GRADE 11 U/C
COURSE OF STUDY

UNIT 1: Investigating Properties of Quadratic Functions

Overall Expectations:

1. Expand and simplify quadratic expressions, solve quadratic equations, and relate the roots of a quadratic equation to the corresponding graph; 2. Demonstrate an understanding of functions, and make connections between the numeric, graphical, and algebraic representations of quadratic functions; 3. Solve problems involving quadratic functions, including problems arising from real-world applications.
Note: Photocopied homework package is taken from McGraw-Hill Ryerson (MHR)

Day	Topic	Suggested Homework
1	Define and identify _functions_ using a variety of representations (tables of values, mapping diagram, graphs).	MHR - Pg. 12 - 13 #1 – 5, 7 , 14
2	Use _function notation_ to represent quadratic functions, including real-life situations.	MHR - Pg. 13 – 14 #8 – 11, 15
3	Explain the meaning of the terms _domain_ and _range_ for linear and quadratic functions. Explain restrictions on the domain & range of a quadratic function that models a real-life situation.	MHR - Pg. 20 – 21 #1 – 7, 10,
4	First & Second differences	MHR - Pg. 28 – 29 #1 - 4
5	The roles of a in quadratic functions of the form $f(x) = a(x - h)^2 + k$ in terms of transformations on the graph $f(x) = x^2$.	MHR - Pg. 38 – 39 #1 - 11
6	The roles of h and k in quadratic functions of the form $f(x) = a(x - h)^2 + k$ in terms of transformations on the graph $f(x) = x^2$.	MHR - Pg. 45 – 46 #1 – 5, 7, 8

7	Transformations: Putting it all Together	MHR - Pg. 51 – 52 #1 - 8
8, 9	Review	
10	TEST	

Unit 2 - Solving Quadratic Equations

Overall Expectations:

1. Expand and simplify quadratic expressions, solve quadratic equations, and relate the roots of a quadratic equation to the corresponding graph; 2. Solve problems involving quadratic functions, including problems arising from real-world applications.

Day	Lesson Title & Description	Suggested Homework
1	Simplify Expressions (Section 2.1)	Pg.85-87 #2, 3, 5ace, 9, 10a, 11
2	Intro to Factoring Common, simple trinomial (Section 2.2, 2.3)	Pg. 93 -94 #3, 6, 7, 15 Pg. 99 #3, 6, 9, 14
3	Factoring Trinomials (continued) (Section 2.4)	Pg. 110 #4, 5, 9, 10
4	Factoring Difference of squares & Perfect trinomial squares (Section 2.5)	Pg. 115 #3, 4, 7,11,12,13
5	Solving Quadratic Equations: Factoring (Section 3.4)	Pg.161 #1, 2, 3ac, 4abe, 6ac, 7bd, 8, 11
6	Solving Quadratic Equations:	Pg.222

	Quadratic Formula (Section 4.3)	#3, 6, 7, 8
7	The Discriminant (Section 4,4)	Pg. 232 #1, 2, 5, 6, 7
8, 9	Review	Pg 120-121 #1, 3, 4, 5, 8, 9, 12, 13, 15, 16, 18 Pg. 182 #6, 7 Pg.254-255 #5, 6, 7, 8
10	Test	

Unit 3 - Representing Quadratic Functions

OVERALL EXPECTATIONS:

1. Expand and simplify quadratic expressions, solve quadratic equations, and relate the roots of a quadratic equation to the corresponding graph; 2. Demonstrate an understanding of functions, and make connections between the numeric, graphical, and algebraic representations of quadratic functions; 3. Solve problems involving quadratic functions, including problems arising from real-world applications.

Day	Topic	Suggested Homework
1	Different Forms of Quadratic Functions -Standard Form -Factored Form (Section 3.2)	Pg. 139-142 #2ab, 3ac, 4ab, 5ace, 10ab, 12ad, 13ac, 14
2	Vertex Form (Section 4.1)	Pg. 203 #1, 4, 7, 8ac, 9ad, 10, 12
3	Completing the square $Ax^2 + Bx + C = 0$, where $A = 1$ and $A = -1$ - Link to vertex form of an equation where (h,k) is the	Pg. 214 - 215 #2ab, 3, 4, 6ab, 7ab

	vertex (Section 4.2)	
4	Completing the square (cont) $Ax^2 + Bx + C = 0$ where $A \neq 1$ and where a/b is a simple rational number (Section 4.2)	Pg. 214 – 215 #2cd, 6c-f, 7c-f, 8, 10, 11
5	Applications of Quadratic Functions in Vertex Form (Section 4.5)	Pg. 240-241 #5-13
6	Multiple Forms of Quadratic Functions: Selecting the best strategy	Handout
7, 8	Modelling with Quadratic Equations (Section 3.6 & 4.6)	Pg. 176 #1, 2, 3, 4ac, 5, 6 Pg.250 #3, 4, 5, 7
9	Review	Pg. 182 #1, 2, 3ac Pg. 254 #1, 2ad, 3, 4, 9-11
10	Test	

Unit 4 - Trigonometry

Overall Expectations:

1. Solve problems involving trigonometry in acute triangles using the sine law and the cosine law, including problems arising from real-world applications;

Day	Topic	Expectation	Suggested Homework	
1	Trigonometric Ratios	– solve problems, including those that arise from real-world applications (e.g., surveying, navigation), by determining the measures of the sides and angles of right triangles using the primary trigonometric ratios	Pg. 261 #2-8	
2	Solving Problems Using Trigonometry		Pg. 271 #5, 7, 8, 9, 10, 12, 14	

3	Solve Problems Using Right-triangle Models	– solve problems involving two right triangles in two dimensions (Sample problem: A helicopter hovers 500 m above a long straight road. Ahead of the helicopter on the road are two trucks. The angles of depression of the two trucks from the helicopter are 60° and 20°. How far apart are the two trucks?)	Pg. 280 # 1-6, 8, 9, 11, Journal #14	
4/5 GSP	The Sine Law	– verify, through investigation using technology (e.g., dynamic geometry software, spreadsheet), the sine law and the cosine law (e.g., compare, using dynamic geometry software, the ratios , , and in triangle ABC while dragging one of the vertices);	Worksheet Pg. 3, 6ac, 7*, 8, 9ac, 10	
6	Mid-Chapter Review		Pg. 291 (read and understand) Pg. 292 #1-11	
7 & 8	The Cosine Law	– describe conditions that guide when it is appropriate to use the sine law or the cosine law, and use these laws to calculate sides and angles in acute triangles;	Pg. 300 #4-12, 13*	
9/10	Solve Problems by Using Acute-Triangle Models	– solve problems that require the use of the sine law or the cosine law in acute triangles, including problems arising from real-world applications (e.g., surveying; navigation; building construction).	Pg. 309 # 3-8,10*, 12, 14	
11	Review		Pg. 314 #1-10	
12	Test			

Unit 5- Trigonometric Functions

Unit 6 - Exponential Functions

OVERALL EXPECTATIONS:

1. Simplify and evaluate numerical expressions involving exponents, and make connections between the numeric, graphical, and algebraic representations of exponential functions; 2. Identify and represent exponential functions, and solve problems involving exponential functions, including problems arising from real-world applications; 3. Demonstrate an understanding of compound interest and annuities, and solve related problems.

Day	Topic	Expectation	Suggested Homework
1	Introduction to Exponents	- evaluate, with and without technology, numerical expressions containing integer and rational exponents and rational bases - determine, through investigation the exponent rules for multiplying and dividing numeric expressions involving exponents and the exponent rule for simplifying numerical expressions involving a power of a power and use the rules to simplify numerical expressions containing integer exponents	Pg. 399 # 1-3, 5--14
2&3	Integer & Rational Exponents	- determine, through investigation using a variety of tools and strategies, the value of a power with a rational exponent	Pg. 407 #1-9 (ace), 11, 12 Pg.415 1-7 (ace), 11, 14, 20
4&5	Properties of Exponential Functions	- determine, through investigation, and describe key properties relating to domain and range, intercepts, increasing/decreasing intervals, and asymptotes for exponential functions represented in a variety of ways. - distinguish exponential functions from linear and quadratic functions by making comparisons in a variety of ways, within the same context when possible - graph, with and without technology, an exponential relation, given its equation in the form y = a(x) (a [greater-than sign] 0, a [not equal to symbol] 1), define this relation as the function f(x) = a(x), and explain why it is a function	Pg. 423 # 1-4
6	Applications of Exponents: Exponential Growth	- identify exponential functions, including those that arise from real-world applications involving growth and decay, given various representations and explain any restrictions that the context places on the domain and range solve problems using given graphs or equations of exponential functions arising from a variety of real-world applications by interpreting the graphs or by substituting values for the exponent into the equations	Pg.429 #1-5, 7, 9
7	Applications of Exponents: Exponential Decay	- identify exponential functions, including those that arise from real-world applications involving growth and decay, given various representations and explain any restrictions that the context places on	Pg. 437 # 1-5, 6, 8, 9, 12

		the domain and range solve problems using given graphs or equations of exponential functions arising from a variety of real-world applications by interpreting the graphs or by substituting values for the exponent into the equations	
8	Review		Pg 444 # 1-3 (ac), 4, 5-6 (ac) 7, 8-14
9	Review *optional*		
10	TEST		

Unit 7 - Finance

Overall Expectation:

1. Demonstrate an understanding of compound interest and annuities, and solve related problems.

Topic	Suggested Homework	
1	Chapter 8 Preview	Pg. 452 #6-8, 10ac, 11ac, 12*, 13*
2	Simple and Compound Interest	Pg. 459 #1-7, 9, 11
3	Compound Interest: Future Value $FV = P(1 + i)^n$	Pg. 468-469 #1, 4-9, 12, 14
4	Compound Interest: Present Value $PV = A(1 + i)^{-n}$	Pg. 476-477 #1, 4-6, 8, 11, 12
5/6	The TVM Solver: Compound Interest	TVM Worksheet Pg. 487 #2, 5ac, 9

7	Annuities and Future Value	Pg. 498 – 499 # 3, 5, 7, 9 and 12
8	Annuities and Present Value	Pg. 507 # 2, 4-7, 10 and 11
9 & 10	**Performance Task:** "Buying and Leasing a Car"	Performance Task
11	Review	Pg. 492 # 11-14 Pg. 522 -523 # 5, 6, 8 and 13
12	TVM Solver Test	
13	Review	Worksheet Pg. 541 # 1-4, 6, 8, 10a, 12
14	Test	