

HiSET® Math

Khan Academy® Instructional Support Videos and Exercises

The *HiSET*® program has identified videos and exercises available at www.khanacademy.org to support HiSET Math test preparation. The Mathematics test assesses mathematical knowledge and competencies. It measures your ability to solve quantitative problems using fundamental concepts and reasoning skills. The questions present practical problems that require numerical operations, measurement, estimation, data interpretation and logical thinking. Problems are based on realistic situations and may test abstract concepts such as algebraic patterns, precision in measurement and probability.

The following online lesson plans can improve these fundamental skills needed to be successful on the HiSET Math test.

Mathematics: Number and Quantity

The Real Numbers

Extend the properties of exponents to rational exponents

Topic	Lesson Page
Pre-Algebra Exponents Radicals and Scientific Notation – Exponents	https://www.khanacademy.org/math/pre-algebra/pre-algebra-exponents-radicals/pre-algebra-exponents/v/exponents-warmup
Arithmetic Operations – Exponents	https://www.khanacademy.org/math/cc-sixth-grade-math/cc-6th-arithmetic-operations/cc-6th-exponents/v/introduction-to-exponents
Algebra Basics Foundations – Exponents	https://www.khanacademy.org/math/algebra-basics/basic-alg-foundations/alg-basics-exponents/v/introduction-to-exponents
Pre-Algebra Exponents Radicals and Scientific Notation – Negative Exponents	https://www.khanacademy.org/math/pre-algebra/pre-algebra-exponents-radicals/pre-algebra-negative-exponents/v/negative-exponents

Use properties of rational and irrational numbers

Topic	Lesson Page
Algebra I – Irrational numbers	https://www.khanacademy.org/math/algebra/rational-and-irrational-numbers/alg-1-irrational-numbers/v/introduction-to-rational-and-irrational-numbers

The Complex Number System

Perform arithmetic operations with complex numbers

Topic	Lesson Page
Algebra II Complex Numbers – Imaginary Numbers	https://www.khanacademy.org/math/algebra2/introduction-to-complex-numbers-algebra-2/the-imaginary-numbers-algebra-2/v/introduction-to-i-and-imaginary-numbers
Algebra II Complex Numbers – Complex Numbers	https://www.khanacademy.org/math/algebra2/introduction-to-complex-numbers-algebra-2/the-complex-numbers-algebra-2/v/complex-number-intro
Precalculus – Complex Numbers	https://www.khanacademy.org/math/precalculus/imaginary-and-complex-numbers/the-complex-numbers/v/complex-number-intro
Precalculus – Challenging Complex Number Problems	https://www.khanacademy.org/math/precalculus/imaginary-and-complex-numbers/complex-number-challenge/v/iit-jee-complex-numbers-part-1
Algebra II – Adding and Subtracting Complex Numbers	https://www.khanacademy.org/math/algebra2/introduction-to-complex-numbers-algebra-2/adding-and-subtracting-complex-numbers-algebra-2/v/adding-complex-numbers
Algebra II – Multiplying Complex Numbers	https://www.khanacademy.org/math/algebra2/introduction-to-complex-numbers-algebra-2/multiplying-complex-numbers-algebra-2/a/multiplying-complex-numbers
Precalculus – Complex Conjugates and Dividing Complex Numbers	https://www.khanacademy.org/math/precalculus/imaginary-and-complex-numbers/complex-conjugates-and-dividing-complex-numbers/v/complex-conjugates
Precalculus – Absolute Value and Angle of Complex Numbers	https://www.khanacademy.org/math/precalculus/imaginary-and-complex-numbers/absolute-value-and-angle-of-complex-numbers/v/absolute-value-of-a-complex-number

Plotting numbers on the complex plane

Topic	Lesson Page
Algebra II – The Complex Plane	https://www.khanacademy.org/math/algebra2/introduction-to-complex-numbers-algebra-2/the-complex-plane-algebra-2/v/plotting-complex-numbers-on-the-complex-plane

Mathematics: Algebra

Seeing Structure in Expressions

Interpret the structure of expressions

Topic	Lesson Page
Algebra I – Manipulating Expressions with Unknown Variables	https://www.khanacademy.org/math/algebra/systems-of-linear-equations/manipulating-expressions-with-unknown-variables/v/manipulating-expressions-with-unknown-variables-1
Algebra I – Factoring Polynomials with Special Product Forms	https://www.khanacademy.org/math/algebra/polynomial-factorization/factoring-polynomials-3-special-product-forms/v/factoring-special-products-2
Algebra I – Factoring Quadratics: Difference of Squares	https://www.khanacademy.org/math/algebra/polynomial-factorization/factoring-quadratics-diff-of-squares/v/difference-of-squares-intro
Algebra I – Factoring Quadratics by Grouping	https://www.khanacademy.org/math/algebra/polynomial-factorization/factoring-quadratics-2/v/factor-by-grouping-and-factoring-completely
Algebra I – Factoring Polynomials with Quadratic Forms	https://www.khanacademy.org/math/algebra/polynomial-factorization/factoring-polynomials-2-quadratic-forms/v/factoring-trinomials-by-grouping-5
Algebra I – Factoring Quadratics Intro	https://www.khanacademy.org/math/algebra/polynomial-factorization/factoring-quadratics-1/v/factoring-simple-quadratic-expression
Algebra Basics Quadratics and Polynomials – Factoring Quadratics 1	https://www.khanacademy.org/math/algebra-basics/alg-basics-quadratics-and-polynomials/alg-basics-factoring-quadratics-1/v/factoring-simple-quadratic-expression
Algebra, Polynomial, Expressions, Equations, & Functions – Factoring Polynomials with Quadratic Forms	https://www.khanacademy.org/math/algebra-home/alg-polynomials/alg-factoring-polynomials-quadratic-forms/v/factoring-trinomials-by-grouping-5
Algebra II Radical Relationships – Solving Square-root Equations	https://www.khanacademy.org/math/algebra2/radical-equations-and-functions/solving-square-root-equations/v/extraneous-solutions-to-radical-equations

Write expressions in equivalent forms to solve problems

Topic	Lesson Page
Algebra I Quadratics – Completing the Square	https://www.khanacademy.org/math/algebra/quadratics/solving-quadratics-by-completing-the-square/v/solving-quadratic-equations-by-completing-the-square
Algebra I Quadratics – Solving Quadratics by Factoring	https://www.khanacademy.org/math/algebra/quadratics/solving-quadratic-equations-by-factoring/v/example-1-solving-a-quadratic-equation-by-factoring

Arithmetic with Polynomials and Rational Functions

Perform arithmetic operations on polynomials

Topic	Lesson Page
Algebra I Polynomials – Adding and Subtracting Polynomials: Two Variables	https://www.khanacademy.org/math/algebra/introduction-to-polynomial-expressions/add-subtract-poly-two-var/v/example-adding-polynomials-with-multiple-variables
Algebra I - Adding & Subtracting Polynomials	https://www.khanacademy.org/math/algebra/introduction-to-polynomial-expressions/adding-and-subtracting-polynomials/v/adding-and-subtracting-polynomials-1
Algebra I Polynomials – Multiplying Binomials	https://www.khanacademy.org/math/algebra/introduction-to-polynomial-expressions/multiplying-binomials-2/v/area-model-for-multiplying-binomials
Algebra I Polynomials – Special Products of Binomials	https://www.khanacademy.org/math/algebra/introduction-to-polynomial-expressions/special-products-of-polynomials/v/difference-of-squares-pattern-for-simple-binomials
Algebra I Polynomials – Multiplying Binomials by Polynomials	https://www.khanacademy.org/math/algebra/introduction-to-polynomial-expressions/multiplying-polynomials-by-binomials/v/more-multiplying-polynomials
Algebra I – Polynomials Word Problems	https://www.khanacademy.org/math/algebra/introduction-to-polynomial-expressions/modeling-with-polynomials/v/multiplying-polynomials-3
Algebra II Arithmetic with Polynomials – Long Division of Polynomials	https://www.khanacademy.org/math/algebra2/arithmetic-with-polynomials/long-division-of-polynomials/v/polynomial-division
Algebra II Arithmetic with Polynomials – Practice Dividing Polynomials with Remainders	https://www.khanacademy.org/math/algebra2/arithmetic-with-polynomials/practice-dividing-polynomials-with-remainders/v/polynomial-divided-by-monomial
Algebra II Arithmetic with Polynomials – Long Division of Polynomials	https://www.khanacademy.org/math/algebra2/arithmetic-with-polynomials/long-division-of-polynomials/v/polynomial-division

Topic	Lesson Page
Algebra II Arithmetic with Polynomials – Practice Dividing Polynomials with Remainders	https://www.khanacademy.org/math/algebra2/arithmetic-with-polynomials/practice-dividing-polynomials-with-remainders/v/polynomial-divided-by-monomial

Rewrite rational expressions

Topic	Lesson Page
Algebra II Rational Relationships – Simplifying Rational Expressions	https://www.khanacademy.org/math/algebra2/rational-expressions-equations-and-functions/simplify-rational-expressions/v/simplifying-rational-expressions-introduction

Creating Equations

Create equations that describe numbers or relationships

Topic	Lesson Page
Algebra I Solving Equations – Why We Do the Same Thing to Both Sides of an Equation	https://www.khanacademy.org/math/algebra/one-variable-linear-equations/alg1-solving-equations/v/why-we-do-the-same-thing-to-both-sides-simple-equations
Algebra I Solving Equations – One-step Addition & Subtraction Equations	https://www.khanacademy.org/math/algebra/one-variable-linear-equations/alg1-one-step-add-sub-equations/v/adding-and-subtracting-the-same-thing-from-both-sides
Algebra I Solving Equations – One-step Multiplication & Division Equations	https://www.khanacademy.org/math/algebra/one-variable-linear-equations/alg1-one-step-mult-div-equations/v/simple-equations
Algebra I Solving Equations – Two-step Equations Intro	https://www.khanacademy.org/math/algebra/one-variable-linear-equations/alg1-two-steps-equations-intro/v/why-we-do-the-same-thing-to-both-sides-two-step-equations
Expressions, Equations & Inequalities – Two-step Equations with Decimals and Fractions	https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-variables-expressions/cc-8th-two-step-equations-dec-fractions/v/two-step-equations-with-decimals-and-fractions

Reasoning with Equations and Inequalities

Understand solving equations as a process of reasoning and explain the reasonings

Topic	Lesson Page
Algebra I Inequalities (Systems & Graphs) Graphing Two-Variable Inequalities	https://www.khanacademy.org/math/algebra/two-variable-linear-inequalities/graphing-inequalities/v/graphing-inequalities

Topic	Lesson Page
Algebra Two-variable Inequalities – Constraining Solutions of Two-variable Inequalities	https://www.khanacademy.org/math/algebra-home/alg-two-var-inequalities/alg-constraining-solutions-of-inequalities/v/constraining-solutions-to-two-variable-linear-inequalities

Solve equations and inequalities in one variable

Topic	Lesson Page
Algebra I Solving Inequalities – Compound Inequalities	https://www.khanacademy.org/math/algebra/one-variable-linear-inequalities/compound-inequalities/v/compound-inequalities
Algebra I Solving Inequalities - Multistep Inequalities	https://www.khanacademy.org/math/algebra/one-variable-linear-inequalities/multi-step-inequalities/v/multi-step-inequalities-3

Solve systems of equations

Topic	Lesson Page
Algebra I Systems of Equations – Introductions to Systems of Equations	https://www.khanacademy.org/math/algebra/systems-of-linear-equations/introduction-to-systems-of-linear-equations/v/trolls-tolls-and-systems-of-equations
Algebra I Systems of Equations – Number of Solutions to Systems of Equations	https://www.khanacademy.org/math/algebra/systems-of-linear-equations/possible-number-of-solutions-of-systems-of-linear-equations/v/inconsistent-systems-of-equations

Represent and solve equations and inequalities graphically

Topic	Lesson Page
Systems of Equations with Graphing	https://www.khanacademy.org/math/cc-eighth-grade-math/cc-8th-systems-topic/cc-8th-systems-graphically/a/systems-of-equations-with-graphing
Linear Equations – Systems of Linear Equations and Their Solutions	https://www.khanacademy.org/math/8th-engage-ny/engage-8th-module-4/8th-module-4-topic-d/v/trolls-tolls-and-systems-of-equations

Mathematics: Data Analysis and Probability

Interpreting Functions

Understand the concept of a function and use function notation

Topic	Lesson Page
Linear Equations and Functions – What is a Function?	https://www.khanacademy.org/math/cc-eighth-grade-math/cc-8th-linear-equations-functions/8th-functions-and-function-notation/v/what-is-a-function
Linear Equations and Functions – Recognizing Functions	https://www.khanacademy.org/math/cc-eighth-grade-math/cc-8th-linear-equations-functions/cc-8th-function-intro/v/testing-if-a-relationship-is-a-function
Algebra I Functions – Recognizing Functions	https://www.khanacademy.org/math/algebra/algebra-functions/recognizing-functions-ddp/v/graphical-relations-and-functions
Algebra I Functions – Introduction to the Domain and Range of a Function	https://www.khanacademy.org/math/algebra/algebra-functions/domain-and-range/v/introduction-to-interval-notation
Algebra Functions – Determining the Range of a Function	https://www.khanacademy.org/math/algebra-home/alg-functions/alg-determining-the-range-of-a-function/v/domain-and-range-of-a-function-given-a-formula
Algebra Functions – Determining the Domain of Advanced Functions	https://www.khanacademy.org/math/algebra-home/alg-functions/alg-domain-of-advanced-functions/v/domain-of-a-function
Algebra I Functions – Evaluating Functions	https://www.khanacademy.org/math/algebra/algebra-functions/evaluating-functions/v/what-is-a-function

Analyze functions using different representations

Topic	Lesson Page
Algebra II Advanced Equations & Functions – Comparing Features of Functions	https://www.khanacademy.org/math/algebra2/advanced-functions/comparing-features-of-functions/v/comparing-features-of-functions-2-example-1
Algebra I Quadratics – Features & Forms of Quadratic Functions	https://www.khanacademy.org/math/algebra/quadratics/features-of-quadratic-functions/v/rewriting-a-quadratic-function-to-find-roots-and-vertex

Building Functions

Build a function that models a relationship between two quantities

Topic	Lesson Page
Algebra I Sequences – Constructing Geometric Sequences	https://www.khanacademy.org/math/algebra/sequences/constructing-geometric-sequences/v/explicit-and-recursive-formulas-for-geometric-sequences
Algebra I Sequences – Modeling with Sequences	https://www.khanacademy.org/math/algebra/sequences/modeling-with-sequences/v/modeling-situations-with-arithmetic-and-geometric-sequences

Linear, Quadratic and Exponential Models

Construct and compare linear, quadratic and exponential models and solve problems

Topic	Lesson Page
Algebra I Linear Word Problems – Comparing Linear Functions	https://www.khanacademy.org/math/algebra/linear-word-problems/comparing-linear-functions/v/comparing-features-of-functions-1

Mathematics: Geometry

Congruence

Experiment with transformations in the plane

Topic	Lesson Page
Basic Geometry – Transformations, Congruence and Similarity	https://www.khanacademy.org/math/basic-geo/basic-geo-transformations-congruence/congruent-similar/v/testing-congruence-by-transformations-example

Similarity and Right Triangles

Prove theorems involving similarity

Topic	Lesson Page
Geometry Similarity – Introduction to Triangle Similarity	https://www.khanacademy.org/math/geometry/hs-geo-similarity/hs-geo-triangle-similarity-intro/v/similar-triangle-basics
Basic Geometry Pythagorean Theorem – Pythagorean Theorem Proofs	https://www.khanacademy.org/math/basic-geo/basic-geometry-pythagorean-theorem/basic-geometry-pythagorean-proofs/v/garfield-s-proof-of-the-pythagorean-theorem

Geometric Measurement and Dimension

Explain volume formulas and use them to solve problems

Topic	Lesson Page
Basic Geometry Volume and Surface Area – Volume of Cones, Cylinders, and Spheres	https://www.khanacademy.org/math/basic-geo/basic-geo-volume-sa/volume-cones/v/cylinder-volume-and-surface-area
High School Geometry – Solid Geometry Intro	https://www.khanacademy.org/math/geometry/hs-geo-solids/hs-geo-solids-intro/v/solid-geometry-volume
Basic Geometry Volume and Surface Area – Volume with Fractions	https://www.khanacademy.org/math/basic-geo/basic-geo-volume-sa/volume-with-fractions/v/volume-of-a-rectangular-prism-with-fractional-cubes

Modeling with Geometry

Apply geometric concepts in modeling situations

Topic	Lesson Page
Linear Equations and Functions – Linear Models	https://www.khanacademy.org/math/cc-eighth-grade-math/cc-8th-linear-equations-functions/8th-linear-functions-modeling/v/interpreting-linear-graphs
Linear Equations and Functions – Constructing Linear Models for Real-World Relationships	https://www.khanacademy.org/math/cc-eighth-grade-math/cc-8th-linear-equations-functions/constructing-linear-models-real-world/v/graphing-linear-functions-1