Challenge

## Workout 4A: Algebra Tools

with Po-Shen Loh

| Course Name | Covered Topics | Learning Time |
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| Get Ready | Who Should Take This Course, Help Us Know More About You, How to Use This Course, Table of Content |  |
| Day 1 Workout | Q1. Two-Variable Equations, Squares, Cubes <br> Q2. Mean, Median, Mode, and Range; Weighted Average Q3. Digit Sum, Multiplication Tricks <br> Bonus: Equation of a Line, X-Intercept, Factoring Quadratics | 9 videos, 40 min |
| Day 2 Workout | Q1. Reversing Digits of a Number, Word Problem, 2-Variable Equations <br> Q2. Special Operations <br> Q3. Base 2, Base 5, Base 7; Easy Strategy for Converting Between Base 10 and Other Bases | 11 videos, 40 min |
| Day 3 Workout | Q1. Expanding and Multiplying Binomials <br> Q2. Two-Variable Equations, Adding-or-Subtracting Method, Mental Math <br> Q3. Graphs, Rates, Slope, Slope-Intercept Form of the Equation of a Line | 13 videos, 47 min |
| Day 4 Workout | Q1. Arithmetic Sequence <br> Q2. Prime Factorization, Geometric Mean <br> Q3. Linear vs. Exponential Growth, Geometric Sequence <br> Bonus: Square Root Function and Graph | 13 videos, 52 min |
| Week 1 Challenge | Try your new skills! | 10 questions, 60 min |
| Day 5 Workout | Q1. Sum of Digits <br> Q2. Coordinate Bashing, Perpendicular Slopes, "Epols," Intersection of Two Lines <br> Q3. Gaussian Elimination, System of Equations with 3 Variables | 10 videos, 43 min |
| Day 6 Workout | Q1. Graphs of Exponential Functions, Finding Solutions Graphically Q2. Change of Variables, Solving 4th-Degree Equations, Substitution, Roots of a Quadratic and Prof. Loh's Method for Quadratics Bonus: Rational Equations, Quadratic Equations and Formula | 12 videos, 50 min |
| Day 7 Workout | Q1. Rational Expressions, Polynomials, Factoring, Cubics, Quadratics <br> Q2. Rational Expressions, Expanding Binomials <br> Q3. Repeating Decimals and Their Fraction Representations, Geometric Series <br> Bonus: Complex Numbers, Graphs in the Complex Plane, 3rd-Degree Functions, Derivative | 10 videos, 45 min |
| Day 8 Workout | Q1. Systems of Equations <br> Q2. Fibonacci Numbers, Factors <br> Q3. Polynomial Functions, Base Conversion, Cubic Functions <br> Q4. Sum of Squares, Sum of First $n$ Odd Squares | 11 videos, 42 min |
| Week 2 Challenge | Try your new skills! | 10 questions, 60 min |

