2 after school jobs with different hourly wages. One week he works 13 hours at job A and 5 hours at job B and earns $275.90. The next week he works 10 hours at job A and 12 hours at job B and earns $348.40. Determine the 2 hourly wages.

8) Jimmy works as a salesman and earns a 3.25% commission on his sales, plus 12.80 per hour, plus time and a half for hours over 40 in a week. One week he has $56 872 in sales and works 42h15min. Determine his gross weekly and monthly pay.

OMIT

9) Jimmy is a salesman and earns a 1.86% commission on his sales. He wants to make $80 000 in a year. How much must he sell every week?

10) Jimmy is offered 2 jobs. Job A pays $18.45 per hour and he would get 36 hours per week. Job B pays a 2.03% commission on sales, plus $10.40 per hour and he would get 25 hours per week. How much would he need to sell at job B in order to make more money at that job?

Lesson F2 ~ Calculate Income Tax, Other Deductions, and Net Pay

Standard Government Deductions

Income Tax	a portion of an employee's earnings that federal and provincial governments use to provide services
Employment Insurance (EI)	a fund that provides a source of income to people who lose their jobs (through no fault of their own) while they look for a new job
Canada Pension Plan (CPP)	a government fund that provides a monthly pension to workers when they retire

Optional Deductions

Company Pension Plan	a fund that provides a company pension during retirement, in addition to CPP
Company Health Plan	a plan for medical expenses not covered by other government health care plans
Life Insurance	a plan that pays a sum of money to a family member or designated beneficiary in the case of an employee's death
Disability Insurance	a plan that provides a source of income when an employee is injured and unable to work
Union Dues	a deduction made when an employee belongs to a union. Unions negotiate wages, benefits, and working conditions with employers.
Payroll Savings	an option for employees to make a regular contribution to a savings plan, such as Canada Savings Bonds
Charitable Donations	an option for employees to make a regular donation to a charity

Payroll Deductions and Net Pay

1) A person has a weekly income of $970. Determine their CPP contribution.

$44.68

2) A person has a weekly income of $1187.46. Determine their EI contribution.

$22.32

3) A person has a weekly income of $1473.98. They are claim code 1. Determine their Federal tax deduction.

$218.05

4) A person has a weekly income of $1514.03. They are claim code 6. Determine their Provincial tax deduction.

$75.75

5) A person has a weekly gross income of $972.28. They are claim code 3. Determine their :

a. CPP contributions

$44.80

b. EI contributions

$18.28

c. Federal tax deduction

$98.70

d. Provincial tax deduction

$39.80

e. total deductions

$201.58

f. Net Income

$770.70

6) A person has a weekly gross income of $923.89. They are claim code 0. Determine their :

a. CPP contributions

$42.40

b. EI contributions

$17.37

c. Federal tax deduction

$130.60

d. Provincial tax deduction

$48.60

e. total deductions

$238.97

f. Net Income

$684.92