

CT ALGEBRAIC PRINCIPLES

Numbers and Operations Standard:1 Understands and applies concepts of numbers and operations				
Power Benchmark 1: Understands numbers, ways of representing numbers, relationships among numbers, and number systems				
Course Level Benchmark	Vocabulary	Background Knowledge/Prior Skills	Skills to Assess	
a. Interprets the meaning of fractions, decimals, and percents	<ul style="list-style-type: none"> • Fraction • Equivalent • Probability 	<ul style="list-style-type: none"> • Numerator • Denominator • Improper Fraction • Mixed Number • Decimal • Percent • Place value 	<ul style="list-style-type: none"> • Illustrates the different ways to define a fraction: part to whole, part to part, etc. • Relates fractions to decimals to percents • Converts fractions, decimals, and percents to equivalent forms 	
b. Examines the properties of integers	<ul style="list-style-type: none"> • Integer • Negative • Positive • Absolute Value • Opposites • Prime • Composite • Inequality • Not equal to 		<ul style="list-style-type: none"> • Distinguishes between positive and negative integers • Compares integers using a number line • Examines numbers to determine whether they are prime or composite • Represents inequalities on a number line 	

Numbers and Operations Standard:1 Understands and applies concepts of numbers and operations				
Power Benchmark 2: Understands meanings of operations and how they relate to one another				
Course Level Benchmark	Vocabulary	Background Knowledge/Prior Skills	Skills to Assess	
a. Uses the properties of operations to simplify computations	<ul style="list-style-type: none"> • Exponent (power) • Base • Perfect squares (1-15) • Radicals • Order of Operations • Distributive Property • Greatest Common Factor • Prime Factorization • Scientific Notation • Standard Form 	<ul style="list-style-type: none"> • Add • Subtract • Multiply • Divide 	<ul style="list-style-type: none"> • Adds, subtracts, multiplies, divides real numbers and simplifies expressions (fractions, integers and decimals) (ITED, ACT, SAT) • Uses order of operation, including grouping symbols, to solve problems (ITED, ACT, SAT) • Convert between scientific and standard notations 	
b. Uses ratios and proportions to represent quantitative relationships	<ul style="list-style-type: none"> • Ratio • Proportion • Unit rate • Percent of change 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Writes ratio in a variety of ways • Sets up a proportion correctly • Calculates percents increase and decrease 	

Algebra Standard:2 Understands and applies concepts of algebra and functions				
Power Benchmark 1: Understands patterns, relations, and functions				
Course Level Benchmark	Vocabulary	Background Knowledge/Prior Skills	Skills to Assess	
a. Rewrites algebraic expressions in equivalent forms ITED *** ACT SAT ASVAB	<ul style="list-style-type: none"> • Variable • Algebraic expression • Evaluate • Terms • Constant • Like terms • Coefficient 	<ul style="list-style-type: none"> • Recognizes like terms • Knows rules to simplify expressions • Knows the order of operations • Understands the meaning of equivalent forms of expressions 	<ul style="list-style-type: none"> •Evaluates simple algebraic expressions (ACT, SAT, ASVAB) •Simplifies algebraic expressions by combining like terms & applying appropriate properties (ITED) • Translates words into algebraic expressions (ITED, ACT, ASVAB) 	
b. Describe the characteristics of linear functions	<ul style="list-style-type: none"> • Function • Relation • Dependent variable • Independent variable • Linear function • Input/Output • Domain/Range 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Represents linear relationships using tables, graphs, words, and symbolic expressions • Understands function means that the value of one variable is dependent on the other variable • Knows the dependent variable is usually expressed as y and the independent variable as x, but can differ 	

Algebra Standard:2 Understands and applies concepts of algebra and functions

Power Benchmark 2: Represents and analyzes mathematical situations and structures using algebraic symbols

Course Level Benchmark	Vocabulary	Background Knowledge/Prior Skills	Skills to Assess	
a. Represents linear functions in a variety of ways	<ul style="list-style-type: none"> • Table • Graph • Coordinate Plane • Ordered Pairs • X axis • Y axis • Origin • Equation • Quardrant 	<ul style="list-style-type: none"> • Knows how to evaluate an equation for a numeric value • Knows how to plot a point on a graph 	<ul style="list-style-type: none"> • Translates problem scenarios into tables, graphs, and equations • Graphs linear functions 	
b. Interprets graphical representations of linear functions - ACT	<ul style="list-style-type: none"> • Rate of change • Slope • Slope-Intercept Form • Solution • Y-Intercept 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Interprets slope as the amount of one quantity (y) per unit of another quantity (x) • Defines slope as a rate of change • Graphs a linear equation 	

Algebra Standard:2 Understands and applies concepts of algebra and functions

Power Benchmark 3: Uses mathematical models to represent and understand quantitative relationships

Course Level Benchmark	Vocabulary	Background Knowledge/Prior Skills	Skills to Assess
a. Solves single and multi-step equations ITED *** ACT SAT ASVAB	<ul style="list-style-type: none"> • Single-step equations • Multi-step equations • Inverse Operations 	<ul style="list-style-type: none"> • Recognizes like terms • Understands rules for combining terms • Knows the order of operations • Knows the inverse relationship between addition and subtraction and multiplication and division 	<ul style="list-style-type: none"> • Demonstrates the process of working backwards to solve equations (strategy of undoing) • Solves single and multi-step equations involving like terms on the same side of the equal sign and distributive property (ITED, ACT, SAT, ASVAB)

Data Analysis and Probability Standard: 5 Understands and applies concepts of data analysis and probability

Power Benchmark 1: Collects, organizes, and displays data to answer a question

Course Level Benchmark	Vocabulary	Background Knowledge/Prior Skills	Skills to Assess
a. Represents data in graphical displays to convey results - ITED	<ul style="list-style-type: none"> • Data • Distribution • Stem-and-leaf plot • Bar graph • Circle graph • Line graph • Frequency table • Histogram • Horizontal axis • Vertical axis 	<ul style="list-style-type: none"> • Knows the basic types of charts, graphs, and tables • Knows different types of graphs convey different messages 	<ul style="list-style-type: none"> • Creates graphical representation appropriate for data type (ITED) • Read data from graphs (ITED) • Draws conclusions from data represented in a graph (ITED) • Makes predictions from data represented in a graph (ITED)

Data Analysis and Probability Standard:5 Understands and applies concepts of data analysis and probability				
Power Benchmark 2: Uses statistical methods to describe data				
Course Level Benchmark	Vocabulary	Background Knowledge/Prior Skills	Skills to Assess	
a. Describes data using central tendency and other statistical terms	<ul style="list-style-type: none"> • Central tendency • Mean • Median • Mode • Min • Max • Range • Outlier • Variability 		<ul style="list-style-type: none"> • Explains the mean's sensitivity to outliers • Determines best measure to central tendency describe a data set • Interprets representations of central tendency 	

Problem Solving Standard:6 Understands and applies problem solving strategies				
Power Benchmark 1: Uses a variety of strategies to solve problems				
Course Level Benchmark	Vocabulary	Background Knowledge/Prior Skills	Skills to Assess	
a. Applies and adapts a variety of appropriate strategies to solve problems	<ul style="list-style-type: none"> • Try, test, revise • Make a model • Find or use a pattern • Draw a picture • Pertinent information • Irrelevant information • Guess and check • Make a chart, table, graph, or organized list • Use logical reasoning 	<ul style="list-style-type: none"> • Knows the general problem solving strategies • Knows the same situation can often be represented in more than one way • Knows different problems may be solved using the same method 	<ul style="list-style-type: none"> • Chooses appropriate strategies to solve problems in the context of the problem situation (ITED) • Uses previous learned strategies, skills, knowledge, and concepts to solve problems (ITED) • Translates words to numbers to symbolic expressions (ITED) 	

Communication Standard:8 Communicates and reasons mathematically				
Power Benchmark 1: Expresses ideas using mathematical terms and representations				
Course Level Benchmark	Vocabulary	Background Knowledge/Prior Skills	Skills to Assess	
a. Uses pictorial representations and mathematical terms to describe situations and solutions	•	<ul style="list-style-type: none"> • Knows spelling and sentence structure rules. • Is willing to draw pictures 	<ul style="list-style-type: none"> • Can clearly describe the mathematical situation and the steps they used to solve the problem 	

Communication Standard:8 Communicates and reasons mathematically				
Power Benchmark 2: Uses tools (such as technology) to enhance mathematical learning				
Course Level Benchmark	Vocabulary	Background Knowledge/Prior Skills	Skills to Assess	
a. Uses the graphing calculator to explore problem situations	•	<ul style="list-style-type: none"> • Basic calculator skills 	<ul style="list-style-type: none"> • Able to work independently to complete tasks in a timely manner 	