

Mathematics 10 F&PC – Pearson Textbook	
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Textbook

This course uses Workbooks and the textbook “*Foundations and Pre-calculus Mathematics 10*” ISBN 10: 0-321-70734-6 by Pearson Canada. 1-800-361-6128. Price is about \$ 85.

Curriculum Outline

Unit 1 Financial Literacy Workbook	Unit 2 Arithmetic Sequences Workbook	Unit 3 Factors and Products
Unit 4 Roots and Powers	Unit 5 Relations and Functions	Unit 6 Linear Functions
Unit 7 Systems of Linear Equations	Unit 8 Trigonometry	

Structure

This course is generally designed with the self-paced student in mind. It is based on a mastery system in which the student must obtain an 80% on the tests. Each unit has two versions in which the student has a chance to reach and or exceed the 80% mastery level.

Evaluation

There are 8 unit tests which account for 70% of the final mark. There are 3 cumulative tests which account for 30% of the final mark.

Composition

The course is made up of:

8 Unit Outlines which includes 2 Workbooks for Unit 1 Financial Literacy (23 Pages) and Unit 2 Arithmetic Sequences (20 pages).

8 Unit Tests each with an A and a B version (14 tests), Plus (14 tests) Answer Keys

3 Cumulative Tests, Plus (3 Cumulative Tests) Answer Keys,

All Answer Keys have a suggested marking scheme,

All files are put on disk in pdf and MS Word,

A perpetual license for your school.

The entire paper course is placed in a binder along with the disk and shipped as one unit.

Cost: \$ 495.00. See Ordering on website.

Math 10 Foundations of Mathematics and Pre-calculus
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Record Chart

Name:

Start Date:

Chapter	Topic	Test A	Test B	Average	Date
1	Financial Literacy				
2	Arithmetic Sequences				
Cumulative Test Unit 1					
3	Factors and Products				
4	Roots and Powers				
Cumulative Test Unit 2					
5	Linear Relations and Functions				
6	Linear Functions				
7	Systems of Linear Equations				
Cumulative Test Unit 3					
8	Trigonometry				

Course Evaluation	Total Marks	Percent	Value	Result
Tests (8)			70%	
Cumulative Tests (3)			30%	
Total				

Final Mark

Date:

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Unit 1 Financial Literacy Workbook

Types of Income

Hourly Wage

Each province and territory have their own minimum wage which refers to the legal minimum amount paid per hour. This rate varies across Canada. As of Oct. 2017 these are the rates for Western Canada

Alberta	\$ 13.60
B. C.	\$ 11.35
Manitoba	\$ 11.15
NW Terri	\$ 12.50
Nunavat	\$ 13.00
Sask.	\$ 10.96
Yukon	\$ 11.32

Video: Calculate Earnings Given An Hourly Wage

<https://www.youtube.com/watch?v=a-wqLL5i8hc>

Problem: Aliysha works in Kelowna BC, for 25 hours per week at minimum wage at a gas station. What are the weekly earnings?

Solution: Minimum wage in BC is 11.35 per hour x 25 hours = \$ 283.75

Problem: Try the following.

1. Chapa works for 37.5 hours per week in NW Territories. What is his weekly wage?

Hourly Rate and Overtime**Video: Hourly Rate and Overtime**

<https://www.youtube.com/watch?v=yHRuXVipIU0>

Overtime can occur when a labourer works past an 8 hour day. It can be paid in terms of time and a half (1.5) or double time (2.0).

Problem: Anthony works at Suprema, a roof materials manufacturing company. His regular pay of \$16.80 per hour is during the AM shift. There is overtime after 40 hours. On Saturdays overtime is 1.5 and on Sunday it is double time the shift rate. Calculate his week gross earnings.

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
AM Shift	8	8	8	8	8	4	4

Solution:

$$40 \text{ hours} \times 16.80 = 672.00$$

$$4 \text{ hours} \times 1.5 \times 16.80 = 100.80$$

$$4 \text{ hours} \times 2.0 \times 16.80 = \underline{134.40}$$

$$\text{The first week gross earnings} \quad \$ 907.20$$

Problem: Try the following.

6. Awan works at Suprema, a roof materials manufacturing company. His regular pay of \$17.30 per hour is during the PM shift. There is overtime after 40 hours. On Saturdays overtime is 1.5 and on Sunday it is double time the shift rate. Calculate his weekly gross earnings.

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
PM Shift	8	8	8	8	8	3	3

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Arithmetic Sequences Workbook

A sequence is a set of numbers called terms that are in order. For example 1, 3, 5, 7, ... These terms are increasing by two each time.

An arithmetic sequence proceeds with one term and goes to the next term by adding or subtracting the same number. For example 5, 7, 9, 11, 13, ... is an arithmetic sequence because the number two is added to each term.

For example 22, 19, 16, 13, 10, 7, 4, 1, -2, -5, ... is an arithmetic sequence because three is subtracted from each term.

Problem 1: Identify whether the following are arithmetic sequences

- (a) 0, 2, 4, 7, 9, 11, 14, 16, 19, ...
- (b) 7, 14, 21, 28, 35, 42, 49, 56, ...
- (c) -2, -5, -8, -11, -14, -17, -20 ...
- (d) -35, -30, -24, -20, -15, -11, ...

The number added or subtracted from one term to the next in an arithmetic sequence is called the common difference and is recognized by the letter "d".

Problem 2: Determine the common difference from the following.

- (a) 1, 3, 5, 7, 9, ...
- (b) -12, -7, -2, 3, 8, 13, ...
- (c) 10, 20, 30, 40, 50, 60, ...
- (d) 8, 16, 24, 32, 40, 48, 56, 64, ...
- (e) 7, 0, -7, -14, -21, -28, -35, ...

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Textbook: Foundations and Pre-calculus by Pearson Canada

Unit 5 Relations and Functions

Goal: The goal of this unit is to familiarize you with relations and functions. A relation is a diagram, equation, or list that defines a specific relationship between groups of elements. A function is a special kind of relation.

Objectives: During this unit you will:

- *Investigate the connection between set, element, and relation.
- *Examine the properties of functions.
- * Create graphs that represent different situations.
- * Examine function notation in a variety of situations.
- * Investigate characteristics of linear relations to graphing.
- * Determine an acceptable range of values for a function.
- * Solve problems that utilize rate of change.

What Needs to be Done:

Unit 5 has 7 sections: 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, and 5.7. Each section in unit 5 may have an accompanied video to enhance your understanding of the section material. There may be more than one video for a section.

Use the section-numbered videos below as they correspond in the Practice Guide below to help you with your understanding.

Video Selections:

- 5.1 https://www.youtube.com/watch?v=hM_iObXeno0
Mathematics Lesson: Relations (Simplifying Math) (6:46 min)
- 5.2 <http://www.youtube.com/watch?v=HebWwBta1cs>
Intro to functions (4:50 min).
- 5.2 <https://www.youtube.com/watch?v=m78DbI2xaiI>
3.2 Video (4b) - Using function notation to find and interpret output values” (2:12 min).
- 5.2 <https://www.youtube.com/watch?v=kODCjH1HU2Y>
“3.2 Video (3d) - Using function notation to find input values”(1:12 min).
- 5.3 <https://www.youtube.com/watch?v=SbxL3ViOebU>
Interpreting Graphs of Functions (6: 52 min).
- 5.3 <https://www.youtube.com/watch?v=hyOqyilCOQk>
Describing situations from graphs 6.5 gr” (10:18 min).
- 5.5 <https://www.youtube.com/watch?v=5Z8DaZPJLKY>
Ex 1: Use the Vertical Line Test to Determine if a Graph Represents a Function” (2:56 min).
- 5.5 <https://www.youtube.com/watch?v=0M3Dv106YBY>
Domain and Range of Relations from a Graph (18:02 min)
- 5.6 <https://www.youtube.com/watch?v=jNmFiQx6Vx0>
Determining if a table of values represents a linear relation (2:34 min)
- 5.6 <https://www.youtube.com/watch?v=ufOF37G7uCO>
Module B How do you determine if you have a linear equation (2:50 min)
- 5.6 https://www.youtube.com/watch?v=2h_Nx3O3sM0
determining the rate of change from a graph (4:56 min)
- 5.7 <https://www.youtube.com/watch?v=IEkex7L-bc8>
Problem Solving with Linear Functions (27:37 min)

Unit 5 Practice Guide: (Check Mark as You Complete)

✓ Page	
254-255	Glance over.
256-258	Read over and define the new terms. Watch video “Mathematics Lesson: Relations (Simplifying Math) (6:46 min)”
259-261	Go over Examples 1, 2, and 3.
262-263	Under "Exercises" try # 3-7,10, 12, and 13.
264-265	Read over and define the new terms. Watch video “Intro to functions ” (4:50min).
266-268	Go over Examples 1-2. Give an example of function notation.
268-270	Read Page 268 and watch video “3.2 Video (4b) - Using function notation to find and interpret output values” (1:12 min). Read 269 and watch video “3.2 Video (3d) - Using function notation input values”(1:12 min). Go over Example 3.
Page to find	
270-273	Under "Exercises" try # 4-8, 9a,11, 12, 13, 14ac, 15, 16, 17, 19, and 21.
274	Read over “Checkpoint 1”.
276-278	Read over. Go over Example 1. Watch video “Interpreting Graphs of Functions (6:52 min).
278-279	Go over Example 2. Watch video “Describing situations from graphs 6.5 gr” (10:18 min).
280	Go over Example 3.
281-283	Under "Exercises" try # 3-6, 8, 10, 12, 14, 17, and 18.
284	Read over.
286	Under "Assess Your Understanding" try # 1 and 2.
288-289	Read over and define the Vertical Line Test.
	290
	Go over Examples 1. Watch video “Ex 1: Use the Vertical Line Test to Determine if a Graph Represents a Function ” (2:56 min).
291-293	Go over Example 2. Watch video “Domain and Range of Relations from a Graph” (18:02 min). Go over Examples 3-4.
294-297	Under "Exercises" try # 4, 6-13, 15, 17, 19, 21, and 22.
298	Glance over “Checkpoint 2”
	299
	Under "Assess Your Understanding" try # 1 - 3.
	302
	Read over. Define rate of change and linear relation.
	303
	Go over Example 1. Watch video “Determining if a table of values

- represents a linear relation” (2:34 min)
- 304 Go over Example 2. Watch video “Module B How do you determine if you have a linear equation” (2:50 min)
- 305 Go over Example 3.

Math 10 F&PC Unit 8 Test A: Trigonometry

Name _____ Date _____

45

Marks

1. Match the descriptions on the bottom with the corresponding letter to the terms on the left.

- 5 _____ Solving a triangle
_____ Trigonometry
_____ Angle of depression
_____ Angle of inclination
_____ Tangent ratio
_____ Primary trigonometric ratios
_____ Sine ratio
_____ Direct measurement
_____ Angle of elevation
_____ Indirect measurement

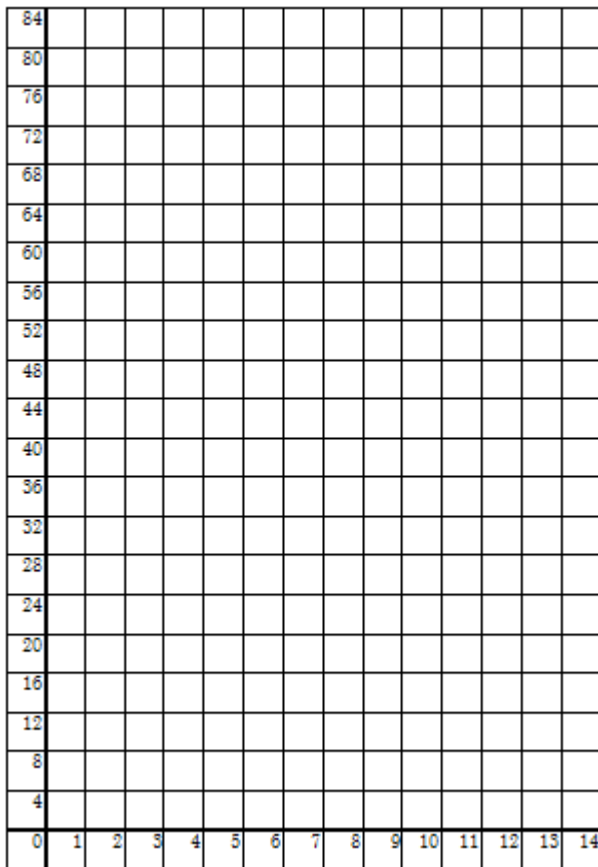
- A. It is the acute angle that a line segment makes with the horizon.
B. It is determined by the length of the opposite side divided by the length of the adjacent side.
C. A measuring instrument to determine a length or an angle in a polygon.
D. It is mathematical reasoning to calculate a length or an angle.
E. The branch of mathematics that deals with the relations between the sides and angles of triangles.
F. These are tangent, sine, and cosine.
G. It is determined by dividing the length of the opposite side by the length of the hypotenuse.

- H. It is determined by dividing the length of the adjacent side by the length of the hypotenuse.
- I. It is the angle between the horizontal and the line of sight from an observer.
- J. It means to determine the measures of all angles and sides of a triangle.
- K. It is the angle below the horizon between the horizontal and the line of sight from an observer.

14. A car is accelerating smoothly with the x-axis representing time in seconds while the y-axis representing the speed in m/s. Plot the following points on the provided graph below. (1,4), (2,12), (3,20), (4,28), (5,36), (6,44).

- (a) Does the following graph represent an arithmetic sequence? Why or why not?
- (b) Determine the general term formula.
- (c) Assume the line continues and so calculate the acceleration at t_{25} .

6



15. A famous tennis player, Andre Agassi, practiced by hitting 1000 balls every day. Assume that the rate of hitting follows an arithmetic sequence.

- (a) Determine the general term.
- (b) Calculate how long it did take him to hit 1 million tennis balls?
- (c) Determine this time in years to one decimal place.

6

2. The following lists some elements and their atomic number:

(Sodium, 11), (Krypton, 36), (Helium, 2), (Gold, 79), (Silver, 47), and (Copper, 29),

For each association use the data to represent a relation in different ways.

(a) As a table of the elements alphabetically

(b) Describe the relation in words.

(c) Represent the above relation as an arrow diagram in alphabetical order and increasing value of the atomic number.

6

ELEMENT	ATOMIC NUMBER

3. The table shows the mass of a given number of Loonies.

(a) Explain why or why not that the relation is a function.

(b) Identify the dependent and independent variables and the reason why.

(c) Write out the domain and range.

5

NUMBER OF LOONIES	MASS OF LOONIES in grams
0	0
1	6.92
2	13.84
5	34.60

10	69.20
15	103.80
20	138.40

13. Dena works as research assistant at the University of British Columbia. She makes an annual salary of \$ 68570.00 and has a claim code of four. Her weekly deductions are union dues \$ 60.75 and the company pension \$ 185.00. Determine the following by filling in the weekly pay statement. For taxes use the Federal and Provincial Tax Tables provided.

- | | | |
|----------------------|----------------------|---------------------|
| (a) Rate | (b) Gross earnings | (c) Deduction total |
| (d) Federal tax | (e) Provincial tax | (f) CPP |
| (h) EI | (i) Taxable earnings | (j) Taxes, CPP, EI |
| (k) Total deductions | (l) Net pay | |

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Pay Statement
Company: University of British Columbia

Employee Name:	Dena Peters
Pay Period	14 Mar. 2018 to 21 Mar. 2018
Rate per week	
Gross Earnings	

Deductions	
Types	
Union Dues	
Pension	
Total	

Taxes	
Types	Amount
Federal	
Provincia l	
CPP	
EI	

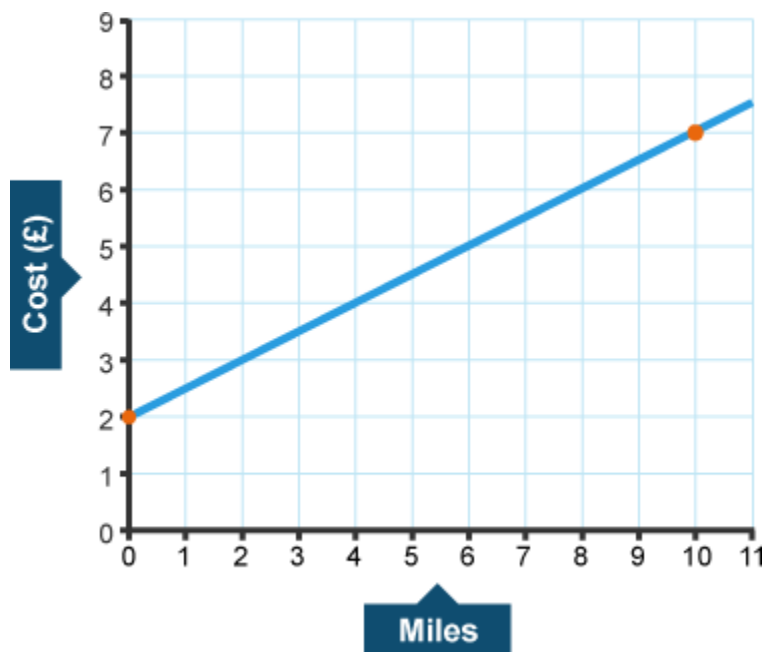
Paycheque Summary				
Gross Earnings	Taxable	Taxes, CPP, EI	Total	Net Pay

	Earnings		Deductions	

14. The following graph shows the relationship between the costs of driving a car based on the miles driven.

- Assume that the starting point begins with one, list the first ten terms.
- Determine the general term.
- What is the cost at 100 miles?
- What is the cost at 12 000 miles?

5



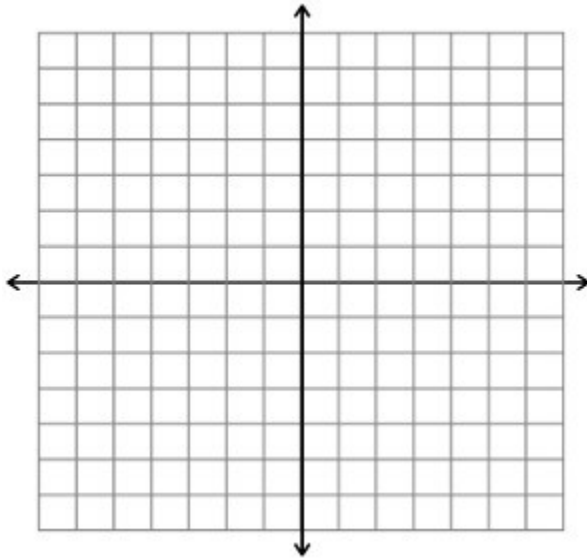
15. A desert locust swarm can pack between 40 and 80 million locusts into less than half a square mile. Assume that the growth rate of locust follows an arithmetic sequence. The initial situation begins with 50000 locust and after an hour it reaches 150000. At the two hour mark the population reaches 250000.

- Determine the general term.
- Calculate how long it will take to form a swarm of 40 million.
- Determine this time in weeks to one decimal place.

6

10. Graph the following equation. $y = 3x - 5$

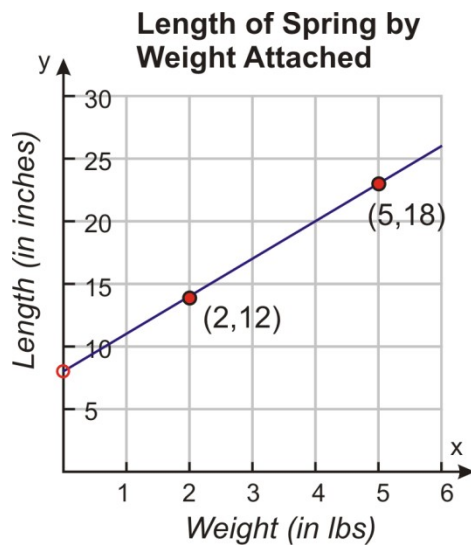
3



11. The following graph represents the length of a spring when certain weights are added.

4

- (a) Write an equation to describe this graph.
- (b) Use the equation to calculate the value of y when $x = 4.75$.
- (c) Predict the length of the spring when the weight is 7.25.



3. An electronics store offers its sales people two options for their wages. Their Plan A is \$800.00 per month plus a 4% commission on total sales. Their Plan B is \$950.00 per month plus a 3% commission on total sales. The linear system that models these plans is as follows.

8 $W = 800 + 0.04c$ and
 $W = 950 + 0.03c$

- (a) Graph this linear system.
- (b) Determine the monthly sales that the employee needs to make in order to have the same wages in both plans.
- (c) Under what conditions is Plan A more profitable?

