Math 11 Foundations   Course Outline

Material Covered:

The course is comprised of the following three themes:

Triangles
- Angle Relationships
- Scale Models

Reasoning
- Financial Reasoning
- Mathematical Reasoning
- Applications of Statistics

Equations
- Linear Inequalities
- Systems of Linear Equations
- Quadratic Functions and Equations
- Optimization

Textbook:

Foundations of Mathematics 11 (Nelson)   ISBN13: 978-0-17-650270-6

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 what page number in the textbook the information comes from so you can look it up again easily.

Projects:

Each of the unit themes has a culminating project. Each project has suggested guiding questions for you to investigate. Or, you can negotiate your own topic with your teacher. Be sure to get permission first if you are investigating your own topic!

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 three theme projects. These are tests you can only take once, so studying before them is essential to do well. Your class mark for the course is based 60% on the mastery unit tests or projects and 40% on the theme projects.

Math 11 Foundations   Unit 1

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 understand the relationship between similar objects. You will also learn how 2D and 3D objects change and how they can be measured, compared and described.

Objectives:

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

- Enlarge and reduce 2D and 3D objects
- Compare properties of 2D and 3D objects
- Discover the relationship between volume and surface area of 3D objects

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. 474	
	8.3	Pg. 474-479	Pg. 479 #1-4,5,7,9,11,14
	8.4	Pg. 483-486	Pg. 487 #2,3,4ab,5a,6,8,10,13
	8.5	Pg. 491-497	Pg. 497 #1,3,5,7,9,11,15
	8.6	Pg. 502-508	Pg. 508 #1c,3,8,11,13
	Chapter Self Test	Pg. 512	Pg. 512 #2-6
	Chapter Review	Pg. 513-514	Pg. 513 #5,6,9,11,12,14

- 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.

- Go over your work from Units 1 and 2 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 3 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 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 solve systems of equations

Objectives:

While completing this unit you will investigate the following topics and practice working with systems of equations and solving them using various methods such as graphing and algebraically.

- Solve a system of linear equations
- Solve a system of linear and quadratic equations
- Solve a system of quadratic equations
- Applications of equations

What to Do in this Unit:

- This unit does not use a textbook.
- Ask your teacher for the Unit 5 Worksheet, and do all the work there.
- 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 3 - 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 increase your understanding and skills with financial reasoning.

Objectives:

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

- Compound interest
- Investments
- Loans

What to Do in this Unit:

- This unit doesn't use the textbook.
- Ask your teacher for the Unit 6 Worksheet and do all the work there.

- You can demonstrate your learning in Unit 6 by writing a test, or by completing a project. When you are ready, ask your teacher for either the Unit 6 Test or the Unit 6 Project. 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 logic 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 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 explore data, and calculate and interpret data using standard deviation, understand the properties of and approximate normal distribution, solve problems using z-scores, and interpret data using confidence intervals and levels.

Objectives:

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

- Mean, median and mode
- Frequency tables and histograms
- Standard deviation
- Confidence Intervals
- Z scores
- Data representation

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. 210	
	5.1	Pg. 210-211	Pg. 211 #1-3
	5.2	Pg. 213-220	Pg. 221 #1,3-6
	5.3	Pg. 226-232	Pg. 233 #1,2,5,7,9,12
	5.4	Pg. 241-250	Pg. 251 #1,3,5-7,9,11
	5.5	Pg. 255-263	Pg. 264 #1,5-9,13-15
	5.6	Pg. 267-273	Pg. 274 #1,3,5,6,8
	Self Test	Pg. 277	Pg. 277 #1-4
	Chapter Review	Pg. 278-279	Pg. 280 #1-5,7-9,11

- 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—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!**