

# Using Khan Academy for GMAT Prep

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The common core state math standards overlap with GMAT standards (pp 105 – 45 in the 2017 Official Guide) in a number of areas. I've listed them below by grade, content area, and common core code.

Doing the related exercises can help you shore up weak areas in your fundamental math skills. Follow this list carefully. If you wonder from the path, you will learn math you don't need to know, and practice skills with little or no payoff on the GMAT. You might also miss out on skills that will help you in unanticipated ways.

Keep in mind that you may already know a lot of this, but I'm trying to be as thorough as possible. However, I have been a bit picky when it comes to basic operations – i.e. adding, subtraction, multiplying, and dividing integers, fractions and decimals. If you struggle with these, you should start with the Arithmetic Module:

<https://www.khanacademy.org/math/arithmetic>

I've also been a bit picky with more advanced concepts. The common core standards are probably an order of magnitude more rigorous than what you encountered in high school, and consequently there's not a lot of quick and dirty explanations when it comes to combinatorics, quadratics, coordinate geometry, etc.

KA lists sub-standards in alphabetical order, rather than order of complexity. I've tried to reorder in terms of complexity, but I'm sure I've made a few mistakes. I welcome comments – john@owltestprep.com

## 1) Grade 4

- a) Operations and Algebraic Thinking
  - i) 4.OA.A.3:
    - (1) Multi-Step Word Problems with Whole Numbers
  - ii) 4.OA.B.4:
    - (1) Factor Pairs
    - (2) Identify Composite Numbers
    - (3) Identify Factors and Multiples
    - (4) Identify Prime Numbers
- b) Numbers and Operations in Base Ten
  - i) 4.NBT.A.1:
    - (1) Divide Whole Numbers by 10
    - (2) Multiply Whole numbers by 10
    - (3) Multiply and Divide by 10 Challenge
    - (4) Place Value When Multiplying and Dividing by 10
  - ii) 4.NBT.A.3:
    - (1) Round Whole Numbers

- iii) 4.NBT.B.5:
  - (1) Multiply 1-Digit Numbers by 10, 100, and 1,000
  - (2) Multiply 1-Digit Numbers by a Multiple of 10, 100, and 1,000
  - (3) Multiply Using Place Value
  - (4) Multiply with Regrouping
  - (5) Multiplying 10's
- iv) 4.NBT.B.6:
  - (1) Cancel Zeros When Dividing
- c) Number and Operations: Fractions
  - i) 4.NF.A.2:
    - (1) Common Denominators
    - (2) Compare Fractions with Different Numerators and Denominators
    - (3) Order Fractions
  - ii) 4.NF.B.3:
    - (1) Rewrite Mixed Numbers and Improper Fractions
  - iii) 4.NF.B.4:
    - (1) Multiply Fractions and Whole Numbers 2
    - (2) Multiply Fractions and Whole Numbers 3
  - iv) 4.NF.B.4c:
    - (1) Multiply Fractions and Whole Numbers Word Problems
  - v) 4.NF.C.6:
    - (1) Rewrite Fractions as Decimals

## 2) Grade 5

- a) Geometry
  - i) 5.G.B.3:
    - (1) Properties of Shapes
  - ii) 5.G.B.4:
    - (1) Properties of Shapes
- b) Operations and Algebraic Thinking
  - i) 5.OA.A.1:
    - (1) Evaluate Expressions with Parentheses
  - ii) 5.OA.A.2:
    - (1) Create Expressions with Parentheses
    - (2) Translate Expressions with Parentheses
- c) Number and Operations in Base Ten
  - i) 5.NBT.A.2:
    - (1) Multiply and Divide by Powers of 10
    - (2) Multiply and Divide Decimals by 10
    - (3) Multiply and Divide Decimals by 10, 100, and 1,000
    - (4) Multiply and Divide Decimals by 10, 100, and 1,000
    - (5) Powers of 10
    - (6) Understanding Moving the Decimal
  - ii) 5.NBT.A.3a:
    - (1) Decimals in Expanded Form
  - iii) 5.NBT.A.3b:
    - (1) Order Decimals

- iv) 5.NBT.A.4:
  - (1) Round Decimals 1
  - (2) Round Decimals 2
- v) 5.NBT.B.5:
  - (1) Multiply by Taking Out Factors of 10
- vi) 5.NBT.B.6:
  - (1) Divide by Taking Out Factors of 10
- d) Number and Operations: Fractions
  - i) 5.NF.A.2:
    - (1) Add and Subtract Fractions Word Problems
  - ii) 5.NF.B.3:
    - (1) Fractions as Division
    - (2) Fractions as Division Word Problems
  - iii) 5.NF.B.5:
    - (1) Fraction Multiplication as Scaling
  - iv) 5.NF.B.5a:
    - (1) Fraction Multiplication as Scaling
  - v) 5.NF.B.6:
    - (1) Multiply Fractions Word Problems
  - vi) 5.NF.B.7c:
    - (1) Divide Fractions and Whole Numbers Word Problems

### 3) Grade 6

- a) Geometry
  - i) 6.G.A.1:
    - (1) Area of Triangles
    - (2) Area of Parallelograms
    - (3) Area of Trapezoids
    - (4) Area of Composite Shapes
- b) Ratios and Proportional Relationships
  - i) 6.RP.A.1:
    - (1) Basic Ratios
  - ii) 6.RP.A.2:
    - (1) Comparing Rates
    - (2) Rate Problems
  - iii) 6.RP.A.3:
    - (1) Comparing Rates
    - (2) Finding Percents
    - (3) Percent Word Problems
    - (4) Rate Problems
    - (5) Ratio Word Problems
  - iv) 6.RP.A.3b:
    - (1) Comparing Rates
    - (2) Rate Problems
  - v) 6.RP.A.3c:
    - (1) Converting Percents and Fractions
    - (2) Percent Word Problems

- c) The Number System
  - i) 6.NS.A.1:
    - (1) Dividing Fractions Word Problems
  - ii) 6.NS.B.3:
    - (1) Adding and Subtracting Decimals Word Problems
  - iii) 6.NS.B.4:
    - (1) Distributive Property with Variables
    - (2) Factor with the Distributive Property
    - (3) Greatest Common Factor
    - (4) Least Common Multiple
    - (5) GCF and LCM Word Problems
  - iv) 6.NS.C.7c:
    - (1) Finding Absolute Values
    - (2) Comparing Absolute Values
    - (3) Interpreting Absolute Value
- d) Expressions and Equations
  - i) 6.EE.A.1:
    - (1) Exponents
    - (2) Powers of Fractions
  - ii) 6.EE.A.2:
    - (1) Writing Basic Expressions with Variables
    - (2) Writing Expressions with Variables
    - (3) Writing Basic Expressions Word Problems
    - (4) Evaluating Expressions with Variables Word Problems
    - (5) Writing Expressions Word Problems
  - iii) 6.EE.A.2b:
    - (1) Terms, Factors, and Coefficients
  - iv) 6.EE.A.2c:
    - (1) Order of Operations
    - (2) Evaluating Expressions with One Variable
    - (3) Evaluating Expressions with Two Variables
    - (4) Evaluating Expressions with Variables Word Problems
  - v) 6.EE.A.3:
    - (1) Combining Like Terms
    - (2) Combining Like Terms with Distribution
    - (3) Distributive Property with Variables
    - (4) Equivalent Expressions
  - vi) 6.EE.B.7:
    - (1) One-Step Addition and Subtraction Equations
    - (2) One-Step Addition and Subtraction Equations: Fractions and Decimals
    - (3) One-Step Multiplication and Division Equations
    - (4) One-Step Multiplication and Division Equations: Fractions and Decimals
- e) Statistics and Probability
  - i) 6.SP.B.5c
    - (1) Calculating the Mean
    - (2) Calculating the Median

- (3) Mean, Median, and Mode
- (4) Missing Value Given the Mean

#### 4) Grade 7

- a) Geometry
  - i) 7.G.A.2
    - (1) Triangle Inequality Theorem
  - ii) 7.G.B.4
    - (1) Radius, Diameter, and Circumference
    - (2) Area of a Circle
    - (3) Area and Circumference of Parts of a Circle
  - iii) 7.G.B.5
    - (1) Quadrilateral Angles
    - (2) Vertical Angles
    - (3) Unknown Angle Problems (with Algebra)
- b) Ratios and Proportional Relationships
  - i) 7.RP.A.1
    - (1) Rates with Fractions
  - ii) 7.RP.A.2
    - (1) Writing Proportional Equations
  - iii) 7.RP.A.3
    - (1) Solving Proportions
    - (2) Markup and Commission Word Problems
    - (3) Discount, Tax, and Tip Word Problems
    - (4) Proportions Word Problems
- c) The Number System
  - i) 7.NS.A.1
    - (1) Adding Negative Numbers
    - (2) Subtracting Negative Numbers
    - (3) Adding and Subtracting Negative Numbers
    - (4) Signs of Sums
    - (5) Negative Number Addition and Subtraction: Word Problems
  - ii) 7.NS.A.1c
    - (1) Absolute Value to Find Distance
  - iii) 7.NS.A.2
    - (1) Converting Fractions to Decimals
    - (2) Comparing Rational Numbers
    - (3) Multiplying and Dividing Negative Numbers
    - (4) Multiplying and Dividing Negative Numbers: Word Problems
    - (5) Exponents with Integer Bases
    - (6) Exponents with Negative Fractional Bases
  - iv) 7.NS.A.3
    - (1) Simplify Hairy Fractions
- d) Expressions and Equations
  - i) 7.EE.A.1
    - (1) Equivalent Expressions: Negative Numbers and Distribution
    - (2) The Distributive Property with Variables

- (3) Combining Like Terms with Negative Coefficients and Distribution
- ii) 7.EE.B.4
  - (1) Two-step Equations
  - (2) Two-step Equations with Decimals and Fractions
  - (3) Two-step Equations Word Problems
- iii) 7.EE.B.4b
  - (1) One-step Inequalities
  - (2) Two-step Inequalities
  - (3) Two-step Inequalities Word Problems
- e) Statistics and Probability
  - i) 7.SP.C.7
    - (1) Simple Probability
  - ii) 7.SP.C.8
    - (1) The Counting Principle
    - (2) Sample Spaces for Compound Events
    - (3) Probabilities of Compound Events

## 5) Grade 8

- a) Geometry
  - i) 8.G.A.5
    - (1) Equation Practice with Congruent Angles
    - (2) Parallel Lines
  - ii) 8.G.B.7
    - (1) Pythagorean Theorem
    - (2) Pythagorean Theorem Word Problems
  - iii) 8.G.B.8
    - (1) Distance Between Two Points
- b) The Number System
  - i) 8.NS.A.2
    - (1) Approximating Square Roots
- c) Expressions and Equations
  - i) 8.EE.A.1
    - (1) Negative Exponents
    - (2) Properties of Exponents
    - (3) Using Exponent Rules to Evaluate Expressions
  - ii) 8.EE.A.2
    - (1) Square Roots of Perfect Squares
    - (2) Cube Roots
    - (3) Roots of Decimals and Fractions
    - (4) Equations with Square Roots and Cube Roots
  - iii) 8.EE.A.4
    - (1) Scientific Notation
    - (2) Adding and Subtracting in Scientific Notation
    - (3) Multiplying and Dividing in Scientific Notation
  - iv) 8.EE.C.7
    - (1) Equations with Parentheses
    - (2) Equations with Variables on Both Sides

- (3) Number of Solutions to Equations
- v) 8.EE.C.7b
  - (1) Equation Practice with Vertical Angles
  - (2) Equation Practice with Angle Addition
  - (3) Equation Practice with Midpoints
  - (4) Sums of Consecutive Integers
- vi) 8.EE.C.8
  - (1) Equivalent Systems of Equations
  - (2) Systems of Equations with Elimination
  - (3) Systems of Equations with Substitution
  - (4) Systems of Equations Word Problems
  - (5) Age Word Problems