

Alignment of Texas Pre-Admission Content Test (PACT) Science: Grades 4–8 (716) 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 716: TX PACT: Science: Grades 4–8 | | Texas Essential Knowledge and Skills for Science |
| <u>Content Domain I</u> | | |
| NATURE OF SCIENCE | | |
| 001 | Understand principles and procedures of scientific inquiry. | <p>Grades 4–5:</p> <p>112.15 b 1; 112.16 b 1 Scientific investigation and reasoning. The student conducts classroom and outdoor investigations, following home and school safety procedures and environmentally appropriate and ethical practices.</p> <p>112.15 b 2; 112.16 b 2 Scientific investigation and reasoning. The student uses scientific practices during laboratory and outdoor investigations.</p> <p>112.15 b 3; 112.16 b 3 Scientific investigation and reasoning. The student uses critical thinking and scientific problem solving to make informed decisions.</p> <p>112.15 b 4 Scientific investigation and reasoning. The student knows how to use a variety of tools, materials, equipment, and models to conduct science inquiry.</p> <p>112.16 b 4 Scientific investigation and reasoning. The student knows how to use a variety of tools and methods to conduct science inquiry.</p> <hr/> <p>Grades 6–8:</p> <p>112.18 b 1; 112.19 b 1; 112.20 b 1 Scientific investigation and reasoning. The student, for at least 40% of instructional time, conducts laboratory and field investigations following safety procedures and environmentally appropriate and ethical practices.</p> <p>112.18 b 2; 112.19 b 2; 112.20 b 2 Scientific investigation and reasoning. The student uses scientific practices during laboratory and field investigations.</p> <p>112.18 b 3; 112.19 b 3; 112.20 b 3 Scientific investigation and reasoning. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions and knows the contributions of relevant scientists.</p> |

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| | | 112.18 b 4; 112.19 b 4; 112.20 b 4 Scientific investigation and reasoning. The student knows how to use a variety of tools and safety equipment to conduct science inquiry. |
| 002 | Understand the history and nature of science. | <p>Grades 4–5:</p> <p>112.15 b 3; 112.16 b 3 Scientific investigation and reasoning. The student uses critical thinking and scientific problem solving to make informed decisions.</p> <p>112.15 b 2; 112.16 b 2 Scientific investigation and reasoning. The student uses scientific practices during laboratory and outdoor investigations.</p> <p>Grades 6–8:</p> <p>112.18 b 2; 112.19 b 2; 112.20 b 2 Scientific investigation and reasoning. The student uses scientific practices during laboratory and field investigations.</p> <p>112.18 b 3; 112.19 b 3; 112.20 b 3 Scientific investigation and reasoning. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions and knows the contributions of relevant scientists.</p> |
| 003 | Understand the relationships between science, technology, engineering, mathematics, and society. | <p>Grades 4–5:</p> <p>112.15 b 3; 112.16 b 3 Scientific investigation and reasoning. The student uses critical thinking and scientific problem solving to make informed decisions.</p> <p>Grades 6–8:</p> <p>112.18 b 3; 112.19 b 3; 112.20 b 3 Scientific investigation and reasoning. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions and knows the contributions of relevant scientists.</p> |
| <p><u>Content Domain II</u></p> <p>PHYSICAL SCIENCE</p> | | |

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| 004 | Understand the properties and characteristics of matter. | <p>Grades 4–5:</p> <p>112.15 b 5; 112.16 b 5 Matter and energy. The student knows that matter has measurable physical properties and those properties determine how matter is classified, changed, and used.</p> <p>Grades 6–8:</p> <p>112.18 b 5 Matter and energy. The student knows the differences between elements and compounds.</p> <p>112.18 b 6 Matter and energy. The student knows matter has physical properties that can be used for classification.</p> <p>112.18 b 7 Matter and energy. The student knows that some of Earth's energy resources are available on a nearly perpetual basis, while others can be renewed over a relatively short period of time. Some energy resources, once depleted, are essentially nonrenewable.</p> <p>112.19 b 5 Matter and energy. The student knows that interactions occur between matter and energy.</p> <p>112.20 b 5 Matter and energy. The student knows that matter is composed of atoms and has chemical and physical properties.</p> |
| 005 | Understand physical and chemical changes in matter. | <p>Grades 4–5:</p> <p>112.15 b 5; 112.16 b 5 Matter and energy. The student knows that matter has measurable physical properties and those properties determine how matter is classified, changed, and used.</p> <p>Grades 6–8:</p> <p>112.18 b 5 Matter and energy. The student knows the differences between elements and compounds.</p> <p>112.18 b 7 Matter and energy. The student knows that some of Earth's energy resources are available on a nearly perpetual basis, while others can be renewed over a relatively short period of time. Some energy resources, once depleted, are essentially nonrenewable.</p> |

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| | | <p>112.19 b 6 Matter and energy. The student knows that matter has physical and chemical properties and can undergo physical and chemical changes.</p> <p>112.20 b 5 Matter and energy. The student knows that matter is composed of atoms and has chemical and physical properties.</p> |
| 006 | Understand the characteristics and transformations of different forms of energy. | <p>Grades 4–5:</p> <p>112.15 b 6; 112.16 b 6 Force, motion, and energy. The student knows that energy exists in many forms and can be observed in cycles, patterns, and systems.</p> <p>112.16 b 5 Matter and energy. The student knows that matter has measurable physical properties and those properties determine how matter is classified, changed, and used.</p> <p>Grades 6–8:</p> <p>112.18 b 7 Matter and energy. The student knows that some of Earth's energy resources are available on a nearly perpetual basis, while others can be renewed over a relatively short period of time. Some energy resources, once depleted, are essentially nonrenewable.</p> <p>112.18 b 8 Force, motion, and energy. The student knows force and motion are related to potential and kinetic energy.</p> <p>112.18 b 9 Force, motion, and energy. The student knows that the Law of Conservation of Energy states that energy can neither be created nor destroyed, it just changes form.</p> <p>112.19 b 5 Matter and energy. The student knows that matter has physical and chemical properties and can undergo physical and chemical changes.</p> <p>112.19 b 7; 112.20 b 6 Force, motion, and energy. The student knows that there is a relationship among force, motion, and energy.</p> |
| 007 | Understand relationships between force, mass, and motion. | <p>Grades 4–5:</p> <p>112.15 b 6; 112.16 b 6 Force, motion, and energy. The student knows that energy exists in many forms and can be observed in cycles, patterns, and systems.</p> |

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| | | <p>Grades 6–8:</p> <p>112.18 b 8 Force, motion, and energy. The student knows force and motion are related to potential and kinetic energy.</p> <p>112.19 b 7; 112.20 b 6 Force, motion, and energy. The student knows that there is a relationship among force, motion, and energy.</p> |
| 008 | Understand characteristics and properties of mechanical and electromagnetic waves. | <p>Grades 4–5: n/a</p> <p>Grades 6–8:</p> <p>112.20 b 8 Earth and space. The student knows characteristics of the universe.</p> |
| <u>Content Domain III</u> | | |
| LIFE SCIENCE | | |
| 009 | Understand the characteristics, organization, and processes of cells. | <p>Grades 4–5:</p> <p>112.15 b 10 Organisms and environments. The student knows that organisms undergo similar life processes and have structures and behaviors that help them survive within their environment.</p> <p>112.16 b 10 Organisms and environments. The student knows that organisms have structures and behaviors that help them survive in their environments.</p> <p>Grades 6–8:</p> <p>112.18 b 12 Organisms and environments. The student knows all organisms are classified into domains and kingdoms. Organisms within these taxonomic groups share similar characteristics that allow them to interact with the living and nonliving parts of their ecosystem.</p> <p>112.19 b 12 Organisms and environments. The student knows that living systems at all levels of organization demonstrate the complementary nature of structure and function.</p> <p>112.19 b 14 Knowledge and skills. Organisms and environments. The student knows that reproduction is a characteristic of living organisms and that the instructions for traits are governed in the genetic material.</p> |

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| | | 112.20 b 11 Organisms and environments. The student knows that interdependence occurs among living systems and the environment and that human activities can affect these systems. |
| 010 | Understand characteristics and life processes of living organisms. | <p>Grades 4–5:</p> <p>112.15 b 9 Organisms and environments. The student knows and understands that living organisms within an ecosystem interact with one another and with their environment.</p> <p>112.16 b 9 Organisms and environments. The student knows that there are relationships, systems, and cycles within environments.</p> <p>Grades 6–8:</p> <p>112.18 b 12 Organisms and environments. The student knows all organisms are classified into domains and kingdoms. Organisms within these taxonomic groups share similar characteristics that allow them to interact with the living and nonliving parts of their ecosystem.</p> <p>112.19 b 11 Organisms and environments. The student knows that populations and species demonstrate variation and inherit many of their unique traits through gradual processes over many generations.</p> <p>112.19 b 12 Organisms and environments. The student knows that living systems at all levels of organization demonstrate the complementary nature of structure and function.</p> <p>112.19 b 13 Organisms and environments. The student knows that a living organism must be able to maintain balance in stable internal conditions in response to external and internal stimuli.</p> <p>112.20 b 11 Organisms and environments. The student knows that interdependence occurs among living systems and the environment and that human activities can affect these systems.</p> |

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| 011 | Understand the concepts and principles related to genetics, the theory of evolution, and the classification of organisms. | <p>Grades 4–5:</p> <p>112.15 b 10 Organisms and environments. The student knows that organisms undergo similar life processes and have structures and behaviors that help them survive within their environment.</p> <p>112.16 b 9 Organisms and environments. The student knows that there are relationships, systems, and cycles within environments.</p> <hr/> <p>Grades 6–8:</p> <p>112.18 b 12 Organisms and environments. The student knows all organisms are classified into domains and kingdoms. Organisms within these taxonomic groups share similar characteristics that allow them to interact with the living and nonliving parts of their ecosystem.</p> <p>112.19 b 11 Organisms and environments. The student knows that populations and species demonstrate variation and inherit many of their unique traits through gradual processes over many generations.</p> <p>112.19 b 14 Organisms and environments. The student knows that reproduction is a characteristic of living organisms and that the instructions for traits are governed in the genetic material.</p> <p>112.20 b 11 Organisms and environments. The student knows that interdependence occurs among living systems and the environment and that human activities can affect these systems.</p> |
| 012 | Understand characteristics of different biomes, relationships between organisms, population dynamics, and the flow of matter and energy through ecosystems. | <p>Grades 4–5:</p> <p>112.15 b 9 Organisms and environments. The student knows and understands that living organisms within an ecosystem interact with one another and with their environment.</p> <p>112.15 b 10 Organisms and environments. The student knows that organisms undergo similar life processes and have structures and behaviors that help them survive within their environment.</p> <p>112.16 b 9 Organisms and environments. The student knows that there are relationships, systems, and cycles within environments.</p> |

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| | | <p>112.16 b 10 Organisms and environments. The student knows that organisms have structures and behaviors that help them survive in their environments.</p> <p>Grades 6–8:</p> <p>112.18 b 12 Organisms and environments. The student knows all organisms are classified into domains and kingdoms. Organisms within these taxonomic groups share similar characteristics that allow them to interact with the living and nonliving parts of their ecosystem.</p> <p>112.19 b 10 Organisms and environments. The student knows that there is a relationship between organisms and the environment.</p> <p>112.19 b 13 Organisms and environments. The student knows that a living organism must be able to maintain balance in stable internal conditions in response to external and internal stimuli.</p> <p>112.20 b 11 Organisms and environments. The student knows that interdependence occurs among living systems and the environment and that human activities can affect these systems.</p> |
| <p><u>Content Domain IV</u></p> <p>EARTH AND SPACE SCIENCE</p> | | |
| 013 | Understand the history of Earth, characteristics of Earth materials and resources, and the geologic processes that shape Earth. | <p>Grades 4–5:</p> <p>112.15 b 7; 112.16 b 7 Earth and space. The students know that Earth consists of useful resources and its surface is constantly changing.</p> <p>Grades 6–8:</p> <p>112.18 b 10 Earth and space. The student understands the structure of Earth, the rock cycle, and plate tectonics.</p> <p>112.19 b 8; 112.20 b 9 Earth and space. The student knows that natural events and human activity can impact Earth systems.</p> |

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| 014 | Understand characteristics and properties of the hydrosphere. | <p>Grades 4–5:</p> <p>112.15 b 7; 112.16 b 7 Earth and space. The students know that Earth consists of useful resources and its surface is constantly changing.</p> <p>112.15 b 8; 112.16 b 8 Earth and space. The student knows that there are recognizable patterns in the natural world and among the Sun, Earth, and Moon system.</p> <p>Grades 6–8:</p> <p>112.19 b 8 Earth and space. The student knows that natural events and human activity can impact Earth systems.</p> <p>112.20 b 10 Earth and space. The student knows that climatic interactions exist among Earth, ocean, and weather systems.</p> |
| 015 | Understand Earth's atmosphere, weather, and climate. | <p>Grades 4–5:</p> <p>112.15 b 7; 112.16 b 7 Earth and space. The students know that Earth consists of useful resources and its surface is constantly changing.</p> <p>112.15 b 8; 112.15 b 8 Earth and space. The student knows that there are recognizable patterns in the natural world and among the Sun, Earth, and Moon system.</p> <p>Grades 6–8:</p> <p>112.19 b 8 Earth and space. The student knows that natural events and human activity can impact Earth systems.</p> <p>112.20 b 10 Earth and space. The student knows that climatic interactions exist among Earth, ocean, and weather systems.</p> |
| 016 | Understand characteristics of the solar system and the universe. | <p>Grades 4–5:</p> <p>112.15 b 8; 112.16 b 8 Earth and space. The student knows that there are recognizable patterns in the natural world and among the Sun, Earth, and Moon system.</p> |

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| | | <p>Grades 6–8:</p> <p>112.18 b 11 Earth and space. The student understands the organization of our solar system and the relationships among the various bodies that comprise it.</p> <p>112.19 b 9 Earth and space. The student knows components of our solar system.</p> <p>112.20 b 7 Earth and space. The student knows the effects resulting from cyclical movements of the Sun, Earth, and Moon.</p> <p>112.20 b 8 Earth and space. The student knows characteristics of the universe.</p> |