

Rationale:

Foundations of Mathematics 11 is an academic course designed for students whose post-secondary education or training will not require theoretical calculus.

Material Covered:

The course is comprised of the following 8 Units:

- Properties of Angles and Triangles
- Acute Triangle Trigonometry
- Oblique Triangle Trigonometry
- Systems of Linear Equations
- Quadratic Functions and Equations
- Inductive and Deductive Reasoning
- Statistical Reasoning
- Proportional Reasoning

Textbook:

The course uses the text *Foundations of Mathematics 11*. (ISBN-13: 978-0-17-650270-6, Nelson)

Notebook:

Your notebook should be neatly organized, as this will help you study for tests. Label the unit and topic headings clearly at the top of the page. Answer questions fully, so that the information makes sense and can be used later for studying. Show which textbook and which page number the information comes from so you can look it up again easily.

Grading:

This course works on a mastery system. You must pass the mastery tests in each unit to the 80% level before you can go on. In addition, there are cumulative tests from time to time. These are tests you can only take once, so studying before them is essential to do well. Your final class mark for the course is based 60% on the mastery unit tests and 40% on the cumulative tests.

Goal:

The goal of this unit is to develop your spatial sense by working with the angles formed by intersecting lines and the angles in triangles and other polygons.

Objectives:

While completing this unit you will investigate the following topics and practice working with

- Identifying the properties of angles formed by intersecting lines.
- Identifying the properties of angles formed by parallel lines and a transversal, and using those properties to solve problems.
- Identifying the properties of angles in triangles and using those properties to solve problems.
- Identifying the properties of angles in polygons and using those properties to solve problems.

What to Do in this Unit:

- Read and follow the example problems at the beginning of each section, then do the practice problems on the pages in the table below. Be sure to tick off each section as you complete it.

✓	Chapter	Read	Practice Questions
	2	Pg. 68	
	2.1	Pg. 70	Pg. 70 #A-E Pg. 72 #2-5
	2.2	Pg. 73	Pg. 74 #G-I
		Pg. 75-78	Pg. 78 #1-4,6,8,10,12,14-16
	Mid-Chapter Review	Pg. 84	Pg. 85 #1,2,4,5
	2.3	Pg. 86	Pg. 90 #1-7, 10, 12-14
	2.4	Pg. 94	Pg. 99 #1-3, 5-8, 15-17
	Chapter Self-Test		Pg. 104 #1-6
	Chapter Review	Pg. 105	Pg. 106 #2-11

- When you are ready, ask your teacher for the Unit 1 Test. Remember, you must get 80% to pass, so studying hard is essential to do well.

Goal:

The goal of this unit is to develop your spatial sense by working with the sine law and cosine law to determine side lengths and angles in acute triangles.

Objectives:

While completing this unit you will investigate the following topics and practice working with

- Identifying the relationship between each side in an acute triangle and the sine of the angle opposite.
- Proving and using the sine law to determine the lengths of sides and measures of angles in acute triangles.
- Proving and using the cosine law to determine the lengths of sides and measures of angles in acute triangles.
- Solving problems involving acute triangles by using the primary trigonometric ratios and the sine and cosine laws.

What to Do in this Unit:

- Read and follow the example problems at the beginning of each section, then do the practice problems on the pages in the table below. Be sure to tick off each section as you complete it.

✓	Chapter	Read	Practice Questions
	3	Pg. 114 Getting Started	
	3.1	Pg. 118	Pg. 117 #1-3
	3.2	Pg. 120-123	Pg. 124 #1-5, 6a,9,10,12,13
	Mid-Chapter Review	Pg. 128	Pg. 129 #1-9
	3.3	Pg. 130-135	Pg. 137 #1-5, 6a,7a,8,9
	3.4	Pg. 140-146	Pg. 143 #A,B,C Pg. 147 #1-8
	Chapter Self-Test		Pg. 152 #1-8
	Chapter Review	Pg. 153	Pg. 154 # 1-12

- When you are ready, ask your teacher for the Unit 2 Test. Remember, you must get 80% to pass, so studying hard is essential to do well.

Goal:

The goal of this unit is to develop your spatial sense by working with the sine law and cosine law to determine side lengths and angles in obtuse triangles.

Objectives:

While completing this unit you will investigate the following topics and practice working with

- Identifying the relationship between the primary trigonometric ratios of acute and obtuse triangles.
- Explaining steps in the proof of the sine and cosine laws for obtuse triangles.
- Using those steps to solve problems involving obtuse triangles.
- Analyzing and solving problems that involve the ambiguous case of the sine law.
- Solving problems that can be modelled by obtuse triangles.

What to Do in this Unit:

- Read and follow the example problems at the beginning of each section, then do the practice problems on the pages in the table below. Be sure to tick off each section as you complete it.

✓	Chapter	Read	Practice Questions
	4	Pg. 160-161	
	4.1	Pg. 162	Pg. 163 #1-4
	4.2	Pg. 164-170	Pg 170 #1-10
	Mid-Chapter Review	Pg. 174	Pg. 175 #1-9
	4.3	Pg. 176-182	Pg. 183 #1-8, 10,11
	4.4	Pg. 188-193	Pg. 193 #1-5, 8,9
	Chapter Self-Test		Pg. 198
	Chapter Review	Pg. 199	Pg. 200 #1-8

- When you are ready, ask your teacher for the Unit 3 Test. Remember, you must get 80% to pass, so studying hard is essential to do well.
- Go over your work from Units 1, 2, and 4 in preparation for Cumulative Test #1. When you are ready to write it, ask your teacher. Remember, this test is one chance only, so do your best.

Goal:

The goal of this unit is to develop algebraic and graphical reasoning by working with linear inequalities in two variables.

Objectives:

While completing this unit you will investigate the following topics and practice working with

- Solving problems both algebraically and graphically using linear inequalities in two variables.
- Exploring graphs of situations modelled by systems of two linear inequalities in two variables.
- Solving problems by modelling systems of linear inequalities.
- Creating models to represent optimization problems.
- Exploring the feasible region of a system of linear inequalities.
- Using linear programming to solve optimization problems.

What to Do in this Unit:

- Read and follow the example problems at the beginning of each section, then do the practice problems on the pages in the table below. Be sure to tick off each section as you complete it.

✓	Chapter	Read	Practice Questions
	6	Pg. 292-293	
	6.1	Pg. 294-302	Pg. 303 #1-7, 10
	6.2	Pg. 306-307	Pg. 307 #1,2
	6.3	Pg. 308-317	Pg. 317 #1-4,6-8
	Mid-Chapter Review	Pg. 321-322	Pg. 323 #1-7
	6.4	Pg. 324-329	Pg. 330 #1-1-4
	6.5	Pg. 332-333	Pg. 334 #1-3
	6.6	Pg. 336-341	Pg. 343 #1-5, 8
	Self Test		Pg. 347 #1-4
	Chapter Review	Pg. 348	Pg. 349 #1-11

- When you are ready, ask your teacher for the Unit 4 Test. Remember, you must get 80% to pass, so studying hard is essential to do well.

Goal:

The goal of this unit is to develop your algebraic and graphical reasoning by working with quadratic functions and equations.

Objectives:

While completing this unit you will investigate the following topics and practice working with

- Investigating the characteristics of a quadratic relation.
- Identifying the characteristics of graphs of quadratic function and using those graphs to solve problems.
- Solving quadratic equations by graphing the corresponding function.
- Relating the factors of a quadratic function to the characteristics of its graph.
- Solving quadratic equations by graphing, factoring, and using the quadratic formula.
- Solving problems that can be modelled as quadratic functions and equations.

What to Do in this Unit:

- Read and follow the example problems at the beginning of each section, then do the practice problems on the pages in the table below. Be sure to tick off each section as you complete it.

✓	Chapter	Read	Practice Questions
	7	Pg. 356-357	
	7.1	Pg. 358-359	Pg. 360 #1-6
	7.2	Pg. 361-368	Pg. 368 #1-9, 11
	7.3	Pg. 373-379	Pg. 379 #1-9 (graphing technology)
	7.4	Pg. 382-390	Pg. 391 #1-4, 7, 11
	Mid-Chapter Review	Pg. 396-397	Pg. 398 #1-3, 5, 7, 8-10
	7.5	Pg. 399-404	Pg. 405 #1,2,4,6,7,8
	7.6	Pg. 408-416	Pg. 417 #1-5,8
	7.7	Pg. 422-427	Pg. 427 #1-5, 7,8
	7.8	Pg. 430-436	Pg. 436 #1-5
	Self Test		Pg. 440 #1-8
	Chapter Review	Pg. 441-442	Pg. 443-444 #1, 2, 4-6, 8, 9, 13, 14

- When you are ready, ask your teacher for the Unit 5 Test. Remember, you must get 80% to pass, so studying hard is essential to do well.
- Go over your work from Units 4 and 5 in preparation for Cumulative Test #2. When you are ready to write it, ask your teacher. Remember, this test is one chance only, so do your best.

Goal:

The goal of this unit is to develop your logical and reasoning ability.

Objectives:

While completing this unit you will investigate the following topics and practice working with

- Forming and analyzing conjectures.
- Using reasoning to make predictions.
- Determining whether a conjecture is valid.
- Invalidating a conjecture by finding a contradiction.
- Proving mathematical statements by using logical arguments.
- Identifying errors in proofs.
- Solving problems using inductive or deductive reasoning.
- Using a reasoning strategy to solve a puzzle or win a game.

What to Do in this Unit:

- Read and follow the example problems at the beginning of each section, then do the practice problems on the pages in the table below. Be sure to tick off each section as you complete it.

✓	Chapter	Read	Practice Questions
	1	Pg. 4-5	
	1.1	Pg. 6-12	Pg. 12 #1-3, 5,7
	1.2	Pg. 16-17	Pg. 17 #2
	1.3	Pg. 18-22	Pg. 22 #1-6
	1.4	Pg. 27-31	Pg. 31 #1-5, 7,8
	Mid-Chapter Review	Pg. 34	Pg. 35 #1-3, 6-9
	1.5	Pg. 36-41	Pg. 42 #2,3
	1.6	Pg. 45-48	Pg. 48 #1, 6-8
	1.7	Pg. 52-55	Pg. 55 #1-4,7
	Self-Test		Pg. 58 #1-7
	Chapter Review	Pg. 59-60	Pg. 61 #1, 2, 4, 5, 6, 9, 10, 12, 14-16

- When you are ready, ask your teacher for the Unit 6 Test. Remember, you must get 80% to pass, so studying hard is essential to do well.

Goal:

The goal of this unit is to develop your statistical reasoning ability.

Objectives:

While completing this unit you will investigate the following topics and practice working with

- Finding the similarities and differences between two data sets.
- Creating frequency tables and graphs from a set of data.
- Calculating standard deviation and using it to solve problems or make decisions.
- Determining the properties of a normal distribution.
- Using *z-scores* to compare data, make predictions, and solve problems.
- Using the normal distribution to solve problems involving confidence intervals.

What to Do in this Unit:

- Read and follow the example problems at the beginning of each section, then do the practice problems on the pages in the table below. Be sure to tick off each section as you complete it.

✓	Chapter	Read	Practice Questions
	5	Pg. 208-209	
	5-1	Pg. 210-211	Pg. 211 #1-3
	5.2	Pg. 213-220	Pg. 221 #1-7
	5.3	Pg. 226-232	Pg. 226 #A-P, Pg. 233 #1-3, 5-7
	Mid-Chapter Review	Pg. 238-239	Pg. 239 #1-6
	5.4	Pg. 241-250	Pg. 251 #1-10
	5.5	Pg. 255-263	Pg. 264 #1-10, 14,17
	5.6	Pg. 267-273	Pg. 274 #1-8
	Chapter Self Test		Pg. 277 #1-4
	Chapter Review	Pg. 278-279	Pg. 280 #1-12

- When you are ready, ask your teacher for the Unit 7 Test. Remember, you must get 80% to pass, so studying hard is essential to do well.

Goal:

The goal of this unit is to develop your spatial sense and proportional reasoning.

Objectives:

While completing this unit you will investigate the following topics and practice working with

- Representing, interpreting, and comparing rates.
- Analyzing and solving rate problems.
- Understanding and using scale diagrams of 2-D shapes.
- Solving area problems that involve similar 2-D shapes.
- Understanding and using scale diagrams and models of 3-D shapes.
- Solving problems that involve scale factor, surface area, and volume.

What to Do in this Unit:

- Read and follow the example problems at the beginning of each section, then do the practice problems on the pages in the table below. Be sure to tick off each section as you complete it.

✓	Chapter	Read	Practice Questions
	8	Pg. 450-451	
	8.1	Pg. 452-458	Pg. 458 #1-6, 9
	8.2	Pg. 462-466	Pg. 466 #1-4, 8-11
	Mid-Chapter Review	Pg. 471-472	Pg. 473 #1-3, 6, 7
	8.3	Pg. 474-479	Pg. 479 #1-4, 6, 8, 11
	8.4	Pg. 438-487	Pg. 487 #1, 2, 4, 5, 8
	8.5	Pg. 491-495	Pg. 497 #1-5, 11
	8.6	Pg. 502-508	Pg. 508 #1-6, 10
	Self-Test		Pg. 512 #1-6
	Chapter Review	Pg. 513-514	Pg. 515 #1, 2, 4, 7, 8, 10-12, 14, 15

- When you are ready, ask your teacher for the Unit 8 Test. Remember, you must get 80% to pass, so studying hard is essential to do well.
- Go over your work from Units 6, 7, and 8 in preparation for Cumulative Test #3. When you are ready to write it, ask your teacher. Remember, this test is one chance only, so do your best.
- **Congratulations! You've finished Math 11 Foundations!**