MAT 050, Quantitative Literacy

using Bittinger & Beecher, Developmental Mathematics, 8th ed.

Includes Textbook Sections and Video Links that cover each competency.

* **Description**:

Develop number sense and critical thinking strategies, introduce algebraic thinking, and connect mathematics to real world applications. Topics in the course include ratios, proportions, percents, measurement, linear relationships, properties of exponents, polynomials, factoring, and math learning strategies. Prerequites: Accuplacer EA 30-84 or AR > 40. This course prepares students for Math for Liberal Arts, Statistics, Integrated Math, and college level career math courses.

* **Learning Objectives (Competencies)**:
1. Demonstrate knowledge of and the ability to solve problems involving ratios, rates, proportions, percents, and measurement conversions.
2. Demonstrate knowledge and usage of formulas.
3. Demonstrate knowledge of and the ability to solve linear equations and inequalities.
4. Demonstrate knowledge of and the ability to calculate and simplify

expressions containing exponents and numeric square roots.

1. Demonstrate knowledge of and the ability to perform algebraic

manipulations involving polynomials, polynomial operations, and basic factoring.

1. Demonstrate the use of critical thinking skills to problem solve.
* **Topical Outline**:
1. Demonstrate knowledge of and the ability to solve problems involving

ratios, rates, proportions, percent’s, and measurement conversions.

* 1. Read and write ratios and proportions using colon or fraction form.

Book Sections:

Section 4.1: Ratio & Proportion

Video Links:

* Intro to Ratios (watch at least the first four minutes, more if you want to)

<http://www.khanacademy.org/math/arithmetic/rates-and-ratios/ratios_and_proportions/v/introduction-to-ratios--new-hd-version>

* 2. Give the ratio $^{2}/\_{3}$ to $^{4}/\_{9}$ as a fraction in lowest terms.

[http://www.mathtv.com/#](http://www.mathtv.com/)

Basic Mathematics, Ratios, Ratios are Fractions

* Additional Problem. Write the ratio $1\frac{2}{3}$ to $3\frac{1}{3}$ as a fraction in lowest terms.

[http://www.mathtv.com/#](http://www.mathtv.com/)

Basic Mathematics, Ratios, Ratios are Fractions

* 1. Simplify ratios and write rates as unit rates.

Book Sections:

Section 4.1 (this text does not specifically use “unit rate” vocabulary, even though it has you calculate them)

Video Links:

* + Definition of Rate & Unit Rate

<http://www.youtube.com/watch?v=l4fVFE5E9ls>



[http://www.mathtv.com/#](http://www.mathtv.com/)

Basic Mathematics, Ratios, Rates and Unit Pricing

* + Rates & Unit Rates with Examples

<http://www.youtube.com/watch?v=r-EjU75RXfs>

* 1. Determine whether a proportion is true.

Book Sections:

Section 4.1

Video Links:

* + What is a proportion? Solving a proportion.

<http://www.youtube.com/watch?v=dLjun948t5Q>

* + Testing if proportions are true (two methods).

<http://www.youtube.com/watch?v=2r83-E5o5rw>

* 1. Solve for the missing term of a proportion.

Book Sections:

Section 4.1

Video Links:

* + Solving Proportions (with check that proportion is true)

<http://www.youtube.com/watch?v=VgSl_YzTXlU>

* + Solving proportions involving decimals & fractions (reviews decimal & fraction multiplication & division).

<http://www.youtube.com/watch?v=31l-07bFl-o>

* 1. Solve word problems involving proportions.

Book Sections:

Section 4.1

Video Links:

* + Application Problems Involving Proportions (multiple):

<http://www.mathtv.com/>

Basic Mathematics, Proportions, Applications

* 1. Convert numbers in percent form to fractional or decimal form and vice versa.

Book Sections:

Section 4.2: Percent Notation, Section 4.3: Percent Notation and Fraction Notation

Video Links:

* + Intro to Percent

<http://www.khanacademy.org/math/arithmetic/decimals/percent_tutorial/v/describing-the-meaning-of-percent>

* + Shading a percent larger than 100%

<http://www.khanacademy.org/math/arithmetic/decimals/percent_tutorial/v/describing-the-meaning-of-percent-2>

* + Writing a percent as a decimal & reduced fraction

<http://www.khanacademy.org/math/arithmetic/decimals/percent_tutorial/v/representing-a-number-as-a-decimal--percent--and-fraction>

* + Write a decimal as a percent.

<http://www.khanacademy.org/math/arithmetic/decimals/percent_tutorial/v/converting-decimals-to-percents--ex-1>

* + Write 7/8 as a decimal and as a percent

<http://www.khanacademy.org/math/arithmetic/fractions/decimals_fractions/v/representing-a-number-as-a-decimal--percent--and-fraction-2>

* 1. Solve percent problems for base, rate, or amount (percentage).

Book Sections:

Section 4.4: Solving Percent Problems Using Percent Equations, 4.5: Solving Percent Problems Using Proportions

Video Links:

* + Identifiying percent, amount, base

<http://www.khanacademy.org/math/arithmetic/decimals/percent_tutorial/v/identifying-percent-amount-and-base>

* + Solve for: 1) amount, 2) percent, 3) base

<http://www.mathtv.com/>

Basic Mathematics, Percent, Basic Percent Problems

* 1. Solve word problems involving percent using the percent formula or proportions.

Book Sections:

Section 4.6: Applications of Percent

Video Links:

* + Solving basic percent word problems

<http://www.mathtv.com/>

Basic Mathematics, Percent, Applications, Examples #1-4

* 1. Solve percent applications involving topics such as commission, discount, simple interest, and percent increase/decrease.

Book Sections:

Commission & Discount: Section 4.7: Sales Tax, Commission, and Discount

Simple Interest: Section 4.8: Simple Interest and Compound Interest

Percent Increase/Decrease: Section 4.6: Applications of Percent

Video Links:

* + Commission & Discount (to 6:10)

<http://www.youtube.com/watch?v=qNuQhCGSKNY>

* + Commission (solve for base, which in this problem is the total sales)

<http://www.youtube.com/watch?v=ecnhf5ZchD8>

* + Discount (using proportions)

<http://www.youtube.com/watch?v=862CmSz15xY>

* + Simple Interest

<http://www.youtube.com/watch?v=r3-lyBGlJ98>

* + Percent Increase/Decrease

<http://www.youtube.com/watch?v=9PMASWqKEaI>

* + Percent Increase/Decrease (new value after a % increase or decrease)

<http://www.youtube.com/watch?v=AHk6XiIlfjE>

* + Sales Tax

<http://www.mathtv.com/>

Basic Mathematics, Percent, Applications, Examples #5-8

* 1. Identify the basic units in the U.S. system and convert from one unit to another, introducing commonly used fractions as needed.

Video Links:

* + A nice intro to conversion factors (unit fractions), also inches <-> cm (same as below in US <-> Metric)

<http://www.youtube.com/watch?v=7Ogj9G3qvVY>

* + Intro – conversions using the factor label method (which is the same as using fractions or unit factors), also m to km, seconds to days (same as below in Metric)

<http://www.youtube.com/watch?v=QoMYSSz4Vco>

Book Sections:

Appendix A: Linear Measures: American Units and Metric Units

Appendix B: Weight and Mass: Medical Applications

Appendix C: Capacity: Medical Applications (capacity is another way of saying volume)

Video Links:

* + Convert feet to yards (first one minute, 45 seconds)

<http://www.youtube.com/watch?v=iwrAvse-ONA>

* + Convert pounds to ounces.

<http://www.khanacademy.org/math/arithmetic/rates-and-ratios/unit_conversion/v/converting-pounds-to-ounces>

* + Convert gallons to cups.

<http://www.khanacademy.org/math/arithmetic/rates-and-ratios/unit_conversion/v/converting-gallons-to-quarts-pints-and-cups>

* 1. Reproduce the metric chart (prefixes, abbreviations, and values) from kilo to milli.

Book Sections: Appendices A-C

Video Link: Metric chart and dekaliters to centiliters.

<http://www.khanacademy.org/math/arithmetic/rates-and-ratios/unit_conversion/v/conversion-between-metric-units>

* 1. Convert from one metric unit to another.

Book Sections:

Appendix A: Linear Measures: American Units and Metric Units

Appendix B: Weight and Mass: Medical Applications

Appendix C: Capacity: Medical Applications (capacity is another way of saying volume)

Video Links:

* + Shortcut method (using the line and listing units), length, volume, mass:

<http://www.youtube.com/watch?v=XS-8FCqYo5M>

* + (same as above) Intro – conversions using the factor label method (which is the same as using fractions or unit factors), also m to km, seconds to days

<http://www.youtube.com/watch?v=QoMYSSz4Vco>

* + Convert decimeters to kilometers:

<http://www.khanacademy.org/math/arithmetic/rates-and-ratios/unit_conversion/v/converting-within-the-metric-system>

* 1. Convert units of length, weight, volume, and temperature between metric and U.S. systems introducing unit fractions and/or proportions as needed.

Appendix A: Linear Measures: American Units and Metric Units

Appendix D: Time and Temperature

*This text does not cover converting from US to metric units of weight or volume (capacity), but the process is the same for all unit conversions here except temperature.*

Video Links:

* + Convert inches to cm, cm to in, also a nice intro to conversion factors (unit fractions) – same as above

<http://www.youtube.com/watch?v=7Ogj9G3qvVY>

* + Convert kg to lb, g to lb

<http://www.youtube.com/watch?v=q-01A-5kdy4>

* + Convert litres to quarts, in to cm

<http://www.youtube.com/watch?v=cjpQetoy0Nk>

* + Convert Fahrenheit to Celcius

<http://www.khanacademy.org/math/arithmetic/rates-and-ratios/unit_conversion/v/converting-farenheit-to-celsius>

* + Convert Celcius to Fahrenheit

<http://www.youtube.com/watch?v=9sEnXM3WeZk>

1. Demonstrate knowledge and usage of formulas.
	1. Apply formulas in calculating perimeter/circumference and area of plane geometric figures.

Book Sections:

Section 6.2: Perimeter

Section 6.3: Area

Section 6.4: Circles

Video Links:

* + Various examples:

[http://www.mathtv.com/#](http://www.mathtv.com/)

Geometry, Area and Perimeter

* 1. Evaluate formulas for given values of the variables, including formulas with integer exponents, fractions, and decimals.

Book Sections:

Sections 6.2-6.4 (includes integer exponents and decimals in area formulas) – refer to above for Video Links

Appendix D: Time and Temperature (temperature formulas are given with both fractions and decimals) – refer to US <-> Metric conversions for temperature formulas

10.3: Introduction to Polynomials (polynomial formulas are used)

Video Links:

* + Calculate BMI

<http://www.youtube.com/watch?v=k9kDN8j-0Wo>

* + Calculate BAC

<http://www.youtube.com/watch?v=1C3TFjAGMVI>

* + Calculate BMR & daily caloric needs

<http://www.youtube.com/watch?v=VPY13pxC02s>

* + Distance = rate x time

<http://www.youtube.com/watch?v=xEhLCrvVrOg>

* 1. Solve word problems that apply formulas.

Book Sections:

Sections 6.2-6.4, Appendix D, 10.3

Video Links:

* + Evaluate total cost

<http://www.youtube.com/watch?v=XIu5wFT9wS0>

* + Basic distance = rate x time

<http://www.youtube.com/watch?v=vqVxedhQN5I>

1. Demonstrate knowledge of and the ability to solve linear equations and inequalities.
	1. Solve first degree equations including those involving fractions, decimals, ratio, proportion, and percent.

Book Sections:

Section 8.1: Solving Equations: The Addition Principle

Section 8.2: Solving Equations: The Multiplication Principle

Section 8.3: Using the Principles Together

Chapter 4: Percent Notation

Video Links: The Khan Academy has a great selection of videos on this topic! Here are direct links to some of them, but there are too many great examples to include! MathTV also does some great examples with explanations of the properties.

* + Subtracting the same thing from both sides, using a scale

<http://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/why-of-algebra/v/why-we-do-the-same--thing-to-both-sides--simple-equations>

* + Same scale as above, writing it as an equation

<http://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/why-of-algebra/v/representing-a-relationship-with-a-simple-equation>

* + Intuition on why to divide by both sides, using a scale

<http://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/why-of-algebra/v/intuition-why-we-divide-both-sides>

* + Dividing by the same thing on both sides (writing it as an equation), using the same scale

<http://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/why-of-algebra/v/one-step-equation-intuition>

* + Solving simple one-step equations $(x+7=10, a-5=-2)$

<http://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/why-of-algebra/v/adding-and-subtracting-the-same-thing-from-both-sides>

* + Two-step equation (intuition using a scale and finding the equation): $3x+2=14$

<http://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/why-of-algebra/v/why-we-do-the-same--thing-to-both-sides--two-step-equations>

* + Multistep equation, both intuition using a scale and solving the algebraic equation: $3y+3=y+7$

<http://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/why-of-algebra/v/why-we-do-the-same--thing-to-both-sides-multi-step-equations>

* + Solve: $-16=\frac{x}{4}+2$ and check the solution (same as below).

<http://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/equations_beginner/v/solving-equations-1>

* + Solve linear equations in one variable with parentheses, fractions, decimals

<http://www.mathtv.com/>

Algebra, Linear Equations in 1 Variable

With Parentheses, With Fractions, With Decimals

* + See video links for Chapter 4 for ratio, proportion, and percent
	1. Check the solution of first degree equations.

Book Sections:

Section 8.1: Solving Equations: The Addition Principle

Section 8.2: Solving Equations: The Multiplication Principle

Section 8.3: Using the Principles Together

Video Link: Solve: $-16=\frac{x}{4}+2$ and check the solution (same as above)

<http://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/equations_beginner/v/solving-equations-1>

* 1. Graph linear equations in two variables using the Cartesian coordinate system.

Book Sections:

Section 9.1: Graphs and Applications of Linear Equations (graph by plotting points)

Section 9.2: More with Graphing and Intercepts

Section 9.5: Graph Using the Slope and y-intercept

Video Links:

* + Intro to naming and plotting points in Cartesian coordinate system (to 3 min 10 sec)

<http://www.khanacademy.org/math/algebra/linear-equations-and-inequalitie/coordinate-plane/v/the-coordinate-plane>

* + Graph the line $5x+2y=20$ (by plotting points)

<http://www.khanacademy.org/math/algebra/linear-equations-and-inequalitie/graphing_solutions2/v/plotting--x-y--relationships>

* + Graph a line using the y-intercept and slope

[http://www.mathtv.com/#](http://www.mathtv.com/)

Algebra, Linear Equations in Two Variables (straight lines), the Equation of a Line (I recommend Preston)



* 1. Determine the x- and y-intercepts of a linear equation.

Book Sections:

Section 9.2: More with Graphing and Intercepts

Video Links:

* + Define intercepts and find the x & y intercepts of $-5x+4y=20$

<http://www.khanacademy.org/math/algebra/linear-equations-and-inequalitie/graphing_with_intercepts/v/x--and-y-intercepts>

* 1. Find the slope of a line given two points or the equation of the line.

Book Sections:

Section 9.3: Slope and Applications

Video Links:

* + Define slope and explain in words what it tells us

<http://www.youtube.com/watch?v=R948Tsyq4vA>

* + What positive, negative, zero, and undefined slope mean

<http://www.thefreemathtutor.com/positivenegativezeroandundefinedslopes.html>

* + Find the slope given the equation of the line $5y=x+10$

<http://www.youtube.com/watch?v=EUDj_lSNzUY>

* + Find the slope of the line containing the two points:

[http://www.mathtv.com/#](http://www.mathtv.com/)

Algebra

[Linear Equations in 2 Variables (Straight Lines)](http://www.mathtv.com/)

 [The Slope of a Line](http://www.mathtv.com/)

 

* 1. Explain how slope relates to a rate of change in a problem.

Book Sections:

Section 9.3: Slope and Applications

Video Links:

* + Intro to slope as a rate of change

<http://www.youtube.com/watch?v=-TOEOhN_jds>

* + Slope as a rate of change: You are traveling by care and leave home at 8am. By 8:45am, you are 36 miles from home. Find the average speed in miles per hour.

<http://www.youtube.com/watch?v=Z9sy1vtOjgc>

* + Interpret slope as a rate of change from a line of best fit through a scatterplot. How does the number of HW assignments completed affect test score? How does hours watching TV affect test score?

<http://www.youtube.com/watch?v=0sKYkpu3AKY>

* + Juanita is snowboarding downhill. Her elevation E(t) in feet after t seconds is given by $E\left(t\right)=4200-65t$. Interpret the y-intercept and slope. (note: E(t) is just a fancy way of saying “y,” so you could read this as $y=4200-65t$ instead)

<http://www.youtube.com/watch?v=ZRPoWtwA5Uo>

* 1. Find and write the equation of a line in slope-intercept form.

Book Sections:

Section 9.4: Equations of Lines

Video Links:

* + Find the equation of the line with slope 3/2 and y-intercept 1:

[http://www.mathtv.com/#](http://www.mathtv.com/)

Algebra, Linear Equations in Two Variables (straight lines), the Equation of a Line, Ex.1

* + The equation of a line in slope-intercept form given two points

[http://www.mathtv.com/#](http://www.mathtv.com/)

Algebra, Linear Equations in Two Variables (straight lines), the Equation of a Line



* 1. Solve and graph applications using linear equations.

Book Sections:

Section 8.6: Applications and Problem Solving (for applications of first degree linear equations)

Section 9.1: Graphs and Applications of Linear Equations

Video Links:

* + Jill just received $40. The number of dollars she has left, y, after x days, is approximated by the formula $y=40-2.5x$. Graph the equation and use the graph to estimate how much money Jill will have 8 days later.

<http://www.khanacademy.org/math/algebra/linear-equations-and-inequalitie/graphing_solutions2/v/application-problem-with-graph>

* + The company Ringular has a monthly cellular plan where a customer pays a flat monthly fee and thena per minute fee. If a customer uses 360 minutes, the monthly cost will be $38. If the customer uses 800 minutes, the monthly cost will be $60. Find a linear equation for the total monthly cost. How much will the monthly cost be if the customer uses 1200 minutes?

<http://www.youtube.com/watch?v=cisfwvpE9V0>

* + The creeper rule of dating: half your age plus seven

<http://www.youtube.com/watch?v=hETx6VpGWAE>

* 1. Solve first degree inequalities, including compound inequalities.

Book Sections:

Section 8.7: Solving Inequalities

Appendix K: Inequalities and Interval Notation

This text does not cover compound inequalities.

Video Links:

* + Graph $x<4$ It will be more useful in MAT 055 to graph using the notation



with parentheses in place of open dots and brackets in place of closed dots. However, the videos that use the dots still give a great “how-to”!

<http://www.khanacademy.org/math/algebra/linear_inequalities/inequalities/v/inequalities-on-a-number-line>

* + Solve $x+8\leq 6$ and graph the solution <http://www.khanacademy.org/math/algebra/linear_inequalities/inequalities/v/one-step-inequalities>
	+ Solve for c and graph the solution: $-5c\leq 15$

<http://www.khanacademy.org/math/algebra/linear_inequalities/inequalities/v/one-step-inequalities-2>

* + Solve a three-part compound inequality: Solve the inequality and express the solution in interval notation: $-4<3w+5<12$

<http://www.youtube.com/watch?v=y0R54UeqClo>

* + Solve and graph an “and” compound inequality: $2x-7>-9 and 3x+1>10$

<http://www.youtube.com/watch?v=IOLS5mqWXU8>

* + Solve and graph an “or” compound inequality: $2x-7<-9 or 3x+1\geq 10$

<http://www.youtube.com/watch?v=yovV0mnRUCc>

* 1. Graph solutions for first degree inequalities.

Book Sections:

Section 8.7, Appendix K

Video Links:

 See above.

1. Demonstrate knowledge of and the ability to calculate and simplify expressions containing exponents and square roots.
	1. Demonstrate proper use of order of operations and properties of exponents, including integer exponents.

Book Sections:

Section 1.6: Exponential Notation and Order of Operations

Section 10.1: Integers as Exponents

Section 10.2: Exponents and Scientific Notation

Video Links:

* + Find $5^{3}$

<http://www.khanacademy.org/math/arithmetic/exponents-radicals/world-of-exponents/v/understanding-exponents-2>

* + Write $6∙6∙6∙6∙6∙6∙6∙6$ in exponential notation

<http://www.khanacademy.org/math/arithmetic/exponents-radicals/world-of-exponents/v/understanding-exponents>

* + Order of Operations Problem: Simplify $62-2(5-1)^{2}+1$

<http://www.youtube.com/watch?v=Y3CZ_JBQ0do>

* + Properties of Exponents: Rules of Multiplying, Dividing, and Raising a Power to a Power – basic examples with explanations of why for the properties, additional examples to use them

<http://www.youtube.com/watch?v=9FWb7vdwLvw>

* + Review of Properties and Exponents of One, Zero, and Negative Exponents

<http://www.youtube.com/watch?v=m7yRS8TEwe0>

* + Zero and negative exponents – intuition (a different approach than above)

<http://www.khanacademy.org/math/arithmetic/exponents-radicals/world-of-exponents/v/negative-exponent-intuition>

* + Examples with negative exponents – includes a fraction

<http://www.youtube.com/watch?v=1Aex9IdNEBw>

* 1. Change notation from standard decimal form to scientific notation and vice versa.

Book Sections:

Section 10.2: Exponents and Scientific Notation

Video Links:

* + Write numbers in scientific notation (no words but nice write-up & graphics)

<http://www.youtube.com/watch?v=H578qUeoBC0>

* + Write $2.9×10^{4}$ (which is in scientific notation) in standard notation

<http://www.youtube.com/watch?v=Hqok8UyyUXA>

* + Write $5.0×10^{-5}$ in standard form

<http://www.youtube.com/watch?v=R2pnWYvZOVw>

* + Write numbers in scientific notation

<http://www.youtube.com/watch?v=ACZJMjt6qFk>

* 1. Apply properties of exponents to simplify expressions involving scientific notation. (Example: (2 x 106) (4 x 105))

Book Sections:

Section 10.2: Exponents and Scientific Notation

Video Links:

* + Multiply and divide in scientific notation

<http://www.youtube.com/watch?v=-qp4ryd1zpA>

* 1. Calculate and simplify square roots of real numbers with both rational and irrational solutions (exact and decimal approximations).

Book Sections:

Section 14.1: Introduction to Radical Expressions (only a small part of this section is needed)

Video Links:

* + Find $\sqrt{100}$

<http://www.khanacademy.org/math/arithmetic/exponents-radicals/radical-radicals/v/understanding-square-roots>

* + Perfect squares and square roots

<http://www.youtube.com/watch?v=4qAKA7MTLSo>

* + Using the TI-84 (same for TI-83) to approximate square roots

<http://www.youtube.com/watch?v=-uWeo48eyBs>

1. Demonstrate knowledge of and the ability to perform algebraic manipulations involving polynomials, polynomial operations, and basic factoring.
	1. Add, subtract, and multiply polynomial expressions with rational coefficients and express the answer in simplest form.

Book Sections:

Section 10.3: Introduction to Polynomials

Section 10.4: Addition and Subtraction of Polynomials

Section 10.5: Multiplication of Polynomials

Section 10.6: Special Products

Video Links:

* + Combining like terms, and explaining what like terms are

<http://www.youtube.com/watch?v=k-HZCuIwW4U>

* + Simplify $3x^{2}-8x+7+2x^{3}-x^{2}+8x-3$

<http://www.khanacademy.org/math/algebra/polynomials/polynomial_basics/v/simply-a-polynomial>

* + Add $\left(5x^{2}+8x-3\right)+(2x^{2}-7x+13x)$

<http://www.khanacademy.org/math/algebra/polynomials/polynomial_basics/v/adding-polynomials>

* + Add polynomials with fractions

<http://www.youtube.com/watch?v=6wwQJNcWIvM>

* + Subtract polynomials:

[http://www.mathtv.com/#](http://www.mathtv.com/)

Algebra, Polynomials, Addition and Subtraction of Polynomials



* + The Distributive Property

<http://www.youtube.com/watch?v=EWcllbr8Hqs>

* + Multiply $3x^{2}(2x^{2}+4x+5)$

[http://www.mathtv.com/#](http://www.mathtv.com/)

Algebra, Polynomials, Multiplication with Polynomials



* + Multiplying polynomials vertically

<http://www.youtube.com/watch?v=XwVZ62iRWN4>

* + Multiply $(2x+3)(3x^{2}-2x+1)$

[http://www.mathtv.com/#](http://www.mathtv.com/)

Algebra, Polynomials, Multiplication with Polynomials



* + FOIL: Multiply $(x+2)(3x-7)$

<http://www.youtube.com/watch?v=Axv7cqezipY>

* + Multiply special products (difference of squares, binomial square)
	+ Multiply: $\left(x+4\right)\left(x-4\right), (x+3)^{2}$

<http://www.youtube.com/watch?v=lJ71P4VdTQI>

* 1. Divide a polynomial by a monomial.

Book Sections:

Section 10.8: Division of Polynomials

Video Links:

* + Simplify: $\frac{18x^{4}-3x^{2}+6x-4}{6x}$

<http://www.khanacademy.org/math/algebra/polynomials/dividing_polynomials/v/polynomial-divided-by-monomial>

* 1. Factor out the greatest common monomial factor.

Book Sections:

Section 11.1: Introduction to Factoring

Video Links:

* + As many of the MathTV videos as you want

[http://www.mathtv.com/#](http://www.mathtv.com/)

Algebra, Factoring, Greatest Common Factor

* 1. Factor the difference of two squares.

Book Sections:

Section 11.5: Factoring Trinomial Squares and Difference of Squares

Video Links:

* + Factor $x^{2}-49y^{2}$

<http://www.khanacademy.org/math/trigonometry/polynomial_and_rational/quad_factoring/v/factoring-difference-of-squares>

* 1. Factor trinomials of the form ax2 + bx + c, a = 1.

Book Sections:

Section 11.2: Factoring Trinomials of the Type $x^{2}+bx+c$

Video Links:

* + Factor $x^{2}-14x+40, x^{2}-x-12$

<http://www.khanacademy.org/math/trigonometry/polynomial_and_rational/quad_factoring/v/factoring-polynomials-1>

1. Demonstrate the use of critical thinking skills to problem solve.
	1. Model real-world application problems, interpret results, and summarize using complete sentences.

This competency is included throughout the text in application problems. See above for specific sections and videos.

* 1. Create and use graphs, tables, and equations to solve real-world application problems relating to linear relationships.

Book Sections:

Section 8.6: Applications and Problem Solving

Video Links:

* + Create an equation.

<http://www.youtube.com/watch?v=OKI5Td_rExY>

* + Use a graph (same video as above in III.h.)

Jill just received $40. The number of dollars she has left, y, after x days, is approximated by the formula $y=40-2.5x$. Graph the equation and use the graph to estimate how much money Jill will have 8 days later.

<http://www.khanacademy.org/math/algebra/linear-equations-and-inequalitie/graphing_solutions2/v/application-problem-with-graph>

* + Use a table

<http://www.youtube.com/watch?v=1igYEeS-kJE>

* 1. Identify academic support resources.

This is campus-specific info that should include instructor office hours, walk-in tutoring, Student Support Services, and workshops/seminars on math topics. Also:

<http://www.khanacademy.org/>

<http://www.mathtv.com/>

<http://education-portal.com/academy/course/algebra.html>

[www.mathvids.com](http://www.mathvids.com)

<http://www.coolmath.com/algebra/index.html>

<http://www.wtamu.edu/academic/anns/mps/math/mathlab/>

<http://www.purplemath.com/>

htt[p://www.themathpage.com](http://www.themathpage.com)

and any other math websites you can find and that you like!

* 1. Engage in appropriate math learning and testing strategies.

Our text provides some strategies – see the first page and the Study Tips scattered throughout. Also, you could use Paul Nolting’s Math Study Skills Workbook as a reference for ideas – there’s a lot of great stuff in there!

Video Links:

* + How Learning Math is Different from Other Subjects

<http://www.youtube.com/watch?v=9SIYDdIiGvg>

* + Six Strategies

<http://www.youtube.com/watch?v=E8mbcXPeq_E>

* + Study Tips (great tips, but maybe geared toward younger students “get rest, don’t party too much”)

<http://www.youtube.com/watch?v=S89KgVIp4m0>

* + Seven Test-Taking Tips

<http://www.youtube.com/watch?v=Z2iCZ6h24pc>

* 1. Effectively use calculators and other appropriate technology.

This is not covered in our text, but you should practice using appropriate technology throughout. A great resource is the CD manual that comes with the calculators (the written manual is often inadequate) as well as Googling for info on specific tasks.