

HiSET® Tutorials are designed based off of the HiSET® Information Brief which includes the High School College and Career Readiness Statements to provide students a more successful and less stressful preparation effort as they work to demonstrate their college readiness on the HiSET® test

In each module, the Learn It and Try It make complex ideas accessible to students through focused content, guided analysis, and practice with personalized feedback so students are empowered to increase their Exam Readiness. The Review It offers an engaging and high impact video summary of key concepts and important to grasp connections. The Test It assesses students' mastery of the module's concepts, providing granular performance data to students and teachers, linking a student's performance to ACT key idea details and score ranges. To help students focus on the content most relevant to them, unit-level pretests and posttests can quickly identify where students are ready for test day and where they need to continue their review and practice.

This Tutorial is aligned with HiSET® Information Brief and High School College and Career Readiness Statements for Math, Reading, and Writing test sections.

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1. REAL NUMBERS

• LAWS OF EXPONENTS

- **N.RN.2** Rewrite expressions involving radicals and rational exponents using the properties of exponents.

• MONITORING PRECISION AND ACCURACY

- **N.Q.1** Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.
- **N.Q.3** Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

2. EXPRESSIONS, EQUATIONS, AND INEQUALITIES

• FORMULATING AND SIMPLIFYING ALGEBRAIC EXPRESSIONS

- **A.SSE.1** Interpret expressions that represent a quantity in terms of its context.

• ONE-STEP EQUATIONS AND INEQUALITIES

- **A.CED.1** Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions and simple rational and exponential functions.
- **A.REI.3** Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

• MULTI-STEP EQUATIONS AND INEQUALITIES

- **A.CED.1** Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions and simple rational and exponential functions.
- **A.REI.3** Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

3. APPLYING EQUATIONS AND INEQUALITIES

• AXIOMS OF EQUALITY

- **A.REI.1** Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous

step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.

- **LITERAL EQUATIONS**

- **A.REI.3** Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.
- **A.CED.4** Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.

4. FORMULATING AND SOLVING EQUATIONS AND INEQUALITIES

- **FORMULATING AND SOLVING EQUATIONS FROM WORD PROBLEMS**

- **A.CED.1** Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions and simple rational and exponential functions.
- **A.SSE.1a** Interpret parts of an expression, such as terms, factors, and coefficients.

- **FORMULATING AND SOLVING INEQUALITIES FROM WORD PROBLEMS**

- **A.CED.1** Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions and simple rational and exponential functions.
- **A.SSE.1a** Interpret parts of an expression, such as terms, factors, and coefficients.

5. FUNCTIONS

- **FUNCTIONS AND RELATIONS**

- **F.IF.1** Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then $f(x)$ denotes the output of f corresponding to the input x . The graph of f is the graph of the equation $y = f(x)$.
- **F.IF.2** Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.

- **EVALUATING FUNCTIONS**

- **F.IF.2** Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.

- **DOMAIN AND RANGE**

- **F.IF.5** Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.

6. INTRODUCTION TO LINEAR FUNCTIONS

- **SLOPE**

- **F.IF.6** Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.
- **F.IF.4** For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.

- **GRAPHING AND ANALYZING LINEAR FUNCTIONS**

- **F.IF.4** For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.

7. GRAPHS OF LINEAR FUNCTIONS AND INEQUALITIES

- **GRAPHING AND MANIPULATING $Y = MX + B$**

- **F.IF.6** Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.

- **A.CED.2** Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
- **F.IF.4** For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.

- **GRAPHS OF LINEAR INEQUALITIES**

- **A.CED.3** Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context.

8. SOLVING SYSTEMS OF EQUATIONS AND INEQUALITIES GRAPHICALLY

- **SOLVING SYSTEMS OF LINEAR EQUATIONS: GRAPHING**

- **A.CED.2** Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
- **A.REI.6** Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.
- **A.CED.3** Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context.

- **SOLVING SYSTEMS OF LINEAR INEQUALITIES**

- **A.CED.2** Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
- **A.CED.3** Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context.

9. SOLVING SYSTEMS OF EQUATIONS ALGEBRAICALLY

- **SOLVING SYSTEMS OF LINEAR EQUATIONS: SUBSTITUTION**

- **A.CED.2** Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
- **A.CED.3** Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context.
- **A.REI.6** Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.

- **SOLVING SYSTEMS OF LINEAR EQUATIONS: ELIMINATION**

- **A.CED.2** Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
- **A.CED.3** Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context.
- **A.REI.6** Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.

- **SOLVING THREE-VARIABLE SYSTEMS OF LINEAR EQUATIONS**

- **A.CED.3** Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context.

10. EXPONENTIAL FUNCTIONS

- **EXPONENTIAL FUNCTIONS**

- **F.IF.4** For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.

- **EXPONENTIAL GROWTH AND DECAY**

EXPONENTIAL GROWTH AND DECAY

- **F.LE.1** Distinguish between situations that can be modeled with linear functions and with exponential functions.
- **A.CED.2** Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

11. SEQUENCES

SEQUENCES

- **F.BF.1** Write a function that describes a relationship between two quantities.

ARITHMETIC AND GEOMETRIC SEQUENCES

- **F.BF.1** Write a function that describes a relationship between two quantities.

12. INTRODUCTION TO POLYNOMIALS

POLYNOMIAL BASICS

- **A.SSE.1a** Interpret parts of an expression, such as terms, factors, and coefficients.

ADDITION AND SUBTRACTION OF POLYNOMIALS

- **A.APR.1** Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.

13. MULTIPLICATION AND DIVISION OF POLYNOMIALS

MULTIPLICATION OF POLYNOMIALS

- **A.APR.1** Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.

DIVISION OF POLYNOMIALS

- **A.APR.6** Rewrite simple rational expressions in different forms.

14. QUADRATIC FUNCTIONS AND FACTORING

QUADRATIC FUNCTIONS

- **F.IF.4** For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.

FACTORING QUADRATIC TRINOMIALS

- **A.SSE.3a** Factor a quadratic expression to reveal the zeros of the function it defines.

15. SOLVING QUADRATIC EQUATIONS

SOLVING QUADRATIC EQUATIONS BY FACTORING

- **A.REI.4** Solve quadratic equations in one variable.
- **A.SSE.3a** Factor a quadratic expression to reveal the zeros of the function it defines.

COMPLETING THE SQUARE

- **A.REI.4** Solve quadratic equations in one variable.

QUADRATIC FORMULA

- **A.REI.4** Solve quadratic equations in one variable.
- **F.IF.4** For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.

16. REPRESENTATIONS OF QUADRATIC FUNCTIONS

● ANALYZING GRAPHS OF QUADRATIC FUNCTIONS

- **F.IF.5** Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.
- **F.IF.4** For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.
- **F.IF.1** Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then $f(x)$ denotes the output of f corresponding to the input x . The graph of f is the graph of the equation $y = f(x)$.
- **A.REI.4** Solve quadratic equations in one variable.

● REPRESENTATIONS OF QUADRATIC FUNCTIONS

- **A.SSE.3a** Factor a quadratic expression to reveal the zeros of the function it defines.
- **A.CED.2** Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
- **F.IF.4** For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.
- **A.REI.4** Solve quadratic equations in one variable.

17. RADICAL AND RATIONAL EQUATIONS AND FUNCTIONS

● SOLVING SQUARE ROOT EQUATIONS

- **A.REI.2** Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.

● SOLVING RATIONAL EQUATIONS

- **A.REI.2** Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.

● MODELING SITUATIONS WITH RATIONAL FUNCTIONS

- **A.REI.2** Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.

18. WORKING WITH FUNCTIONS

● LINEAR VERSUS NONLINEAR FUNCTIONS

- **F.IF.6** Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.
- **F.IF.4** For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.
- **F.LE.1** Distinguish between situations that can be modeled with linear functions and with exponential functions.

● MULTIPLE REPRESENTATIONS OF FUNCTIONS

- **A.CED.2** Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

19. STATISTICS

● DATA ANALYSIS

- **S.ID.3** Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).

- **FREQUENCY TABLES**

- **S.ID.5** Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.

20. TRIANGLES

- **TRIANGLES AND CONGRUENCE TRANSFORMATIONS**

- **G.SRT.5** Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.

- **TRIANGLES AND SIMILARITY TRANSFORMATIONS**

- **G.SRT.5** Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.

- **TRIANGLE BISECTORS**

- **G.SRT.5** Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.

21. VOLUME

- **VOLUME OF PRISMS AND PYRAMIDS**

- **G.GMD.3** Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.

- **VOLUME OF CYLINDERS AND CONES**

- **G.GMD.3** Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.

- **SURFACE AREA AND VOLUME OF SPHERES**

- **G.GMD.3** Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.

22. APPLICATIONS OF VOLUME

- **VOLUME OF COMPOSITE SOLIDS**

- **G.GMD.3** Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.

- **MODELING SITUATIONS WITH GEOMETRY**

- **G.MG.2** Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).