

**NEW YORK CITY COLLEGE OF TECHNOLOGY**  
**The City University of New York**

**DEPARTMENT:** Mathematics

**COURSE:** MAT 1175

**TITLE:** Fundamentals of Mathematics

**DESCRIPTION** Topics include linear and quadratic functions, intermediate algebra, plane geometry and trigonometry of the right triangle.

**TEXTS:** 1) Intermediate Algebra, Custom Edition.  
J. Miller, M. O'Neill and N. Hyde (2011)  
Mc Graw Hill  
2) Elementary College Geometry.  
H. Africk (1997).  
Thomson Learning

**CREDITS:** 4

**PREREQUISITES:** CUNY proficiency in mathematics.

Prepared by:  
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Fall 2010

- A. Testing Guidelines:  
The following exams should be scheduled:
- i. A one-session exam at the end of the First Quarter
  - ii. A one-session exam at the end of the Second Quarter
  - iii. A one-session exam at the end of the Third Quarter
  - iv. A one-session Final Examination
- B. A scientific calculator with trigonometric functions is required.

## Course Intended Learning Outcomes/Assessment Methods

Learning Outcomes	Assessment Methods
1. Simplify exponents and use scientific notation.	Classroom activities and discussion, homework, exams.
2. Combine and factor polynomials.	Classroom activities and discussion, homework, exams.
3. Combine and simplify rational and radical expressions.	Classroom activities and discussion, homework, exams.
4. solve <ul style="list-style-type: none"> <li>Linear and quadratic equations.</li> <li>Systems of linear equations in two variables.</li> <li>Equations involving rational and radical expressions.</li> </ul>	Classroom activities and discussion, homework, exams.
5. <ul style="list-style-type: none"> <li>Identify lines and angles.</li> <li>Apply theorems and solve problems associated with parallel and perpendicular lines.</li> <li>Apply the SAS, SSS, ASA and AAS Theorems to congruent triangles.</li> <li>Apply the AA Theorem to similar triangles.</li> <li>Solve problems related to a parallelogram.</li> <li>Apply the Pythagorean Theorem.</li> <li>Solve special right triangles.</li> </ul>	Classroom activities and discussion, homework, exams.

## General Education Learning Outcomes/Assessment Methods

Learning Outcomes	Assessment Methods
1. Understand and employ both quantitative and qualitative analysis to solve problems.	Classroom activities and discussion, homework, exams.
2. Employ scientific reasoning and logical thinking.	Classroom activities and discussion, homework, exams.
3. Communicate effectively using written and oral means.	Classroom activities and discussion, homework, exams.
4. Use creativity to solve problems.	Classroom activities and discussion, homework, exams.

## **Mathematics Department Policy on Lateness/Absence**

A student may be absent during the semester without penalty for 10% of the class instructional sessions. Therefore,

If the class meets:

The allowable absence is:

1 time per week

2 absences per semester

2 times per week

3 absences per semester

Students who have been **excessively absent and failed the course at the end of the semester will receive either**

- the WU grade if they have attended the course at least once. This includes students who stop attending without officially withdrawing from the course.
- the WN grade if they have never attended the course.

In credit bearing courses, the WU and WN grades count as an F in the computation of the GPA. While WU and WN grades in non-credit developmental courses do not count in the GPA, the WU grade does count toward the limit of 2 attempts for a developmental course.

**The official Mathematics Department policy is that two latenesses (this includes arriving late or leaving early) is equivalent to one absence.**

Every withdrawal (official or unofficial) can affect a student's financial aid status, because withdrawal from a course will change the number of credits or equated credits that are counted toward financial aid.

## **New York City College of Technology Policy on Academic Integrity**

Students and all others who work with information, ideas, texts, images, music, inventions, and other intellectual property owe their audience and sources accuracy and honesty in using, crediting, and citing sources. As a community of intellectual and professional workers, the College recognizes its responsibility for providing instruction in information literacy and academic integrity, offering models of good practice, and responding vigilantly and appropriately to infractions of academic integrity. Accordingly, academic dishonesty is prohibited in The City University of New York and at New York City College of Technology and is punishable by penalties, including failing grades, suspension, and expulsion. The complete text of the College policy on Academic Integrity may be found in the catalog.

**MAT 1175 Fundamentals of Mathematics****Text:** Miller, O' Neill & Hyde, Intermediate Algebra, custom edition (2011), McGraw HillAfrick, H. (1997). Elementary College Geometry, Thomson Learning.**Note:** The problems in the algebra text followed by a (G) require some basic geometry (area, perimeter, circumference, Pythagorean Theorem)

Session	Section	Homework
1	<b>Algebra</b> 4.1 (Ex. 1-3) Properties of Integer Exponents and Scientific Notation (pp. 314-316)	TEXT: INTERMEDIATE ALGEBRA BY MILLER, O' NEILL & HYDE p. 321: 11-17 odd, 25-31 odd, 33-55 odd, 61, 63
2	<b>Algebra</b> 4.1 (Ex. 4-7) Properties of Integer Exponents and Scientific Notation (pp. 317-320)	TEXT: INTERMEDIATE ALGEBRA BY MILLER, O' NEILL & HYDE p. 321: 65, 69-83 odd, 85-90 all, 91-103 odd
3	<b>Algebra</b> 2.1 (Ex. 1-6, 8, 9) Linear Equations in Two Variables (pp. 128-137) 2.2 (Ex. 2-7) Slope of a Line and Rate of Change (pp. 145-150) 2.3 (Ex. 1-3) Equations of a Line (pp. 156-159)	TEXT: INTERMEDIATE ALGEBRA BY MILLER, O' NEILL & HYDE p. 140: 15-29 odd p. 153: 13-23 odd, 39-51 odd p. 165: 7-17 odd, 25-29 odd, 33-37 odd
4	<b>Algebra</b> 2.3 (Ex. 4-8) Equations of a Line (pp. 159-163)	TEXT: INTERMEDIATE ALGEBRA BY MILLER, O' NEILL & HYDE p. 167: 39-73 odd
5	<b>Algebra</b> 3.1 (Ex. 1-4) Solving Systems of Linear Equations by the Graphing Method (pp. 234-238)	TEXT: INTERMEDIATE ALGEBRA BY MILLER, O' NEILL & HYDE p. 239: 3-7 odd, 15-23 odd, 27, 31
6	<b>Algebra</b> 3.2 (Ex. 1-3) Solving Systems of Linear Equations by the Substitution Method (pp. 243-246) 3.3 (Ex. 1, 2, 5) Solving Systems of Linear Equations by the Addition Method (pp. 249-253) 3.4 (Ex. 1, 2, 4, 5) Applications of Systems of Linear Equations in Two Variables (Optional) (pp. 256-261)	TEXT: INTERMEDIATE ALGEBRA BY MILLER, O' NEILL & HYDE p. 248: 9-21 odd, 25, 35-37 all p. 254: 5-11 odd, 15, 19, 23, 27, 29, 35 p. 262: (Optional) 5, 9, 11, 17, 23, 29
7	<b>Algebra</b> 4.2 (Ex. 1-5, 7(optional), 8 -- only examples with integer coefficients) Adding & Subtracting Polynomials (pp. 323-328) 4.3 (Ex. 1-5) Multiplication of Polynomials (pp. 334-337)	TEXT: INTERMEDIATE ALGEBRA BY MILLER, O' NEILL & HYDE p. 330: 19, 21, 25-29 odd, 37-43 odd, 47, 49, 51-71 odd, 75 (G), 89 (G), 85 (optional), 95 (optional) p. 340: 7, 8, 13, 14, 17-25 odd, 31, 32, 37, 41-53 odd, 93 (G), 97-101 odd (G)

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8	<b>Algebra</b> 4.4 (Ex. 1-3) Division of Polynomials (pp. 343-347) 4.5 (Ex. 1-5) The Greatest Common Factor & Factoring by Grouping (pp. 354-358)	<b>TEXT: INTERMEDIATE ALGEBRA</b> BY MILLER, O' NEILL & HYDE p. 351: 9-17 odd, 25, 27-30 all, 31-37 odd p. 360: 9-25 odd, 31-37 odd, 45-49 odd, 71 (G)
9	<b>Algebra</b> 4.6 (Ex. 1-9) Factoring Trinomials (pp. 362-371) 4.7 (Ex. 1-3) Factoring Binomials (pp. 376-377)	<b>TEXT: INTERMEDIATE ALGEBRA</b> BY MILLER, O' NEILL & HYDE p. 373: 9-35 odd, 55-58 all, 87, 88, 91, 93, 94, 95 p. 383: 11-17 all, 59, 60, 95 (G), 96 (G)
10	<b>Algebra</b> 4.8 (Ex. 1-3, 7, 8) Solving Equations by Using the Zero Product Rule (pp. 388-393)	<b>TEXT: INTERMEDIATE ALGEBRA</b> BY MILLER, O' NEILL & HYDE p. 397: 17-20 all, 25-35 odd, 42, 43, 45, 63 (G), 65 (G), 67 (G), 72 (G), 75 (G)
11	<b>First Examination</b>	
12	<b>Algebra</b> 5.1 (Ex. 3, 4, 6) Rational Expression (pp. 416-422) 5.2 (Ex. 1-3) Multiplication of Rational Expression (pp. 426-428) 5.3 (Ex. 1-9) Addition & Subtraction of Rational Expressions (pp. 431-438)	<b>TEXT: INTERMEDIATE ALGEBRA</b> BY MILLER, O' NEILL & HYDE p. 424: 31-39 odd, 43, 48, 65-73 odd p. 429: 11-21 odd, 23-31 odd p. 438: 7-11 odd, 33-45 odd, 49-57 odd, 79 (G), 81 (G)
13	<b>Algebra</b> 5.5 (Ex. 1-5) Solving Rational Equations (pp. 449-454)	<b>TEXT: INTERMEDIATE ALGEBRA</b> BY MILLER, O' NEILL & HYDE p. 455: 9-19 odd, 29-37 odd
14	<b>Algebra</b> 6.1 (Ex. 1-3) Definition of an nth Root (pp. 492-494) 6.3 (Ex. 1, 3-6 -- only examples with square roots) Simplifying Radical Expressions (pp. 510-514)	<b>TEXT: INTERMEDIATE ALGEBRA</b> BY MILLER, O' NEILL & HYDE p. 500: 7-15 odd p. 515: 9, 13, 17, 19, 21, 25, 33, 35, 37, 45, 47, 49, 53, 55, 61, 65, 67, 69, 71, 77 (G), 79 (G)
15	<b>Algebra</b> 6.4 (Ex. 1-4 -- only examples with square roots) Addition and Subtraction of Radicals (pp. 517-519) 6.5 (Ex. 1-7 -- only examples with square roots) Multiplication of Radicals (pp. 522-526)	<b>TEXT: INTERMEDIATE ALGEBRA</b> BY MILLER, O' NEILL & HYDE p. 520: 15, 19, 23, 35, 37, 39, 41, 45, 51, 55, 57, 79 (G), 81 (G) p. 528: 11, 17, 19, 21, 23, 29, 31, 35, 37, 41, 45, 47, 51, 55, 57, 61, 63, 77, 85 (G), 87 (G)
16	<b>Algebra</b> 6.6 (Ex. 1, 3, 5, 7-9 -- only examples with square roots) Division of Radicals and Rationalization (pp. 531-537)	<b>TEXT: INTERMEDIATE ALGEBRA</b> BY MILLER, O' NEILL & HYDE p. 538: 11, 13, 17, 31-39 odd, 53, 63, 65, 67, 75-81 odd

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17	<b>Algebra</b> 6.7 (Ex. 1, 4) Solving Radical Equations (pp. 540-543)	TEXT: INTERMEDIATE ALGEBRA BY MILLER, O' NEILL & HYDE p. 547: 11-16 all, 21, 23, 37-42 all, 63, 64
18	<b>Algebra</b> 7.1 (Ex. 1-3) Square Root Property (pp. 574-575) 7.2 (Ex. 1, 3, 8) Quadratic Formula (pp. 583-592)	TEXT: INTERMEDIATE ALGEBRA BY MILLER, O' NEILL & HYDE p. 580: 2-5 all, 8, 9, 11, 15 p. 595: 9, 12, 15-20 all, 23, 25, 41 (G), 43 (G), 77
19	<b>Midterm Examination</b>	
20	<b>Geometry</b> 1.1 Lines: pp. 1-6: Ex. A-D 7.5 Circumference of a Circle: pp. 331-335: Ex. A, D 7.6 Area of a Circle: pp. 342: Ex. A 1.2 Angles pp. 8-13: Ex. A-C 1.3 Angle Classifications: pp.17-24: Ex. A-F	TEXT: ELEMENTARY COLLEGE GEOMETRY BY HENRY AFRICK Page 7: 1-5 odd Page 339: 1-5 odd, 19-23 odd, Page 348: 1, 3, 7, 9 Page 14: 1-27 odd Page 26: 1-25 odd
21	<b>Geometry</b> 1.4 Parallel Lines: pp. 30-38: Ex. A-E 6.1 The Area of a Rectangle and Square: pp. 244-247: Ex. A-B, D 1.5 Triangles: pp. 46-54: Ex. A-F 6.3 The Area of a Triangle: pp. 260-264: Ex. A	TEXT: ELEMENTARY COLLEGE GEOMETRY BY HENRY AFRICK Page 42: 1-25 odd Page 249: 1-5 odd, 15, 17 Page 55: 1-25 odd Page 265: 1, 3, 7, 21, 23
22	<b>Geometry</b> 2.1 The Congruence Statement: pp. 67-70: Ex. A-C 2.2 The SAS Theorem: pp. 73-78: Ex. A-C	TEXT: ELEMENTARY COLLEGE GEOMETRY BY HENRY AFRICK Page 71: 1-9 odd Page 81: 1-23 odd
23	<b>Geometry</b> 2.3 The ASA and AAS Theorem: pp. 84-91: Ex. A-D 2.5 Isosceles Triangles: pp.103-109: Ex. A-D 2.6 The SSS Theorem: pp. 113-115: Ex. A, B	TEXT: ELEMENTARY COLLEGE GEOMETRY BY HENRY AFRICK Page 93: 1-21 odd Page 111: 1-13 odd Page 118: 1-7 odd
24	<b>Geometry</b> 3.1 Parallelograms: pp. 130-138: Ex. A-G 6.2 The Area of a Parallelogram: pp. 253-257: Ex. A, D, E	TEXT: ELEMENTARY COLLEGE GEOMETRY BY HENRY AFRICK Page 139: 1-17 odd Page 258: 1, 9, 11, 13

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<b>25</b>	<b>Geometry</b>  4.1 Proportions: pp. 157-160: Ex. A, B 4.2 Similar Triangles: pp. 162-169: Ex. A-H	TEXT: ELEMENTARY COLLEGE GEOMETRY BY HENRY AFRICK  Page 161: 1-11 odd Page 173: 1-21 odd
<b>26</b>	<b>Geometry</b>  4.4 Pythagorean Theorem: pp. 182-186: Ex. A-D 6.1 The Area of a Rectangle and Square: pp. 244-247: Ex. C 6.2 The Area of a Parallelogram: pp. 253-257: Ex. B 6.3 The Area of a Triangle: pp. 260-264: Ex. C 4.5 Special Right Triangles: pp. 197-203: Ex. A-D  6.3 The Area of a Triangle: pp. 260-264: Ex. D	TEXT: ELEMENTARY COLLEGE GEOMETRY BY HENRY AFRICK  Page 192: 1-15 odd Page 249: 7, 9 Page 258: 3 Page 265: 9-13 odd Page 207: 1-19 odd Page 249: 11, 13 Page 258: 7 Page 265: 15, 17
<b>27</b>	<b>Third Examination</b>	
<b>28</b>	<b>Geometry</b>  5.1 The Trigonometric Functions: pp. 215-222: Ex. A-G 5.2 Solution of Right Triangles: pp. 225-230: Ex. A-G 6.2 The Area of a Parallelogram: pp. 253-257: Ex. C 6.3 The Area of a Triangle: pp. 260-264: Ex. B	TEXT: ELEMENTARY COLLEGE GEOMETRY BY HENRY AFRICK  Page 223: 1-19 odd Page 234: 11-41odd Page 258: 5, Page 265: 5, 19 Page 242: 1-5 odd
<b>29</b>	<b>Review</b>	
<b>30</b>	<b>Final Examination</b>	