**Side-by-Side of Oklahoma Science PASS and Reading for Literacy in Science and Technical Subjects**
**Grades 9-12**

R.ST - Reading for Literacy in Science and Technical Subjects

| Grade | Strand | Standard # | Standard | Grade | Strand | Standard # | Standard |
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| 9,10,11,12 | R.ST | Process 1.1 | Identify qualitative and quantiative changes given conditions (e.g., temperature, mass, volume, time, position, length) before, during, and after an event. | 9,10,11,12 | R.ST | 1 | Key Ideas and Details: Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions. |
| 9,10,11,12 | R.ST | Process 4.1 | Select appropriate predictions based on previously observed patterns of evidence. | | | | |
| 9,10,11,12 | R.ST | Process 4.7 | Communicate or defend scientific thinking that resulted in conclusions. | | | | |
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| 9,10,11,12 | R.ST | Process 4.7 | Communicate or defend scientific thinking that resulted in conclusions. | 9,10,11,12 | R.ST | 2 | Key Ideas and Details: Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text. |
| 9,10,11,12 | R.ST | Process 5.2 | Select predictions based on models. | | | | |
| 9,10,11,12 | R.ST | Process 5.3 | Compare a given model to the physical world. | | | | |

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**Grades 9-12**

| Grade | Strand | Standard # | Standard | Grade | Strand | Standard # | Standard |
|---|---|---|---|---|---|---|---|
| 9,10,11,12 | R.ST | Process 6.4 | Inquiries should lead to the formulation of explanations or models (physical, conceptual, and mathematical). In answering questions, students should engage in discussions (based on scientific knowledge, the use of logic, and evidence from the investigation) and arguments that encourage the revision of their explanations, leading to further inquiry. | 9,10,11,12 | R.ST | 2 | Key Ideas and Details: Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text. |
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| 9,10,11,12 | R.ST | Process 1.2 | Use appropriate tools (e.g., metric ruler, graduated cylinder, thermometer, balances, spring scales, stopwatches) when measuring objects and/or events. | 9,10,11,12 | R.ST | 3 | Key Ideas and Details: Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks attending to special cases or exceptions defined in the text. |
| 9,10,11,12 | R.ST | Process 3.1 | Evaluate the design of a physical science investigation. | | | | |
| 9,10,11,12 | R.ST | Process 3.2 | Identify the independent variables, dependent variables, and controls in an experiment. | | | | |
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| 9,10,11,12 | R.ST | Process 1.3 | Use appropriate System International (SI) units (i.e., grams, meters, liters, degrees Celsius, and seconds); and SI prefixes (i.e., micro-, milli-, centi-, and kilo-) when measuring objects and/or events. | 9,10,11,12 | R.ST | 4 | Craft and Structure: Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9–10 texts and topics. |

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| Grade | Strand | Standard # | Standard | Grade | Strand | Standard # | Standard |
|---|---|---|---|---|---|---|---|
| 9,10,11,12 | R.ST | Process 3.2 | Identify the independent variables, dependent variables, and controls in an experiment. | 9,10,11,12 | R.ST | 4 | Craft and Structure: Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9–10 texts and topics. |
| 9,10,11,12 | R.ST | Process 3.5 | Recognize potential hazards and practice safety procedures in all physical science activities. | | | | |
| 9,10,11,12 | R.ST | Process 4.3 | Interpret data tables, line, bar, trend, and/or circle graphs. | | | | |
| 9,10,11,12 | R.ST | Process 4.8 | Identify and/or create an appropriate graph or chart from collected data, tables, or written description. | | | | |
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| 9,10,11,12 | R.ST | Process 2.1 | Use observable properties place an object or event into a classification system. | 9,10,11,12 | R.ST | 5 | Craft and Structure: Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy). |
| 9,10,11,12 | R.ST | Process 5.1 | Interpret a model which explains a given set of observations. | | | | |
| 9,10,11,12 | R.ST | Process 5.2 | Select predictions based on models. | | | | |
| 9,10,11,12 | R.ST | Process 5.3 | Compare a given model to the physical world. | | | | |

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| Grade | Strand | Standard # | Standard | Grade | Strand | Standard # | Standard |
|---|---|---|---|---|---|---|---|
| 9,10,11,12 | R.ST | Process 6.4 | Inquiries should lead to the formulation of explanations or models (physical, conceptual, and mathematical). In answering questions, students should engage in discussions (based on scientific knowledge, the use of logic, and evidence from the investigation) and arguments that encourage the revision of their explanations, leading to further inquiry. | 9,10,11,12 | R.ST | 5 | Craft and Structure: Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy). |
| | | | | | | | |
| 9,10,11,12 | R.ST | Process 3.1 | Evaluate the design of a physical science investigation. | 9,10,11,12 | R.ST | 6 | Craft and Structure: Analyze the author's purpose in providing an explanation, describing a procedure, |
| 9,10,11,12 | R.ST | Process 3.4 | Identify a hypothesis for a given problem in physical science investigations. | | | | |
| 9,10,11,12 | R.ST | Process 4.1 | Select appropriate predictions based on previously observed patterns of evidence. | | | | |
| 9,10,11,12 | R.ST | Process 6.1 | Formulate a testable hypothesis and design an appropriate experiment relating to the physical world. | | | | |

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| Grade | Strand | Standard # | Standard | Grade | Strand | Standard # | Standard |
|---|---|---|---|---|---|---|---|
| 9,10,11,12 | R.ST | Process 6.4 | Inquiries should lead to the formulation of explanations or models (physical, conceptual, and mathematical). In answering questions, students should engage in discussions (based on scientific knowledge, the use of logic, and evidence from the investigation) and arguments that encourage the revision of their explanations, leading to further inquiry. | 9,10,11,12 | R.ST | 6 | Craft and Structure: Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address. |
| | | | | | | | |
| 9,10,11,12 | R.ST | Process 1.1 | Identify qualitative and quantitative changes given conditions (e.g., temperature, mass, volume, time, position, length) before, during, and after an event. | 9,10,11,12 | R.ST | 7 | Integration of Knowledge and Ideas: Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words. |
| 9,10,11,12 | R.ST | Process 1.3 | Use appropriate System Internation (SI) units (i.e., grams, meters, liters, degrees Celsius, and seconds); and SI prefixes (i.e., micro-, milli-, centi-, and kilo-) when measuring objects and/or events. | | | | |

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| Grade | Strand | Standard # | Standard | Grade | Strand | Standard # | Standard |
|---|---|---|---|---|---|---|---|
| 9,10,11,12 | R.ST | Process 2.3* | *Physics PS | 9,10,11,12 | R.ST | 7 | Integration of Knowledge and Ideas: Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words. |
| 9,10,11,12 | R.ST | Process 3.3 | Use mathematics to show relationships within a given set of observations. | | | | |
| 9,10,11,12 | R.ST | Process 4.2 | Report data in an appropriate manner. | | | | |
| 9,10,11,12 | R.ST | Process 4.3 | Interpret data tables, line, bar, trend, and/or circle graphs. | | | | |
| 9,10,11,12 | R.ST | Process 4.7 | Communicate or defend scientific thinking that resulted in conclusions. | | | | |
| 9,10,11,12 | R.ST | Process 4.8 | Identify and/or create an appropriate graph or chart from collected data, tables, or written description. | | | | |
| 9,10,11,12 | R.ST | Process 6.3 | Use a variety of technologies, such as hand tools, measuring instruments, and computers to collect, analyze, and display data. | | | | |

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|---|---|---|---|---|---|---|---|
| 9,10,11,12 | R.ST | Process 4.5 | Evaluate experimental data to draw the most logical conclusion. | 9,10,11,12 | R.ST | 8 | Integration of Knowledge and Ideas: Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem. |
| 9,10,11,12 | R.ST | Process 4.7 | Communicate or defend scientific thinking that resulted in conclusions. | | | | |
| 9,10,11,12 | R.ST | Process 5.3 | Compare a given model to the physical world. | | | | |
| 9,10,11,12 | R.ST | Process 6.4 | Inquiries should lead to the formulation of explanations or models (physical, conceptual, and mathematical). In answering questions, students should engage in discussions (based on scientific knowledge, the use of logic, and evidence from the investigation) and arguments that encourage the revision of their explanations, leading to further inquiry. | | | | |

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| | | | | | | | |
| 9,10,11,12 | R.ST | Process 2.1 | Using observable properties, place an object or event into a classification system. | 9,10,11,12 | R.ST | 9 | Integration of Knowledge and Ideas: Compare and contrast findings presented in a text to those from other sources (including their own |
| 9,10,11,12 | R.ST | Process 2.2 | Identify the properties by which a classification system is based. | | | | |
| 9,10,11,12 | R.ST | Process 4.4 | Accept or reject hypotheses when given results of a physical science investigation. | | | | |
| 9,10,11,12 | R.ST | Process 4.5 | Evaluate experimental data to draw the most logical conclusion. | | | | |
| 9,10,11,12 | R.ST | Process 4.7 | Communicate or defend scientific thinking that resulted in conclusions. | | | | |
| 9,10,11,12 | R.ST | Process 5.3 | Compare a given model to the physical world. | | | | |

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|---|---|---|---|---|---|---|---|
| 9,10,11,12 | R.ST | Process 6.4 | Inquiries should lead to the formulation of explanations or models (physical, conceptual, and mathematical). In answering questions, students should engage in discussions (based on scientific knowledge, the use of logic, and evidence from the investigation) and arguments that encourage the revision of their explanations, leading to further inquiry. | 9,10,11,12 | R.ST | 9 | Integration of Knowledge and Ideas: Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts. |
| | | | | | | | |
| 9,10,11,12 | R.ST | Process 4.4 | Accept or reject hypotheses when given results of a physical science investigation. | 9,10,11,12 | R.ST | 10 | Range of Reading and Level of Text Complexity: By the end of grade 10, read and comprehend science/technical texts in the grades |
| 9,10,11,12 | R.ST | Process 4.5 | Evaluate experimental data to draw the most logical conclusion. | | | | |
| 9,10,11,12 | R.ST | Process 5.1 | Interpret a model which explains a given set of observations. | | | | |
| 9,10,11,12 | R.ST | Process 5.2 | Select predictions based on models. | | | | |
| 9,10,11,12 | R.ST | Process 5.3 | Compare a given model to the physical world. | | | | |

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| 9,10,11,12 | R.ST | Process 6.4 | Inquiries should lead to the formulation of explanations or models (physical, conceptual, and mathematical). In answering questions, students should engage in discussions (based on scientific knowledge, the use of logic, and evidence from the investigation) and arguments that encourage the revision of their explanations, leading to further inquiry. | 9,10,11,12 | R.ST | 10 | Range of Reading and Level of Text Complexity: By the end of grade 10, read and comprehend science/technical texts in the grades 9–10 text complexity band independently and proficiently. By the end of grade 11, read and comprehend science/technical texts in the grades 11-12 text complexity band independently and proficiently. |