

Alignment of Texas Pre-Admission Content Test (PACT) Mathematics: Grades 4–8 (715) Framework with Texas Essential Knowledge and Skills

This alignment study identifies the Texas Essential Knowledge and Skills that are addressed in whole or in part by each competency of the exam framework. An indication of alignment does not necessarily imply complete congruence of the content of an exam competency with the relevant standard. The information in this document is subject to change if revisions are made to the exam framework. Any changes will fully supersede the information contained in this document.

| Competencies | | Texas Essential Knowledge and Skills |
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| Field 715: TX PACT: Mathematics: Grades 4–8 | | Texas Essential Knowledge and Skills for Mathematics |
| <u>Content Domain I</u> | | |
| NUMBER SENSE AND OPERATIONS | | |
| 001 | Understand numbers. | <p>Grades 4–5:</p> <p>111.6 b 2 Number and operations. The student applies mathematical process standards to represent, compare, and order whole numbers and decimals and understand relationships related to place value.</p> <p>111.6 b 3 Number and operations. The student applies mathematical process standards to represent and generate fractions to solve problems.</p> <p>111.7 b 2 Number and operations. The student applies mathematical process standards to represent, compare, and order positive rational numbers and understand relationships as related to place value.</p> <hr/> <p>Grades 6–8:</p> <p>111.26 b 2 Number and operations. The student applies mathematical process standards to represent and use rational numbers in a variety of forms.</p> <p>111.27 b 3 Number and operations. The student applies mathematical process standards to represent and use rational numbers in a variety of forms. The student is expected to extend previous knowledge of sets and subsets using a visual representation to describe relationships between sets of rational numbers.</p> <p>111.28 b 2 Number and operations. The student applies mathematical process standards to represent and use real numbers in a variety of forms.</p> |

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| 002 | Understand operations. | <p>Grades 4–5:</p> <p>111.6 b 1; 111.7 b 1 Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding.</p> <p>111.6 b 4 Number and operations. The student applies mathematical process standards to develop and use strategies and methods for whole number computations and decimal sums and differences in order to solve problems with efficiency and accuracy.</p> <p>111.7 b 3 Number and operations. The student applies mathematical process standards to develop and use strategies and methods for positive rational number computations in order to solve problems with efficiency and accuracy.</p> <p>111.6 b 10; 111.7 b 10 Personal financial literacy. The student applies mathematical process standards to manage one's financial resources effectively for lifetime financial security.</p> |

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| | <p>Grades 6–8:</p> <p>111.26 b 1; 111.27 b 1; 111.28 b 1 Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding.</p> <p>111.26 b 3 Number and operations. The student applies mathematical process standards to represent addition, subtraction, multiplication, and division while solving problems and justifying solutions.</p> <p>111.26 b 4 Proportionality. The student applies mathematical process standards to develop an understanding of proportional relationships in problem situations.</p> <p>111.26 b 5 Proportionality. The student applies mathematical process standards to solve problems involving proportional relationships.</p> <p>111.27 b 3 Number and operations. The student applies mathematical process standards to add, subtract, multiply, and divide while solving problems and justifying solutions.</p> <p>111.27 b 4 Proportionality. The student applies mathematical process standards to represent and solve problems involving proportional relationships.</p> <p>111.28 b 2 Number and operations. The student applies mathematical process standards to represent and use real numbers in a variety of forms.</p> <p>111.26 b 14; 111.27 b 13; 111.28 b 12 Personal financial literacy. The student applies mathematical process standards to develop an economic way of thinking and problem solving useful in one's life as a knowledgeable consumer and investor.</p> |
| <p><u>Content Domain II</u></p> <p>ALGEBRA AND FUNCTIONS</p> | |

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| Field 715: TX PACT: Mathematics: Grades 4–8 | | Texas Essential Knowledge and Skills for Mathematics |
| 003 | Understand patterns, relations, and functions. | <p>Grades 4–5:</p> <p>111.6 b 1; 111.7 b 1 Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding.</p> <p>111.6 b 5; 111.7 b 4 Algebraic reasoning. The student applies mathematical process standards to develop concepts of expressions and equations.</p> <hr/> <p>Grades 6–8:</p> <p>111.26 b 1; 111.27 b 1; 111.28 b 1 Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding.</p> <p>111.26 b 4 Proportionality. The student applies mathematical process standards to develop an understanding of proportional relationships in problem situations.</p> <p>111.26 b 7 Expressions, equations, and relationships. The student applies mathematical process standards to develop concepts of expressions and equations.</p> <p>111.27 b 4 Proportionality. The student applies mathematical process standards to represent and solve problems involving proportional relationships.</p> <p>111.27 b 7 Expressions, equations, and relationships. The student applies mathematical process standards to represent linear relationships using multiple representations. The student is expected to represent linear relationships using verbal descriptions, tables, graphs, and equations that simplify to the form $y = mx + b$.</p> <p>111.28 b 5 Proportionality. The student applies mathematical process standards to use proportional and non-proportional relationships to develop foundational concepts of functions.</p> |

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| 004 | Understand algebraic techniques and applications. | <p>Grades 4–5:</p> <p>111.6 b 1; 111.7 b 1 Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding.</p> <p>111.6 b 5; 111.7 b 4 Algebraic reasoning. The student applies mathematical process standards to develop concepts of expressions and equations.</p> <hr/> <p>Grades 6–8:</p> <p>111.26 b 5 Expressions, equations, and relationships. The student applies mathematical process standards to use multiple representations to describe algebraic relationships.</p> <p>111.26 b 9 Expressions, equations, and relationships. The student applies mathematical process standards to use equations and inequalities to represent situations.</p> <p>111.27 b 10 Expressions, equations, and relationships. The student applies mathematical process standards to use one–variable equations and inequalities to represent situations.</p> <p>111.28 b 8 Expressions, equations, and relationships. The student applies mathematical process standards to use one-variable equations or inequalities in problem situations.</p> <p>111.27 b 9; 111.28 b 9 Expressions, equations, and relationships. The student applies mathematical process standards to use multiple representations to develop foundational concepts of simultaneous linear equations. The student is expected to identify and verify the values of x and y that simultaneously satisfy two linear equations in the form $y = mx + b$ from the intersections of the graphed equations.</p> |

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| 005 | Understand linear relations and applications. | <p>Grades 4–5:</p> <p>111.6 b 1; 111.7 b 1 Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding.</p> <p>111.6 b 5; 111.7 b 4 Algebraic reasoning. The student applies mathematical process standards to develop concepts of expressions and equations.</p> <hr/> <p>Grades 6–8:</p> <p>111.26 b 9 Expressions, equations, and relationships. The student applies mathematical process standards to use equations and inequalities to represent situations.</p> <p>111.26 b 10 Expressions, equations, and relationships. The student applies mathematical process standards to use equations and inequalities to solve problems.</p> <p>111.27 b 7 Expressions, equations, and relationships. The student applies mathematical process standards to represent linear relationships using multiple representations. The student is expected to represent linear relationships using verbal descriptions, tables, graphs, and equations that simplify to the form $y = mx + b$.</p> <p>111.27 b 10 Expressions, equations, and relationships. The student applies mathematical process standards to use one–variable equations and inequalities to represent situations.</p> <p>111.27 b 11 Expressions, equations, and relationships. The student applies mathematical process standards to solve one–variable equations and inequalities.</p> <p>111.28 b 4 Proportionality. The student applies mathematical process standards to explain proportional and non–proportional relationships involving slope.</p> <p>111.28 b 8 Expressions, equations, and relationships. The student applies mathematical process standards to use one-variable equations or inequalities in problem situations.</p> |

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| 006 | Understand nonlinear relations and concepts of calculus. | <p>Grades 4–5: n/a</p> <p>Grades 6–8:</p> <p>111.27 b 10 Expressions, equations, and relationships. The student applies mathematical process standards to use one–variable equations and inequalities to represent situations.</p> <p>111.27 b 11 Expressions, equations, and relationships. The student applies mathematical process standards to solve one–variable equations and inequalities.</p> <p>111.28 b 5 Proportionality. The student applies mathematical process standards to use proportional and non–proportional relationships to develop foundational concepts of functions.</p> |
| <p><u>Content Domain III</u></p> <p>MEASUREMENT AND GEOMETRY</p> | | |
| 007 | Understand measurement principles, procedures, and applications. | <p>Grades 4–5:</p> <p>111.6 b 8 Geometry and measurement. The student applies mathematical process standards to select appropriate customary and metric units, strategies, and tools to solve problems involving measurement.</p> <p>111.7 b 7 Geometry and measurement. The student applies mathematical process standards to select appropriate units, strategies, and tools to solve problems involving measurement. The student is expected to solve problems by calculating conversions within a measurement system, customary or metric.</p> <p>111.6 b 10; 111.7 b 10 Personal financial literacy. The student applies mathematical process standards to manage one's financial resources effectively for lifetime financial security.</p> |

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| | <p>Grades 6–8:</p> <p>111.26 b 4 Proportionality. The student applies mathematical process standards to develop an understanding of proportional relationships in problem situations.</p> <p>111.26 b 5 Proportionality. The student applies mathematical process standards to solve problems involving proportional relationships.</p> <p>111.26 b 8 Expressions, equations, and relationships. The student applies mathematical process standards to use geometry to represent relationships and solve problems.</p> <p>111.27 b 5 Proportionality. The student applies mathematical process standards to use geometry to describe or solve problems involving proportional relationships.</p> <p>111.27 b 8 Expressions, equations, and relationships. The student applies mathematical process standards to develop geometric relationships with volume.</p> <p>111.27 b 9 Expressions, equations, and relationships. The student applies mathematical process standards to solve geometric problems.</p> <p>111.28 b 6 Expressions, equations, and relationships. The student applies mathematical process standards to develop mathematical relationships and make connections to geometric formulas.</p> <p>111.28 b 7 Expressions, equations, and relationships. The student applies mathematical process standards to use geometry to solve problems.</p> |

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| Field 715: TX PACT: Mathematics: Grades 4–8 | | Texas Essential Knowledge and Skills for Mathematics |
| 008 | Understand Euclidean geometry in two and three dimensions. | <p>Grades 4–5:</p> <p>111.6 b 6 Geometry and measurement. The student applies mathematical process standards to analyze geometric attributes in order to develop generalizations about their properties.</p> <p>111.6 b 7 Geometry and measurement. The student applies mathematical process standards to solve problems involving angles less than or equal to 180 degrees.</p> <p>111.7 b 5 Geometry and measurement. The student applies mathematical process standards to classify two-dimensional figures by attributes and properties. The student is expected to classify two-dimensional figures in a hierarchy of sets and subsets using graphic organizers based on their attributes and properties.</p> <p>111.7 b 6 Geometry and measurement. The student applies mathematical process standards to understand, recognize, and quantify volume.</p> <hr/> <p>Grades 6–8:</p> <p>111.26 b 8 Expressions, equations, and relationships. The student applies mathematical process standards to use geometry to represent relationships and solve problems.</p> <p>111.27 b 9 Expressions, equations, and relationships. The student applies mathematical process standards to solve geometric problems.</p> <p>111.27 b 11 Expressions, equations, and relationships. The student applies mathematical process standards to solve one–variable equations and inequalities.</p> <p>111.28 b 3 Proportionality. The student applies mathematical process standards to use proportional relationships to describe dilations.</p> <p>111.28 b 6 Expressions, equations, and relationships. The student applies mathematical process standards to develop mathematical relationships and make connections to geometric formulas.</p> <p>111.28 b 7 Expressions, equations, and relationships. The student applies mathematical process standards to use geometry to solve problems.</p> |

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| 009 | Understand coordinate and transformational geometry. | Grades 4–5: 111.7 b 8 Geometry and measurement. The student applies mathematical process standards to identify locations on a coordinate plane. |
| | | Grades 6–8: 111.27 b 5 Proportionality. The student applies mathematical process standards to use geometry to describe or solve problems involving proportional relationships. 111.28 b 3 Proportionality. The student applies mathematical process standards to use proportional relationships to describe dilations. 111.28 b 4 Proportionality. The student applies mathematical process standards to explain proportional and non–proportional relationships involving slope. 111.28 b 10 Two–dimensional shapes. The student applies mathematical process standards to develop transformational geometry concepts. |
| <u>Content Domain IV</u> STATISTICS, PROBABILITY, AND DISCRETE MATHEMATICS | | |
| 010 | Understand principles and techniques of statistics. | Grades 4–5: 111.6 b 9; 111.7 b 9 Data analysis. The student applies mathematical process standards to solve problems by collecting, organizing, displaying, and interpreting data. 111.6 b 10; 111.7 b 10 Personal financial literacy. The student applies mathematical process standards to manage one's financial resources effectively for lifetime financial security. |

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| | | <p>Grades 6–8:</p> <p>111.26 b 12 Measurement and data. The student applies mathematical process standards to use numerical or graphical representations to analyze problems.</p> <p>111.26 b 13 Measurement and data. The student applies mathematical process standards to use numerical or graphical representations to solve problems.</p> <p>111.27 b 6 Proportionality. The student applies mathematical process standards to use probability and statistics to describe or solve problems involving proportional relationships.</p> <p>111.27 b 12 Measurement and data. The student applies mathematical process standards to use statistical representations to analyze data.</p> <p>111.28 b 5 Proportionality. The student applies mathematical process standards to use proportional and non-proportional relationships to develop foundational concepts of functions.</p> <p>111.28 b 11 Measurement and data. The student applies mathematical process standards to use statistical procedures to describe data.</p> |
| 011 | Understand principles of probability and techniques for determining probability. | <p>Grades 4–5: n/a</p> <hr/> <p>Grades 6–8:</p> <p>111.27 b 6 Proportionality. The student applies mathematical process standards to use probability and statistics to describe or solve problems involving proportional relationships.</p> |
| 012 | Understand principles of discrete mathematics. | Grades 4–5: n/a |

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| | | <p>Grades 6–8: n/a</p> <p><i>NOTE: Discrete mathematics topics are aligned to the TEKS at Grades 9-12. See the alignment table for TX PACT: Mathematics: Grades 7-12 for more information.</i></p> |