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## Tiers 1-3: Syllabus

### Tier 1

#### Tier 1 TI-30XA Calculator

TI-30XA Introduction

- C1 ON/OFF FIX DEG M1 M2 M3
- C2 Real Numbers: Add + Subtract - Equal =
- C3 Negative Numbers +  $\approx$  -
- C4 Multiply  $\times$  Divide  $\div$
- C5 Percentage %
- C6 Memory M1, M2, M3 STO RCL ( )
- C7  $X^2$  Square
- C8  $\sqrt{X}$  Square Root
- C9  $1/X$  Reciprocal "Flip It"
- C10 Fractions  $A^{B/C}$  + -  $\times$   $\div$
- C11 D/C Proper/Improper Fractions
- C12 F  $\leftrightarrow$  D Fraction to Decimal Conversion
- C13 DEG RAD GRAD Three Angle Measures
- C14 SIN  $\text{SIN}^{-1}$
- C15 COS  $\text{COS}^{-1}$
- C16 TAN  $\text{TAN}^{-1}$

#### Tier 1 Pre-Algebra

Pre-Algebra Introduction

- P1 Real Numbers, Integers, and Rationals
- P2 The Number Line, Negative Numbers
- P3 Rules of Addition + -

- P4 Rules of Multiplication  $\times \div$
- P5 Distributive Law  $+$  and  $\times$  Combined
- P6 Fractions,  $A/B$  and  $C/D$ , Rules
- P7 Squares  $X^2$   $X$  Squared
- P8 Square Roots  $\sqrt{X}$
- P9 Reciprocal  $1/X$   $X \neq 0$
- P10 Exponents  $Y^X$   $Y > 0$ ,  $X$  Can Be Any Number

## Tier 2

### Tier 2 Algebra

#### Introduction to Algebra

- A1 Four Ways to Solve an Algebra Equation
- A2 The Rule of Algebra
- A3  $X + A = B$  This is an Easy Linear Equation
- A4  $AX = B$  This is an Easy Linear Equation
- A5  $AX + B = CX + D$  This is an Easy Linear Equation
- A6  $A/X = C/D$  This is an Easy Linear Equation
- A7  $AX^2 = B$  This is an Easy Non-Linear Equation
- A8  $A\sqrt{X} = B$  This is an Easy Non-Linear Equation
- A9 (1)  $\text{SIN } X^\circ = A$ ,  $-1 \leq A \leq 1$ , or (2)  $\text{SIN}^{-1}X = A^\circ$ ,  $0 \leq A^\circ \leq 180^\circ$
- A10 (1)  $\text{COS } X^\circ = A$ ,  $-1 \leq A \leq 1$ , or (2)  $\text{COS}^{-1}X = A^\circ$ ,  $0 \leq A^\circ \leq 180^\circ$

### Tier 2 Geometry

#### Introduction to Geometry

- G1 What is Geometry?
- G2 Straight Lines and Angles
- G3 Parallel Lines
- G4 Triangles, Definition, Sum of Angles
- G5 Pythagorean Theorem
- G6 Similar Triangles
- G7 Quadrilaterals, Polygons, Perimeters (P)
- G8 Area of Triangles and Rectangles
- G9 Formulas for Polygons
- G10 Circles  $\pi$  Circumference
- G11 Circles Area  $A = \pi r^2$
- G12 Circles Special Properties
- G13 Surface Area Blocks and Cylinders
- G14 Surface Area Cones
- G15 Volume Blocks and Cylinders
- G16 Volume Cones
- G17 Surface Area Ball or Sphere

G18 Volume Ball or Sphere, Archimedes Tombstone

G19 When Geometry is not Enough for Triangles

## Tier 2 Trigonometry

Introduction to Trigonometry

T1 Trig Functions SIN COS TAN

T2 SIN X, Sine of X, X is an Angle (Degrees °)

T3 COS X, Cosine of X, X is an Angle (Degrees °)

T4 TAN X, Tangent of X, X is an Angle (Degrees °)

T5 Warning about  $\text{SIN}^{-1}$

T6 Law of Sines

T7 Law of Cosines – Generalized Pythagorean Theorem

T8 Trigonometry Beyond Practical Math (Optional)

## Tier 3

### Tier 3 Part 1

T3 Part 1 Introduction

T3 P1 L1 The Real Number System (Simmons pp. 34-36)

T3 P1 L2A Notation and Rules (Simmons pp. 36 -39)

T3 P1 L2B Notation and Rules (Simmons pp. 36 -39)

T3 P1 L3 Integral Exponents (Simmons pp. 39 -40)

T3 P1 L4 Root, Radical, Fractional Exponents (Simmons pp. 40 -43)

T3 P1 L5 Polynomials (Simmons pp. 43-45)

T3 P1 L6 Factoring Polynomials (Simmons pp. 45 -46)

T3 P1 L7 Linear Equations & Rule of Algebra (Simmons pp. 46 -49)

Plus: Review of Algebra and Rules from the Tier 2 Practical Math Foundation

T3 P1 L8 Quadratic Equation (Simmons pp. 46 -49)

T3 P1 L9 Inequalities and Absolute Values (Simmons pp. 49 -50)

T3 P1 L10 Coordinates in a Plane (Simmons pp. 53 -54)

T3 P1 L11 Functions and Graphs (Simmons pp. 51 -53)

T3 P1 L12 Straight Lines & Linear Functions (Simmons pp. 55 -56)

T3 P1 L13 Parallel and Perpendicular Lines (Simmons pp. 55 -56)

T3 P1 L14 Intersecting Straight Lines (Custom Training)

You will learn a process you should master by practice.

Part 1 of Tier 3 should prepare you for a standard test you will need to pass to graduate from high school.

Part 2 of Tier 3 will teach you additional mathematics you will need to excel on the SAT and ACT and other exams.

## **Tier 3 Part 2**

- T3 P2 L1 Prime Numbers (Custom Notes)
- T3 P2 L2 Number Facts and Ideas (Custom Notes)
- T3 P2 L3 Percents and Percentage (Custom Notes)
- T3 P2 L4 Chain Discounts (Custom Notes)
- T3 P2 L5 Markups and Discounts (Custom Notes)
- T3 P2 L6 Means, Medians, Averages (Custom Notes)
- T3 P2 L7 Ratios and Proportions (Custom Notes)
- T3 P2 L8 Logic (Custom Notes)
- T3 P2 L9 Arithmetic Progressions (Simmons pp. 77)
- T3 P2 L10 Geometric Progressions (Simmons pp. 74 –76)
- T3 P2 L11 Geometric Series (Simmons pp. 74 –76)
- T3 P2 L12 Permutations and Combinations (Simmons pp. 78 –81)
- T3 P2 L13 Combinations (continued) (Simmons pp. 78 –81)
- T3 P2 L14 Probability (Custom Notes)

## **Tier 3 Part 3: SAT/ACT Preparation**

- T3 P2 L1 Pep Talk
- T3 P2 L2 Test Preparation
- T3 P2 L3 Test Techniques
- T3 P2 L4 Sample Problems A
- T3 P2 L5 Sample Problems B
- T3 P2 L6 Sample Problems C
- T3 P2 L7 Sample Problems D
- T3 P2 L8 More Fun
- T3 P2 L9 Fun & Games