

2.1 Net Income and Deductions

Focus: Solving fractions and percents

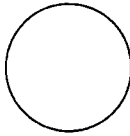
**Chapter
2****Warm Up**

1. Shade the given amount of each figure.

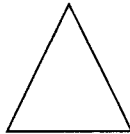
a) $\frac{1}{5}$



b) 75%



c) 0.5



2. Complete the table.

Fraction	$\frac{1}{2}$	$\frac{\square}{\square}$	$\frac{\square}{\square}$
Percent		25%	
Decimal			0.75

3. a) What is half of 80?

b) What is $\frac{1}{4}$ of 80?

c) What is $\frac{3}{4}$ of 80?

4. Petar scored 56 out of 80 on a Geography quiz.

- a) Did he pass?

YES NO

- b) What is the lowest passing mark, if 50% is a pass?

- c) What score did he get, expressed as a percent?

5. Petar's score on the quiz as a percent will be a little _____ than _____%.

6. Make each fraction equivalent.

$$\frac{56}{80} = \frac{\square}{20} = \frac{\square}{100}$$

Skills Practice 2: Fractions and Percents

A fraction just means that you're working with part of a larger something. You use fractions all the time and you may not realize how easy they can be to work with!

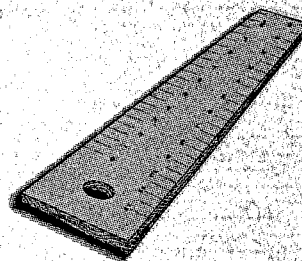
There are 12 inches in a foot. How long is half a foot? _____

What's $\frac{3}{4}$ of a dollar? _____

How long is 1 quarter of an hour? _____

How long is an hour and a half? _____

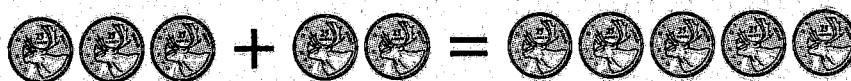
Those are all fractions.



One way to make fractions easier to work with is to relate them to something that you understand well.

The directions to your friend's house say to drive $\frac{3}{4}$ of a kilometre, turn left, and drive another $\frac{1}{2}$ kilometre. How many kilometres are you from your friend's house?

$\frac{3}{4}$ and $\frac{1}{2}$ can easily be represented with money.



Five quarters equals one and a quarter dollars,

so $\frac{3}{4}$ km + $\frac{1}{2}$ km = $1\frac{1}{4}$ km.

1. Solve the following.

a) $\frac{1}{4} + \frac{1}{2} =$ _____

b) $1\frac{1}{2} + 2\frac{3}{4} =$ _____

c) $\frac{3}{4} - \frac{1}{2} =$ _____

d) $\frac{3}{10} + \frac{1}{2} =$ _____

e) $2 - \frac{1}{2} =$ _____

f) $\frac{1}{2} + \frac{1}{8} =$ _____

Percents are just a type of fraction. The word "percent" means "for each 100."

So, 70% on a test means $\frac{70}{100}$.

What would your percent be if your test score was $\frac{14}{20}$?

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In Chapter 1, you learned how to use a calculator to find one number as a percent of another. (For help, refer back to the Tech Tip on p. 10)

$\frac{14}{20} = \underline{\hspace{1cm}}\%$. This means that if the test was worth 100 marks, you would have got $\underline{\hspace{1cm}}$ of the marks.

2. Convert the following.

a) $5\% = \frac{\boxed{}}{\boxed{}}$

b) $14\% = \frac{\boxed{}}{\boxed{}}$

c) $20\% = \frac{\boxed{}}{\boxed{}}$

3. $60\% = \frac{60}{100}$, which also equals $\frac{6}{10}$, and $\frac{3}{5}$.

Express each of the fractions in #2 as a different, but equal, fraction.

a)

b)

c)

Gross Pay, Deductions, and Net Pay

Go to pages 1–6 to write definitions for **net pay** and **take-home pay** in your own words.

- **Net pay** is gross pay after all deductions have been taken off.
- Net pay is also called **take-home pay**.

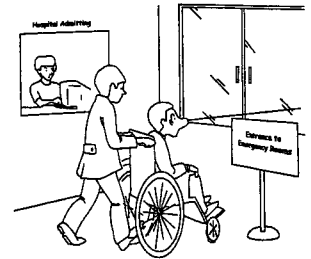
1. Survey the members of your class to determine the difference between how much students earn and the actual amount of each pay that they receive. The first row is completed as an example.

Student	Hours Per Week	Hourly Pay Rate	Pay Frequency	Gross Pay	Net Pay
Paige	20	\$8.50	bi-weekly	\$340	\$315
a) _____					
b) _____					
c) _____					

2. Calculate the percent of their gross income that each student in #1 receives as net pay. The first one is done as an example.

Student	Gross Pay	Net Pay	Deductions	Net Pay (% of Gross Pay)	Deductions (% of Gross Pay)
Paige	\$340	\$315	\$25	$315 \div 340\%$ $= 93\%$	$25 \div 340\%$ $= 7\%$
a) _____					
b) _____					
c) _____					

- The primary deductions from an employee's income are contributions to
 - the **Canada Pension Plan (CPP)**, which provides income for retired workers;
 - Employment Insurance (EI)**, which provides income for unemployed workers while they look for new jobs; and
 - federal and provincial income tax**, which are taxes on income that pay for federal and provincial services such as health care, education, and national defence.
- Gather information about these government deductions and answer the following questions.



Go to pages 1–6 to write definitions for **Canada Pension Plan (CPP)**, **Employment Insurance (EI)**, **federal income tax**, and **provincial income tax** in your own words.

3. a) Who pays into the Canada Pension Plan?

- b) What percent of an employee's gross income is the CPP contribution? _____

- c) What is the maximum amount that an employee is required to contribute to the Canada Pension Plan in 1 year? _____

- d) Who is eligible to collect from the Canada Pension Plan?



For information about CPP, EI, and provincial and federal tax rates, go to www.mcgrawhill.ca/workplace11 and follow the links.



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4. a) What is the EI plan?

b) What percent of an employee's gross income is the EI contribution? _____

c) What is the maximum amount that an employee may be required to contribute to Employment Insurance in 1 year? _____

d) Who is eligible to collect EI?

e) What is the maximum length of time that someone can collect Employment Insurance? _____

5. a) What is income tax and what does it pay for?

b) Who pays income tax?

c) Is there a maximum amount that an employee might be required to pay in income tax in 1 year? _____

d) An employee earning under \$ _____ per year is not required to pay income tax.

Date _____

- e) The percent of gross income that is deducted for income tax usually depends on the amount earned. Different ranges of income have different amounts of taxes deducted. Complete the following tables.

For information about taxable income and provincial and federal tax rates, go to www.mcgrawhill.ca/workplace11 and follow the links.



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Range of Annual Gross Income	Percent of Taxable Income Going to Federal Income Tax
from \$0 to \$	
from \$ to \$	
from \$ to \$	
Income over \$	

Range of Annual Gross Income	Percent of Taxable Income Going to Provincial Income Tax
from \$0 to \$	
from \$ to \$	
from \$ to \$	
Income over \$	

Check Your Understanding

1. Marc has a gross income of \$760 every 2 weeks. His net income is \$683.

- a) What deductions does Marc probably have taken off his gross pay?

- b) What percent of his gross income does Marc take home? Show your calculator keystroke sequence and your answer.

- c) What percent of his gross income does Marc have deducted? Show your calculator keystroke sequence and your answer.

2.2 Approximating Net Income

Focus: estimating fractions and percents

Warm Up

1. Shade the given amount of each figure.

a) 80%

b) 75%

2. Complete the table.

Fraction	$\frac{3}{4}$	<div><div></div><div></div></div>	<div><div></div><div></div></div>
Percent		20%	
Decimal			0.16

3. Solve without a calculator.

a) 14% of \$100 = \$

b) 14% of \$200 = \$

4. Martine wants to score at least 70% on her next math quiz. If the quiz is worth 30 marks, at least how many marks must she get?

Finding Net Income

1. Complete the following table.

Annual Earnings	Earnings Per Pay: Weekly	Earnings Per Pay: Bi-weekly	Earnings Per Pay: Semi-monthly	Earnings Per Pay: Monthly
a) \$24 000				
b) \$37 520				
c) \$63 800				

Skills Practice 3: Reading EI Tables

An employee earning \$8.75/h and working 40 hours/week will have a weekly gross income of \$350.

Employment Insurance Premiums

Insurable Earnings		EI premium	
From - De	To - A	From - De	To - A
345.28	-	385.28	6.22
345.84	-	385.84	6.23
346.39	-	386.39	6.24
346.95	-	386.95	6.25
347.50	-	387.50	6.26
348.06	-	388.06	6.27
348.62	-	388.62	6.28
349.17	-	389.17	6.29
349.73	-	389.73	6.30
350.28	-	390.28	6.31
350.84	-	390.84	6.32
351.39	-	391.39	6.33
351.95	-	391.95	6.34
352.50	-	392.50	6.35
353.06	-	393.06	6.36
353.62	-	393.62	6.37
354.17	-	394.17	6.38
354.73	-	394.73	6.39

Insurable Earnings		EI premium	
From - De	To - A	From - De	To - A
425.28	-	425.28	6.94
425.84	-	425.84	6.95
426.39	-	426.39	6.96
426.95	-	426.95	6.97
427.50	-	427.50	6.98
428.06	-	428.06	6.99
428.62	-	428.62	7.00
429.17	-	429.17	7.01
429.73	-	429.73	7.02
430.28	-	430.28	7.03
430.84	-	430.84	7.04
431.39	-	431.39	7.05
431.95	-	431.95	7.06
432.50	-	432.50	7.07
433.06	-	433.06	7.08
433.62	-	433.62	7.09
434.17	-	434.17	7.10
434.73	-	434.73	7.11

Insurable Earnings		EI premium	
From - De	To - A	From - De	To - A
425.28	-	425.28	7.66
425.84	-	425.84	7.67
426.39	-	426.39	7.68
426.95	-	426.95	7.69
427.50	-	427.50	7.70
428.06	-	428.06	7.71
428.62	-	428.62	7.72
429.17	-	429.17	7.73
429.73	-	429.73	7.74
430.28	-	430.28	7.75
430.84	-	430.84	7.76
431.39	-	431.39	7.77
431.95	-	431.95	7.78
432.50	-	432.50	7.79
433.06	-	433.06	7.80
433.62	-	433.62	7.81
434.17	-	434.17	7.82
434.73	-	434.73	7.83

The table indicates that an employee earning between \$349.73 and \$350.27 contributes \$6.30 to Employment Insurance.

1. Read the EI table to determine the employment insurance contribution for the following weekly earnings.

Earnings	EI Contribution
a) \$347.80	
b) \$389.60	
c) \$429.50	

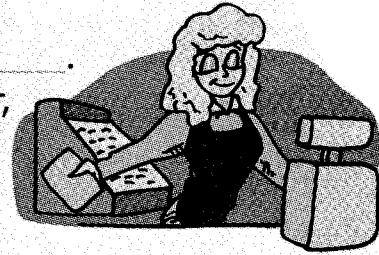
2. Complete the following table.

Hourly Wage	Hours Per Week	Earnings Per Pay: Weekly	Earnings Per Pay: Bi-weekly
a) \$7.75	20		
b) \$13.50	40		
c) \$24.85	38		

Go to pages 1–6 to review the definitions you wrote for bi-weekly and semi-monthly pay schedules.

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2. a) Simone earns \$7.50 per hour. In a 40-hour week, she will earn \$ 300. With 2 weeks unpaid holidays per year, she will have an annual gross income of about \$15 000.



- b) Pierre earns \$20 000 per year. If he works 50 weeks per year, he has an average weekly gross income of \$ _____. If he works 40 hours per week, he is earning \$ ____ /h.
- c) Nico earns \$25 000 per year. If he works 50 weeks per year, he has an average weekly gross income of \$ _____. If he works 40 hours per week, he is earning \$ ____ /h.
- d) Use government deductions tables to find the amounts deducted from Simone's, Pierre's, and Nico's pay. For income tax deductions, use Claim Code 1.

	Simone	Pierre	Nico
Weekly Gross Earnings	300		
CPP Deduction	14.93		
EI Deduction	12.42		
Taxable Income	272.65		
Federal Tax Deduction	9.48		
Provincial Tax Deduction			
Total Deductions	23.83		
Weekly Net Earnings	278.82		
Net Earnings as % of Gross Earnings	92.94%		

Refer to the McGraw-Hill Ryerson website for links to help you complete these tables.

www.mcgrawhill.ca/workplace11



Check Your Understanding

1. Fill in the blanks with the missing terms.

Income = _____ Income - _____

Go to pages 1–6 to write a definition for **annual** in your own words.

2. The amount of deductions from someone's pay depends largely on _____.

3. Complete the following table.

Annual Gross Pay	Gross Weekly Earnings	Total Deductions	Net Weekly Earnings	Approximate Hourly Rate (Annual Earnings ÷ 2000 h)	Net Pay as a % of Gross Pay
a) \$15 000					
b) \$20 000					
c) \$25 000					
d) \$30 000					
e) \$35 000					
f) \$40 000					

4. Refer to the table you have just completed above. Can you identify a pattern between the first and last columns? Based on this pattern, in general, the more money that you earn,



Use values from the tables in #3 and #4 to find total deductions.

2.3 Net Income and Personal Expenses

Focus: estimating and calculating fractions, decimals, and percents

Warm Up

1. Evaluate without a calculator.

a) 40 is what percent of 80?

b) 20 is what percent of 80?

c) 10 is what percent of 80?

d) 50 is what percent of 80?

2. Complete the table.

Fraction	$\frac{9}{10}$	$\frac{\square}{\square}$	$\frac{\square}{\square}$
Percent		35%	
Decimal			0.08

3. Evaluate without a calculator.

a) 22% of \$100 = \$ _____

b) 22% of \$200 = \$ _____

c) 22% of \$300 = \$ _____

4. Multiply. Use a calculator.

a) $24 \times 50 =$ _____

b) $36 \times 50 =$ _____

c) $40 \times 50 =$ _____

d) $250 \times 50 =$ _____

e) $600 \times 50 =$ _____

Net Income and Personal Expenses

1. Dahlia graduated from high school last year. She works full-time at a job that pays \$9.35/h.

a) If she works 40 hours per week, calculate Dahlia's weekly gross income.

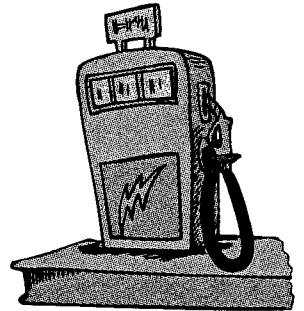
b) If she works 50 weeks per year, calculate Dahlia's annual gross income.

Date _____

- c) Approximately what percent of Dahlia's gross income is her net pay? _____
- d) Dahlia is paid bi-weekly. Estimate her take-home pay, rounded to the nearest dollar. _____
- e) Most months she gets paid _____ times and her total take-home pay for the month is \$_____.
Some months she gets paid _____ times and her total take-home pay for the month is \$_____.
- f) Explain the difference in the answers to e).

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2

2. a) Jamil bought a car. List the types of car-related expenses that he probably has to pay. Circle the expenses that don't change month by month.



- b) How could Jamil's pay schedule affect his decisions about paying his bills?

3. Brainstorm as many types of expenses as you can think of that you or your family must pay.

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- **Essential expenses** are not optional. Food is an example.
- **Non-essential expenses** are optional. A trunk organizer for your car is an example.



4. Classify your expenses from #3 as either essential or non-essential.

Essential Expenses		Non-Essential Expenses	

Go to pages 1–6 to write definitions for **essential expenses** and **non-essential expenses** in your own words.

- Fixed expenses are the same amount each week or month. They are generally paid at the same time each week or each month. Rent is one example of a fixed expense.
- **Variable expenses** are expenses that usually change in amount or in how often they are paid. Entertainment is an example of a variable expense.

Go to pages 1–6 to write a definition for **variable expenses** in your own words.

5. Classify your expenses from #3 as either fixed or variable.

Fixed Expenses		Variable Expenses	

✓ Check Your Understanding

1. Many people include savings as a fixed expense and put it first on the list. Explain why this might be a good idea.

2. When you start planning and budgeting your expenses, is your starting point your gross income or net income? Explain.

2.4 Purchasing Power and Living Standards

Focus: estimating and calculating expenses

Chapter 2

Warm Up

1. Evaluate without using a calculator.

a) $3 \times 8 =$ _____

b) $30 \times 8 =$ _____

c) $30 \times 80 =$ _____

d) $30 \times 80\% =$ _____

e) $30\,000 \times 80\% =$ _____

2. Complete the table for someone earning \$8.40/h.

Hours Worked	Gross Earnings
10	
20	
30	
40	

3. Expenses that come after the essentials have been taken care of are _____.

4. Examples of the type of expense in #3 are _____ and _____.

Income and Expenses

1. Dan is in grade 11, and works weekends and some evenings at a local cinema. He earns \$8.40 per hour and averages 25 hours per week. Dan lives with his parents and has no regular expenses.

a) Calculate Dan's weekly gross income.

b) If Dan takes home 95% of his gross earnings, determine Dan's approximate weekly net income, rounded to the nearest dollar.

- c) Dan tends to spend about half of his net earnings on essential items. He saves about one-quarter of his net earnings so that he can buy a car. How many weeks will it take Dan to save \$3000?

- d) **Purchasing power** is how able a person is to buy what they want when they want. Describe Dan's purchasing power.
- _____
- _____
- _____

2. Classify each of the following items as either improving (+) or worsening (–) purchasing power.

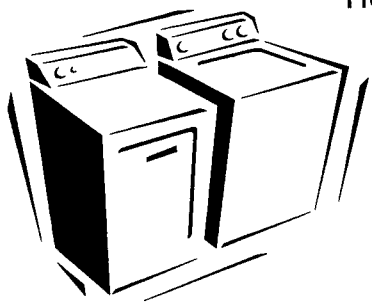
- | | | | |
|---------------------------------|-------|-------------------------|-------|
| a) overtime | () | b) car payments | () |
| c) car insurance | () | d) an increase in pay | () |
| e) an increase in rent | () | f) using a credit card | () |
| g) receiving a credit card bill | () | h) working a second job | () |
| i) saving coins in a jar | () | j) smoking | () |

Go to pages 1–6 to write a definition for **purchasing power** in your own words.

3. Ivanka is a single, 28-year-old woman. Her take-home pay from her main job is about \$900.00 every other Friday. She also has income of about \$100.00 every Friday from a second job.

- a) Calculate Ivanka's net income for a 4-week month.

- b) Calculate Ivanka's net income for a month with 5 Fridays if the first Friday of that month is 1 of her paydays.



Here is a list of Ivanka's usual expenses.

- Rent: \$734 per month + \$20 for parking
- Groceries: \$85 per week
- Car Insurance: \$135 per month
- Car Expenses (e.g., gas, maintenance): \$200 per month
- Phone: \$40 per month
- Laundry: \$10 per week
- Long-term Savings (RRSP): \$50 per week
- Personal Loan: \$238 per month
- Credit Card Payment: \$100 per month



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- c) Calculate the difference between Ivanka's net income and her expenses for a typical month.



To calculate the most accurate monthly values, multiply the weekly rate by 52 because there are 52 weeks in a year. Then divide that value by 12 because there are 12 months in a year.

- d) Describe Ivanka's purchasing power.

- e) What could Ivanka do to improve her overall purchasing power in a month in which she receives 3 paycheques?

4. Joona is a waitress at a café in a hotel. She earns \$8.50/hour and usually works 35 hours per week. In addition to her wages, Joona earns about \$300 per week in tips.

- a) Assuming that Joona works 35 hours per week, determine her annual wages including tips.

Date _____

- b)** Approximately what percent of her gross income does Joona take home?
- c)** Joona is paid every other Thursday. Determine her net pay.

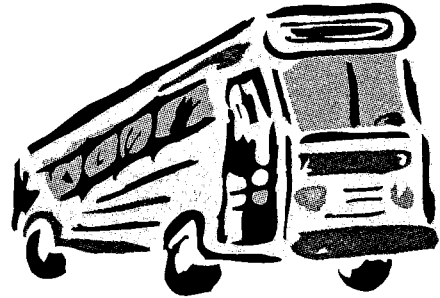
OCTOBER						
S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24 31	25	26	27	28	29	30

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- d)** Assuming that Joona was paid on the last day of September, circle her October paydays on the calendar.
- e)** How much should Joona expect to make in tips this month? _____ Explain your answer.

Here is a list of Joona's usual essential expenses.

- Savings: 25% of tips (deposited to an account every week)
- Rent: \$450 per month (due on the 1st of each month)
- Groceries: \$60 per week
- Transit Pass: \$100 per month
(renewed between the 24th and the 30th of each month)
- Phone: \$40 per month (due on the 12th of each month)
- Laundry: \$10 per week
- Income Tax: 25% of tips
(deposited to an account every week)



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- 5. a)** Why do you think Joona puts aside 25% of her tips in a separate account for income tax?

- b)** On the calendar below, place the dollar value of Joona's gross income on the days that she receives it. Place the dollar value of her expenses on the day that they occur or are likely to occur.

S	M	T	W	T	F	S
26	27	28	29	30	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	1	2	3	4	5	6

- c) Calculate the difference between Joona's net income and her expenses for a typical month.

✓ Check Your Understanding

1. List and describe the factors that affect Dan's, Ivanka's, and Joona's purchasing power and their ability to do things like pay bills, save money, or plan for a major purchase.

Factor	Description	Who is affected? (Dan and/or Ivanka and/or Joona?)

Chapter 2 Review

1. Describe the relationship between gross pay, net pay, and deductions. Either write a mathematical equation or use words.
- _____
- _____

2. List the full names of the 4 major deductions from an employee's gross income.

a) _____

b) _____

c) _____

d) _____

3. Aram has a gross income of about \$880 every 2 weeks. His net income is about \$700. What percent of his gross income does Aram take home?

4. Complete the table.

Annual Earnings	Earnings Per Pay: Weekly	Earnings Per Pay: Bi-weekly	Earnings Per Pay: Semi-monthly	Earnings Per Pay: Monthly
a) \$14 000				
b) \$1.2 M				
c) \$26 800				

5. Complete the table.

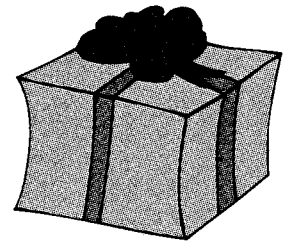
Hourly Wage	Hours Per Week	Weekly Earnings	Approximate Deductions	Approximate Net Earnings
a) minimum	20			
b) \$9.50	35			
c) \$22.25	44			

- 6.** List some other deductions that might reduce net income even more than the table in #5 indicates.

- 7.** Danya is in grade 12 and works weekends and after school as a cashier at a dollar store. She earns \$8.75/h and averages 30 hours per week.

- a)** Calculate Danya's weekly gross income.
b) Approximate Danya's weekly net income, rounded to the nearest dollar.

- Danya lives with her mother and pays \$75/week to help out with expenses.
- She tends to spend about
 - \$50/week on non-essential items,
 - \$80/month for insurance to drive her mother's car,
 - \$20/week for gasoline, and
 - she saves \$50/month in an account for gifts (e.g., Christmas, birthdays).
- She saves the rest so she can buy a car.



- c)** Danya wants to save \$3000 by next year at this time. Can she do it?

YES NO

Explain your answer by showing the necessary calculations.

- d)** Does Danya have the purchasing power to buy the things that she needs? What about the things that she wants? Explain your answers.