

## Study Resources for the *Praxis®* Elementary Education: Mathematics Test (5003)

The links below allow you to connect content topics on this *Praxis*® test directly to free Khan Academy study resources.

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I. Numbers and Operations	L
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	n
A. Understands the place value system	
1. Writes numbers using base-10 numerals, number	Praxis Math: Naming and ordering numbers
names, and expanded form	Pre-algebra: Arithmetic properties
2. Composes and decomposes multi-digit numbers	



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	3. Given a digit, identifies the place the digit is in and	
	its value in that place	
	4. Recognizes that a digit in one place represents ten	
	times what it represents in the place to its right and one-tenth what it represents in the place to its left,	
	and extends this recognition to several places to the	
	right or left	
	5. Uses whole-number exponents to denote powers of	
	10	_
	6. Rounds multi-digit numbers to any place value	
В.	• • • • • • • • • • • • • • • • • • • •	Praxis Math: Rational number operations
		Praxis Math: Naming and ordering numbers
		<u>Arithmetic</u>



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1. Solves multistep mathematical and real-world <u>Algebra basics: Foundations</u>	
problems using addition, subtraction, multiplication, <a href="Pre-algebra: Fractions">Pre-algebra: Fractions</a>	
and division of rational numbers  Pre-algebra: Decimals	
2. Understands various strategies and algorithms used <a href="Pre-algebra: Fractions">Pre-algebra: Fractions</a>	
to perform operations on rational numbers  Pre-algebra: Decimals	
3. Recognizes concepts of rational numbers and their <a href="Pre-algebra: Arithmetic properties">Pre-algebra: Arithmetic properties</a>	
operations  Pre-algebra: Fractions  Descriptions	
Pre-algebra: Decimals  Algebra basing Francoing with supprents	
4. Solves problems using the order of operations, including problems involving whole number  Algebra basics: Expressions with exponents	
exponents	
5. Identifies properties of operations (e.g., Pre-algebra: Arithmetic properties	
commutative, associative, distributive) and uses	
them to solve problems	
6. Represents rational numbers and their operations in <a href="Pre-algebra: Fractions">Pre-algebra: Fractions</a>	
different ways  Pre-algebra: Decimals	



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	7. Compares, classifies, and orders rational numbers	<u>Pre-algebra: Arithmetic properties</u>
		Pre-algebra: Fractions
		Pre-algebra: Decimals
	8. Converts between fractions, decimals, and percents	Pre-algebra: Decimals
		<u>Pre-algebra: Ratios, rates, proportions</u>
C.		Praxis Math: Ratios and proportions
	·	Praxis Math: Percentages
		Praxis Math: Rates
	1. Applies the concepts of ratios and unit rates to	<u>Pre-algebra: Ratios, rates, proportions</u>
	describe relationships between two quantities	
	2. Understands percent as a rate per 100	<u>Pre-algebra: Ratios, rates, proportions</u>
	3. Solves unit-rate problems	<u>Pre-algebra: Ratios, rates, proportions</u>
	4. Uses proportional relationships to solve ratio and	Pre-algebra: Ratios, rates, proportions
	percent problems	Algebra basics: Writing & solving proportions



Praxis Elementary Education: Mathematics (5003)	s
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D. Knows how to use basic concepts of number theory	Praxis Math: Number concepts
1. Identifies and uses prime and composite numbers	Pre-algebra: Factors and multiples
2. Finds factors and multiples of numbers	Pre-algebra: Factors and multiples
E. Knows a variety of strategies to determine the reasonableness of results	Praxis Math: Pre-algebra word problems
<ol> <li>Recognizes the reasonableness of results within the context of a given problem</li> </ol>	
Uses mental math, estimation, and rounding strategies to solve problems and determine reasonableness of results	
II. Algebraic Thinking	Lesson



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A. Knows how to evaluate and manipulate algebraic	Praxis Math: Algebraic properties
expressions, equations, and formulas	Praxis Math: Equivalent expressions
	Praxis Math: Creating expressions and equations
	Praxis Math: Algebraic word problems
	Praxis Math: Quadratic equations
1. Differentiates between algebraic expressions and	6 <sup>th</sup> grade: Variables and expressions Pre-algebra: Equations, expressions, and inequalities
equations	Algebra basics: Algebraic expressions
Adds and subtracts linear algebraic expressions	6 <sup>th</sup> grade: Variables and expressions
	7 <sup>th</sup> grade: Expressions, equations, & inequalities
	Pre-algebra: Equations, expressions, and inequalities
	Algebra basics: Algebraic expressions
3. Uses the distributive property to generate	6 <sup>th</sup> grade: Variables and expressions
equivalent linear algebraic expressions	7 <sup>th</sup> grade: Expressions, equations, & inequalities
	Pre-algebra: Equations, expressions, and inequalities
	Algebra basics: Algebraic expressions



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	Evaluates simple algebraic expressions (i.e., one	6 <sup>th</sup> grade: Variables and expressions
	variable, binomial) for given values of variables	7 <sup>th</sup> grade: Expressions, equations, & inequalities
		Pre-algebra: Equations, expressions, and inequalities
		Algebra basics: Algebraic expressions
		Algebra basics: Quadratics and polynomials
	Uses mathematical terms to identify parts of	6 <sup>th</sup> grade: Variables and expressions
	expressions and describe expressions	Pre-algebra: Equations, expressions, and inequalities
	Translates between verbal statements and algebraic	
	expressions or equations (e.g., the phrase "the	7 <sup>th</sup> grade: Expressions, equations, & inequalities
	number of cookies Joe has is equal to twice the	Pre-algebra: Equations, expressions, and inequalities
	number of cookies Sue has" can be represented by	Algebra basics: Algebraic expressions
	the equation $j = 2s$ )	
7.	Uses formulas to determine unknown quantities	8 <sup>th</sup> grade: Linear equations and functions
		Pre-algebra: Equations, expressions, and inequalities



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8. Differentiates between dependent and indepen	dent	Pre-algebra: Equations, expressions, and inequalities
variables in formulas		
B. Understands the meanings of the solutions to linear	ar	Praxis Math: Solution procedures
equations and inequalities		Praxis Math: Linear equations Praxis Math: Quadratic equations
Solves multistep one-variable linear equations a	nd	7 <sup>th</sup> grade: Expressions, equations, & inequalities
inequalities	Hu	Pre-algebra: Equations, expressions, and inequalities
inequalities		Algebra basics: Linear equations and inequalities
2. Interprets solutions of multistep one-variable lin	near	7 <sup>th</sup> grade: Expressions, equations, & inequalities
equations and inequalities (e.g., graphs the solu		Pre-algebra: Equations, expressions, and inequalities
on a number line, states constraints on a situation		Algebra basics: Linear equations and inequalities
3. Uses linear relationships represented by equation	•	7 <sup>th</sup> grade: Expressions, equations, & inequalities
tables, and graphs to solve problems	•	8 <sup>th</sup> grade: Linear equations and functions
		Pre-algebra: Equations, expressions, and inequalities
		Algebra basics: Graphing lines and slope



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C. Knows how to recognize and represent patterns (e.g.,	Algebra I: Sequences
number, shape)	
<ol> <li>Identifies, extends, describes, or generates number and shape patterns</li> </ol>	Pre-algebra: Number patterns
<ol><li>Makes conjectures, predictions, or generalizations based on patterns</li></ol>	
3. Identifies relationships between the corresponding terms of two numerical patterns (e.g., find a rule for	
a function table)	
III. Geometry and Measurement, Data, Statistics,	, Lesson
and Probability	
A. Understands how to classify one-, two-, and	Praxis Math: Properties of shapes
three-dimensional figures	Praxis Math: Angles
	Praxis Math: Congruence and similarity
	Praxis Math: Circles



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	1.	Uses definitions to identify lines, rays, line segment parallel lines, and perpendicular lines	s,	Basic geometry: Lines
	_			Basic geometry: Angles
	2.	Classifies angles based on their measure		Basic geometry: Shapes
	3.	Composes and decomposes two- and three-dimensional shapes		Basic geometry: Shapes
	4.	Uses attributes to classify or draw polygons and		Basic geometry: Shapes
		solids		Basic geometry: Transformations, congruence, and similarity
В.		ows how to solve problems involving perimeter,		Praxis Math: Perimeter, area, and volume
	are	a, surface area, and volume	$\dashv$	<u>Pre-algebra: Measurement</u>
	1.	Represents three-dimensional figures with nets		Basic geometry: Volume and surface area
	2.	Uses nets that are made of rectangles and triangles to determine the surface area of three-dimensional figures		Basic geometry: Volume and surface area



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3. Finds the area and perimeter of polygons, including	Basic geometry: Area and perimeter
those with fractional side lengths	basic geometry. Area and perimeter
4. Finds the volume and surface area of right	
rectangular prisms, including those with fractional	Basic geometry: Volume and surface area
edge lengths	
5. Determines how changes to dimensions change area and volume	Basic geometry: Volume and surface area
C. Knows the components of the coordinate plane and	
how to graph ordered pairs on the plane	
1. Identifies the x-axis, the y-axis, the origin, and the	Basic geometry: Coordinate plane
four quadrants in the coordinate plane	5 <sup>th</sup> grade: Coordinate plane
2. Solves problems by plotting points and drawing	Basic geometry: Coordinate plane
polygons in the coordinate plane	6 <sup>th</sup> grade: Polygons on the coordinate plane
D. Knows how to solve problems involving measurement	Praxis Math: Unit reasoning



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1.	Solves problems involving elapsed time, money,		2 <sup>nd</sup> grade: Measurement, data, and geometry
	length, volume, and mass		3 <sup>rd</sup> grade: Measurement
			4 <sup>th</sup> grade Units of measurement
			5th grade: Converting units of measure
2.	Measures and compares lengths of objects using		1 <sup>st</sup> grade: Measurement, data, and geometry
	standard tools		2 <sup>nd</sup> grade: Measurement, data, and geometry
			4 <sup>th</sup> grade Units of measurement
			5th grade: Converting units of measure
3.	Knows relative sizes of United States customary units and metric units		3rd grade: Measurement
	units and metric units		4 <sup>th</sup> grade Units of measurement
			5 <sup>th</sup> grade: Converting units of measure
4.	Converts units within both the United States		4 <sup>th</sup> grade Units of measurement
	customary system and the metric system		5th grade: Converting units of measure



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E. Is familiar with basic statistical concepts	Praxis Math: Data representations Praxis Math: Center and spread
	Pre-algebra: Reading and interpreting data
Identifies statistical questions	6 <sup>th</sup> grade: Data and statistics
1. Identifies statistical questions	Statistics and probability: Study design
Solves problems involving measures of center	6 <sup>th</sup> grade: Data and statistics
(mean, median, mode) and range	Stade: Data and Statistics
Recognizes which measure of center best describes	6 <sup>th</sup> grade: Data and statistics
a set of data	Statistics and probability: Summarizing quantitative data
4. Determines how changes in data affect measures of	6 <sup>th</sup> grade: Data and statistics
center or range	Statistics and probability: Summarizing quantitative data
5. Describes a set of data (e.g., overall patterns,	6 <sup>th</sup> grade: Data and statistics
outliers)	Statistics and probability: Summarizing quantitative data



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F. Knows how to represent and interpret data presented	Praxis Math: Data representations
in various forms	Pre-algebra: Reading and interpreting data
1. Interprets various displays of data (e.g., box plots,	6 <sup>th</sup> grade: Data and statistics
histograms, scatterplots)	Statistics and probability: Analyzing categorical data
2. Identifies, constructs, and completes graphs that	Cth and do. Date and statistics
correctly represent given data (e.g., circle graphs,	6 <sup>th</sup> grade: Data and statistics
bar graphs, line graphs, histograms, scatterplots,	Statistics and probability: Analyzing categorical data
double bar graphs, double line graphs, box plots, and line plots/dot plots)	Statistics and probability: Displaying and comparing quantitative data
	6 <sup>th</sup> grade: Data and statistics
3. Chooses appropriate graphs to display data	Statistics and probability: Analyzing categorical data
	Statistics and probability: Displaying and comparing quantitative data
G. Is familiar with how to interpret the probability of	
events	



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Interprets probabilities relative to likelihood of occurrence	7 <sup>th</sup> grade: Statistics and probability
	Statistics and probability: Probability
	Praxis Math: Probability