

# **Component Codes**

CA: Chapter Assessment

CK: Checkpoint

CS: Case Study CT: Chapter Test

DA: Data Analysis

EAW: Explorers at Work INV: Investigations

LA: Lesson Assessment

ML: Minilab

PT: Performance Task
TIAT: Tying It All Together

U: Unit

UO: Unit Opener PTT: Posttest

Bold blue numbers indicate chapters or sections. Standards unique to Earth/Space Science Honors are indicated with an asterisk (\*).

Next Generation Sunshine State Standards (NGSSS) Correlation...

..FL2

Additional Standards for Earth/Space Science ...... FL8



# Next Generation Sunshine State Standards

	EARTH/SPACE SCIENCE	
STANDARD	STUDENT/TEACHER EDITION	ONLINE RESOURCES
SC. 912.E.5.1 Cite evidence used to develop and verify the scientific theory of the Big Bang (also known as the Big Bang Theory) of the origin of the universe.	<b>25.2</b> pp. 823–828; <b>25.2 DA</b> p. 825; <b>25.2 CK</b> p. 825, 828; <b>25.2 ML</b> p. 826; <b>25.2 LA</b> p. 828, #3; <b>25 TIAT</b> p. 832; <b>25 CT</b> p. 835, #21; <b>25 PT</b> p. 835	<b>25 PTT,</b> #10
<b>SC.912.E.5.2</b> Identify patterns in the organization and distribution of matter in the universe and the forces that determine them.	22.3 pp 735–739; 22.3 DA p. 739; 22 CK p. 739; 22.3 ML p. 740; 22.3 LA p. 745, #2; 22 TIAT p. 752; 22 CT p. 754; 24 TIAT p. 809; 25 CS p. 818; 25.1 pp. 819–823; 25.1 CK pp. 821; 25.1 LA p. 823, #1–4; 25.2 pp. 823, 828–829; 25.2 CK pp. 823; 25.2 DA p. 825; 25.2 ML p. 826; 25.2 LA p. 828, #4; 25.3 p. 831; 25.3 LA p. 831, #1, 2; 25.3 CK p. 831, 25 TIAT p. 832; #2, 3; 25 CT p. 835, #19, 20, 23, 24	<b>22 PTT,</b> #7; <b>25 PTT,</b> #6, 12, 13, 14; <b>25 INV</b>
<b>SC.912.E.5.3</b> Describe and predict how the initial mass of a star determines its evolution.	<b>24.3</b> p. 802; <b>24.3 DA</b> pp. 802, 807; <b>24.3 LA</b> p. 804, #4; <b>24.4</b> pp. 805–807; <b>24 PT</b> pp. 812–813; <b>24 CT</b> p.812, #29, 30, 31	<b>24 PTT,</b> #7, 11
SC.912.E.5.4 Explain the physical properties of the Sun and its dynamic nature and connect them to conditions and events on Earth.	<b>19.1</b> pp. 621–624; <b>19.2</b> pp. 629–631; <b>19.3</b> LA p. 631, #1, 2; <b>19</b> CT p. 645, #17, 22; <b>21.3</b> p. 704; <b>21</b> CK p. 706; <b>24</b> CS p. 792; <b>24.2</b> p. 799; <b>24.3</b> DA p. 802, #4; <b>24.2</b> LA p. 799, #1–5; <b>24</b> PT p. 813; <b>24</b> CT p. 812, #19, 20, 21	<b>24 PTT,</b> #5, 6; <b>25 INV</b>
SC.912.E.5.5 Explain the formation of planetary systems based on our knowledge of our Solar System and apply this knowledge to newly discovered planetary systems.	<b>22 TIAT</b> p. 752; <b>23.1</b> pp. 761–763; <b>23.1 LA</b> p. 763, #1, 3; <b>23.2</b> p. 764; <b>23.5</b> p. 781; <b>23 PT</b> p. 787; <b>24 EAW</b> pp. 790–791; <b>25 EAW</b> pp. 816–817	
SC.912.E.5.6 Develop logical connections through physical principles, including Kepler's and Newton's Laws about the relationships and the effects of Earth, Moon, and Sun on each other.	<b>16.2</b> pp. 513–515; <b>16.2</b> LA p. 516, #1–3; <b>16.3</b> p. 518; <b>16</b> CT p.544, #18; <b>19.1</b> pp. 621–624; <b>19.4</b> pp. 638–639; <b>19.4</b> DA p. 639; <b>19</b> CT p. 645, #16, 17; <b>22.2</b> pp. 733–734; <b>22.3</b> pp. 733, 740–741; <b>22.3</b> DA p. 739; <b>22.3</b> ML p. 740; <b>22.3</b> LA p. 745, #3–5; <b>22.2</b> CK pp. 734, 739, 741; <b>22</b> TIAT p. 752; <b>22</b> CT p. 754, #20, 21, 22, 23, 29, 31; <b>22</b> PT p. 755; <b>23.2</b> p. 769; <b>24</b> TIAT p. 809	<b>22 PTT,</b> #5, 7

STANDARD	STUDENT/TEACHER EDITION	ONLINE RESOURCES
<b>SC.912.E.5.7</b> Relate the history of and explain the justification for future space exploration and continuing technology development.*	<b>23 EAW</b> pp. 758–759; <b>23 CS</b> p. 760; <b>23 CT</b> p. 786, #27	
<b>SC.912.E.5.8</b> Connect the concepts of radiation and the electromagnetic spectrum to the use of historical and newly-developed observational tools.*	<b>19.1</b> pp. 621–628; <b>19 CK</b> p. 624; <b>19.1</b> LA p. 628, #2; <b>19 CT</b> p. 645, #16, 18; <b>22.4</b> pp.745–751; <b>22.4</b> CK p. 747; <b>22.4</b> DA p. 748; <b>22.4</b> LA p. 751, #1, 2; <b>22 CT</b> p. 754, #24, 25, 26, 27, 30; <b>24.4</b> p. 808; <b>25 CS</b> p. 818	<b>22 PTT,</b> #12
<b>SC.912.E.5.9</b> Analyze the broad effects of space exploration on the economy and culture of Florida.	<b>22.4</b> pp 749–750	
<b>SC.912.E.5.10</b> Describe and apply the coordinate system used to locate objects in the sky.*	<b>22.1</b> pp. 728–729	
SC.912.E.5.11 Distinguish the various methods of measuring astronomical distances and apply each in appropriate situations.	<b>22.1 LA</b> 730, #4; <b>22.2</b> pp. 731, 732, 734; <b>22 TIAT</b> p. 752; <b>22 CT</b> p. 754 #18; <b>24.3</b> p. 800; <b>24 PT</b> pp. 812–813; <b>25.1</b> pp. 819–821; <b>25.2 DA</b> p. 825; <b>25 CT</b> p. 835, #18	24 INV
SC.912.E.6.1 Describe and differentiate the layers of Earth and the interactions among them.	2.1 pp. 40–42; 2.1 CK p. 42; 7.1 pp. 203–206; 7.1 DA p. 205; 7.1 CK p. 207; 7.1 LA p. 208, #3, 5; 7.2 pp. 209–213; 7.2 CK p. 212; 7.2 LA p. 213, #2, 3; 7.2 ML p. 217; 7.3 pp. 215–219; 7.3 ML p. 220; 7.3 LA p. 220 #1, 2, 4; 7.3 CK p. 215; 7.4 pp. 221–222; 7 CT p. 228, #12, 13, 19; 7 PT p. 229; 8.4 pp. 259–263; 8.4 LA p. 263, #1, 2, 3; 8.4 CK pp. 260, 262, 263; 8 CT p. 266, #21, 22, 25	<b>7 PTT,</b> #2, 3, 4, 5, 15
SC. 912. E.6.2 Connect surface features to surface processes that are responsible for their formation.	12.3 pp.378–386; 12.3 LA p. 388, #3, 6; 12.3 CK pp. 382, 379; 12.4 pp. 389–391; 12.4 LA p. 394, #1, 2, 5; 12.4 CK pp. 384, 385; 12 TIAT p. 395; 12 CT p. 397, #20–22, 25; 13.3 pp. 411–414; 13.3 CK pp. 411, 414; 13.3 LA p. 414, #1–3; 13.4 pp. 415–419; 13.4 CK pp. 418, 419; 13.4 LA p. 419, #1–4; 13.7 pp. 427–430; 13.7 LA p. 431, #1–4; 13.7 CK pp. 428, 430; 13.8 pp. 434–435; 13.8 ML p. 437; 13.8 LA p. 437, #2–3; 13.8 CK p. 437; 13 TIAT p. 438; 13 CT p. 441, #19–22, 25, 26; 13 PT p. 443	<b>12 INV</b> ; <b>12 PTT,</b> #9, 10; <b>13 PTT,</b> #3-7, 11
<b>SC.912.E.6.3</b> Analyze the scientific theory of plate tectonics and identify related major processes and features as a result of moving plates.	<b>7 CS</b> p. 200; <b>7.1</b> pp. 201–203, 207–208; <b>7.1 CK</b> p. 203, 208; <b>7.1 LA</b> p. 208, #1, 2, 4; <b>7.2</b> pp. 209–213; <b>7.2 CK</b> p. 209, 212, 213; <b>7.2 LA</b> p. 213, #1, 2, 3, 4, 5, 6; <b>7.3</b> pp. 215–218; <b>7.3 CK</b> p. 216; <b>7.3 ML</b> p. 217; <b>7.3 LA</b> p. 220, #1, 2, 4; <b>7.4</b> pp. 221–225; <b>7.4 CK</b> p. 221, 224, 225; <b>7.4 LA</b> p. 225, #1–4; <b>7 TIAT</b> p. 226; <b>7 CT</b> p. 228, #12–22	<b>7 INV</b> ; <b>7 PTT,</b> #1, #7–15
<b>SC.912.E.6.4</b> Analyze how specific geologic processes and features are expressed in Florida and elsewhere.	5.5 pp. 155–156; 9.2 pp. 285–286; 9.2 LA p. 286, #3; 9 CT p. 297, #23; 10.2 pp. 310–312; 10 CT p. 324, #29; 10 PT p. 325; 11.4 p. 349; 11.4 CK p. 350; 12.2 LA p. 374, #3, 5; 12.3 pp. 381–382; 12.3 CK p. 381; 12 CT p. 397, #22; 13.3 pp. 411–414; 13.3 LA p. 414, #1, 2; 13.3 CK p. 414; 13.8 pp. 435–437; 13.8 ML p. 437 13.8 LA p. 437, #2, 3; 13.8 CK p. 437; 13 CT p. 441, #21, 22; 13 PT p. 443; 15.2 pp. 484–486, 488, 489; 15.2 LA p.494, #3; 15.3 pp. 495–496; 15 CT p.502, #22	8 INV; 9 INV; 10 INV; 12 INV; 13 INV; 15 PTT, #9
<b>SC.912.E.6.5</b> Describe the geological development of the present day oceans and identify commonly found features.	<b>11.1</b> pp. 332–333; <b>11.1</b> DA p. 333; <b>11.1</b> LA p. 333, #2, 3; <b>11.1</b> CK p. 333; <b>11.3</b> pp. 337–340, 342–347; <b>11.3</b> ML p. 345; <b>11.3</b> LA p. 347, #1–5; <b>11.3</b> CK pp. 340, 343, 345, 347; <b>11.4</b> pp. 348–353; <b>11.4</b> LA p. 353, #1–3; <b>11.4</b> CK pp. 350, 353; <b>11</b> PT p. 357; <b>11</b> CT p. 356, #17, 18, 20, 22–27, 30	<b>11 INV; 11 INV; 11 PTT,</b> 2, 6, 10–12

STANDARD	STUDENT/TEACHER EDITION	ONLINE RESOURCES
SC.912.E.7.1 Analyze the movement of matter and energy through the different biogeochemical cycles, including water and carbon.	2 EAW p. 36–37; 2.3 pp 57–60; 2.3 DA p. 59; 2.3 LA p. 61, #1, 2, 3, 4; 2.3 CK p. 60; 2 PT p. 65; 2 CT p. 64, #22, 23; 11.3 p.339; 11 CT p. 357, #32; 15 CS p. 482; 15.1 pp. 483–484; 15.1 LA p. 484, #1–4; 15.1 CK p. 484; 15.2 ML p. 488; 15.3 LA p. 499, #5; 15 TIAT p. 500; 15 CT p. 502, #15, 16, 17, 30; 16.3 ML p. 525; 19.2 pp. 629–630; 19.2 ML p. 630; 19.2 CK p. 631; 19.3 pp. 632, 634–635; 19.3 LA p. 635, #4; 19 PT p. 646; 21.4 pp. 706–708; 21.4 LA p. 708, #1, 3; 21.4 CK p. 708; 21 PT p. 718; 21 CT p. 717, #24	<b>2 PTT</b> , #10–13; <b>15 INV</b> ; <b>15 PTT</b> , #1, 2
<b>SC.912.E.7.2</b> Analyze the causes of the various kinds of surface and deep water motion within the oceans and their impacts on the transfer of energy between the poles and the equator.	<b>16.3</b> pp. 517–526; <b>16.3</b> ML p. 525; <b>16.3</b> LA p. 526, #1–4; <b>16.3</b> CK pp. 518, 520, 526; <b>16</b> CT p. 544, #21, 27, 28	<b>16 INV</b> ; <b>16 PTT,</b> #5, 6, 13, 14
SC.912.E.7.3 Differentiate and describe the various interactions among Earth systems, including: atmosphere, hydrosphere, cryosphere, geosphere, and biosphere.	2.1 p. 39; 2.3 pp. 58-60; 2.3 DA p. 59; 2.3 CK p. 60; 2.3 LA p. 61, #2, 4; 2 CT p. 64, #16, 18, 19; 2 PT p. 65; 5.1 p. 133; 5.1 CK p. 133; 5.1 LA p. 135, #4; 5 CT p. 160, #16; 12.3 pp. 378-379; 12.3 LA p. 388, #3; 12 CT p. 397, #18, 21; 13.4 pp. 415-418; 13.4 CK p. 418; 13.4 LA p. 419, #1-4; 13 CT p. 441, #21, 22, 30; 13 PT p. 443; 14.1 pp. 453-455; 14.1 DA p. 454; 14 CT p. 474, #27, 30; 19 CS p. 620; 19.1 pp. 625-628; 19.1 LA p. 628, #5; 19.4 pp. 640-641; 19.4 CK p. 640; 19.4 LA p. 642, #4; 19 CT p. 646, #17, 26; 19 PT p. 646; 21.5 pp. 711-712; 21.5 LA p. 714, #4	2 INV; 2 INV; 2 PTT, #3, 4; 12 INV; 13 INV; 15 INV; 18 INV
SC.912.E.7.4 Summarize the conditions that contribute to the climate of a geographic area, including the relationships to lakes and oceans.	19.4 pp. 636–641; 19.4 DA p. 639; 19.4 CK pp. 638, 640, 642; 19.4 LA p. 642, #1–6; 19 CT p. 646, #24–27, 31, 33; 19 PT p. 646; 20.4 pp. 671–680; 20.4 CK pp. 672, 676; 20.4 DA p. 680; 20.4 LA p. 680, #1, 2; 20 TIAT p. 681; 20 CT p. 683, #24, 25; 20 PT p. 685 21.2 pp. 695–699; 21.2 DA p. 697; 21.2 CK pp. 698, 699; 21.2 LA p. 699, #1–5; 21 CT p. 717, #18, 19, 28	<b>19 INV</b> ; <b>19 PTT,</b> #9
SC.912.E.7.5 Predict future weather conditions based on present observations and conceptual models and recognize limitations and uncertainties of such predictions.	<b>20.2 DA</b> p. 658; <b>20.3 ML</b> p. 665; <b>20 TIAT</b> p. 681	20 INV
<b>SC.912.E.7.6</b> Relate the formation of severe weather to the various physical factors.	<b>20 EAW</b> pp. 650–405; <b>20.4</b> pp. 671–680; <b>20.4 DA</b> p. 680; <b>20.4 CK</b> pp. 672, 676; <b>20.4 LA</b> p. 680, #1, 2; <b>20 TIAT</b> p. 681; <b>20 PT</b> p. 685; <b>20 CT</b> p. 683 #24, 25	<b>20 PTT,</b> #9
<b>SC.912.E.7.7</b> Identify, analyze, and relate the internal (Earth system) and external (astronomical) conditions that contribute to global climate change.	<b>20.4</b> LA p. 706, #3; <b>21.3</b> pp. 700–701, 703–706; <b>21.3</b> ML p. 704; <b>21.3</b> LA p. 706, #3; <b>21.3</b> CK p. 706; <b>21.4</b> pp. 706–707; <b>21.4</b> LA p. 708, #1–4; <b>21.4</b> CK p. 707; <b>21.5</b> pp. 713–714; <b>21.5</b> LA p. 714, #4; <b>21.5</b> CK p. 714; <b>21</b> PT p. 718; <b>21</b> CT p. 717, #20, 24–26	<b>21 PTT,</b> #5–7, 10
SC.912.E.7.8 Explain how various atmospheric, oceanic, and hydrologic conditions in Florida have influenced and can influence human behavior, both individually and collectively.	<b>20.4</b> p. 664; <b>20.4</b> LA p. 666, #5; <b>20</b> TIAT p. 667; <b>20</b> PT p. 671; <b>20</b> CT p. 670, #31, 32	<b>20 PTT,</b> #11
SC.912.E.7.9 Cite evidence that the ocean has had a significant influence on climate change by absorbing, storing, and moving heat, carbon, and water.*	2 EAW pp. 36–37; 2.3 p. 60; 2.3 LA p. 61, #4; 2 CT p. 64, #22; 2 PT p. 65; 11.1 p. 333; 11.1 LA p. 333, #4; 16 CS p. 508; 16.1 pp. 510–512; 16.1 LA p. 512, #4, 5; 16.1 CK p. 512; 16.3 p. 518, 16.3 ML p. 525; 16 TIAT p. 542; 16 PT p. 545; 16 CT p. 544, #17, 27; 19.3 p. 635; 19.3 LA p. 635, #3, 4; 19.3 CK p. 635; 21 CS p. 690; 21.5 pp. 711–712; 21.5 LA p. 714, #3	

STANDARD	STUDENT/TEACHER EDITION	ONLINE RESOURCES
SC.912.L.15.1 Explain how the scientific theory of evolution is supported by the fossil record, comparative anatomy, comparative embryology, biogeography, molecular biology, and observed evolutionary change.	<b>5.2</b> pp. 138, 140, 142; <b>5.2 LA</b> p.142, #2; <b>5 TIAT</b> p. 158; <b>5 CT</b> p. 160, #21	<b>5 PTT,</b> #9
<b>SC.912.L.15.8</b> Describe the scientific explanations of the origin of life on Earth.	<b>18.2</b> p. 591; <b>18.2 LA</b> p. 595, #1; <b>18 CT</b> p. 612, #18	
SC. 912.N.1.1 Define a problem based on a specific body of knowledge, for example: biology, chemistry, physics, and earth/space science, and do the following:  1. Pose questions about the natural world, (Articulate the purpose of the investigation and identify the relevant scientific concepts).  2. Conduct systematic observations, (Write procedures that are clear and replicable. Identify observables and examine relationships between test (independent) variable and outcome (dependent) variable. Employ appropriate methods for accurate and consistent observations; conduct and record measurements at appropriate levels of precision. Follow safety guidelines).  3. Examine books and other sources of information to see what is already known,  4. Review what is known in light of empirical evidence, (Examine whether available empirical evidence can be interpreted in terms of existing knowledge and models, and if not, modify or develop new models).  5. Plan investigations, (Design and evaluate a scientific investigation).  6. Use tools to gather, analyze, and interpret data (this includes the use of measurement in metric and other systems, and also the generation and interpretation of graphical representations of data, including data tables and graphs), (Collect data or evidence in an organized way. Properly use instruments, equipment, and materials (e.g., scales, probeware, meter sticks, microscopes, computers) including set-up, calibration, technique, maintenance, and storage).  7. Pose answers, explanations that explicate or describe natural phenomena (inferences),  9. Use appropriate evidence and reasoning to justify these explanations to others,  10. Communicate results of scientific investigations, and  11. Evaluate the merits of the explanations produced by others.	1.1 pp. 9, 10, 14, 15–16, 18, 19; 1.1 DA p. 14; 1.1 ML p. 16; 1 CT p. 32 #16; 2 CT p. 64, #18, 20, 22; 3.1 ML p. 74; 3.1 LA p. 75, #4; 3.3 LA p. 81, #4; 3.5 LA p. 91, #4; 3 PT p. 95, #1; 4.1 LA p. 106, #3; 4 CT p. 124, #12, 16; 4 PT p. 125; 5.3 LA p. 148, #6; 5.4 ML p. 150, #1; 5 TIAT p. 158; 5 CT p. 160, #16, 17, 25; 5 PT p. 161, #1; 6.4 LA p. 189, #4; 6 CT p. 192, #17, 18; 7 CS p. 200; 7 CT p. 228, #12, 14, 16, 18, 19, 21; 7 PT p. 229; 8.3 LA p. 259, #5; 8 CT p. 266, #15, 18, 20, 22, 24, 25, 27, 29; 8 PT p. 267, #1; 9 CT p. 296, #18, 24; 9 PT p. 297, #1; 10.2 ML p. 316, #1; 10 CT p. 324, #16, 24, 26, 29, 30; 11.3 ML p. 345, #1; 11 CT p. 356, #16, 17, 20–22, 27; 11 PT p. 357, #1; 12.1 ML p. 370, #1; 12.2 ML p. 374, #1; 12 CT p. 397, #19, 24, 28, 32; 13 CT p. 440, #22, 26; 14 CT p. 474, #27, 30; 14 PT p. 475, #3; 15.2 ML p. 488, #1; 15 PT p. 503, #1; 15 CT p. 502, #15–17, 19, 21, 25; 16.3 ML p. 525, #2; 16 PT p. 545, #1; 16 CT p. 544, #21, 24, 29; 17.4 ML p. 573, #1; 17.4 LA p. 576, #5; 17 TIAT p. 577, #5; 17 CT p. 579, #25; 17 PT p. 581, #1; 18.2 ML p. 594, #1; 18.4 DA p. 603, #1, 4, 5; 18 CT p. 612, #19, 20, 22, 24, 30, 31; 18 PT pp. 613, 614, 615; 19.2 ML p. 630, #1; 19.3 ML p. 633, #1; 19.4 DA p. 639, #4, 5; 19 CT p. 645, #18, 26, 29, 32; 19 PT p. 646; 20 CS p. 652; 20.3 ML p. 665, #1, 2; 20 CT p. 683, #15, 17, 18, 20, 22, 24, 28; 20 PT p. 685, #1; 21 CT p. 717, #17, 20, 24, 28; 20 PT p. 685, #1; 21 CT p. 717, #17, 20, 24, 28; 22 PT p. 780, #1; 24 CT p. 786, #18, 20, 23, 29; 24.2 ML p. 798, #1; 24 CT p. 786, #18, 20, 23, 29; 24.2 ML p. 798, #1; 24 CT p. 786, #18, 20, 23, 29; 24.2 ML p. 798, #1; 24 CT p. 786, #18, 20, 23, 29; 24.2 ML p. 798, #1; 24 CT p. 786, #18, 20, 23, 29; 24.2 ML p. 798, #1; 24 CT p. 786, #18, 20, 23, 29; 24.2 ML p. 798, #1; 24 CT p. 786, #18, 20, 23, 29; 24.2 ML p. 798, #1; 24 CT p. 786, #18, 20, 23, 29; 24.2 ML p. 798, #1; 24 CT p. 786, #18, 20, 22, 24, 28; 20 PT p. 685, #1, 21, 27; 25 PT p. 835	1 INV; 2 INV; 3 INV; 4 INV; 5 INV; 6 INV; 7 INV; 8 INV; 9 INV; 14 INV; 15 INV; 17 INV; 18 INV; 19 INV; 20 INV; 21 INV; 24 INV; 25 INV

STANDARD	STUDENT/TEACHER EDITION	ONLINE RESOURCES
SC.912.N.1.3 Recognize that the strength or usefulness of a scientific claim is evaluated through scientific argumentation, which depends on critical and logical thinking, and the active consideration of alternative scientific explanations to explain the data presented.*	<b>1.1</b> p. 9; <b>6.4</b> p. 188; <b>6.4</b> LA p. 189, #4; <b>11.2</b> LA p. 335, #4; <b>11</b> CT p. 357, #28; <b>17</b> EAW p. 548; <b>17</b> TIAT p. 577; <b>18.3</b> LA p. 603, #6; <b>18.4</b> DA p. 603, #2; <b>18</b> PT p. 615; <b>22.1</b> LA p. 730, #4; <b>25</b> CT p. 835, #27	
<b>SC.912.N.1.4</b> Identify sources of information and assess their reliability according to the strict standards of scientific investigation.	<b>4 TIAT</b> p. 122; <b>6 TIAT</b> p. 190; <b>7 TIAT</b> p. 226; <b>11 TIAT</b> p. 354; <b>16 TIAT</b> p. 542; <b>21 TIAT</b> p. 715	4 INV; 5 INV; 6 INV; 8 INV; 9 INV; 13 INV; 15 INV; 15 INV; 17 INV; 18 INV; 19 INV; 21 INV; 25 INV
<b>SC.912.N.1.5</b> Describe and provide examples of how similar investigations conducted in many parts of the world result in the same outcome.	<b>1.1</b> pp. 15–16; <b>1.1 LA</b> p. 22, #4; <b>1 CT</b> p. 34, #16	<b>1 PTT,</b> #12
SC.912.N.1.6 Describe how scientific inferences are drawn from scientific observations and provide examples from the content being studied.	1.1 p. 18; 1.1 LA p. 22, #4; 1 CT p. 32, #16; 2.1 ML p. 44, #2; 3.4 DA p. 84, #2; 3.4 LA p. 85, #5; 4.4 DA p. 121, #3; 5.2 p. 136, 134; 5.4 DA p. 151, #1, 3; 5.4 LA p. 151, #3; 6.4 DA p. 188, #2; 7.2 LA p. 213, #5; 8.1 ML p. 244, #2; 8.1 DA p. 244, #4; 8.4 p. 260; 8.4 LA p. 263, #2, 4; 10.2 ML p. 316, #2; 11.1 DA p. 333, #3; 12.1 LA p. 370, #3; 12.3 DA p. 377, #2; 14.1 DA p. 454, #4; 14.2 LA p. 461, #4; 15.2 DA p. 491, #2, 3; 16.4 p. 529; 17.1 LA p. 556, #3; 17.2 pp. 572–573; 21.3 ML p. 704, #2; 23.2 p. 767; 23.4 p. 777; 23.5 ML p. 783, #3; 24.2 ML p. 798, #2; 25.1 LA p. 823, #4	<b>1 PTT,</b> #12
<b>SC.912.N.2.1</b> Identify what is science, what clearly is not science, and what superficially resembles science (but fails to meet the criteria for science).*	<b>1.1</b> pp. 9–20; <b>1.1 DA</b> p. 14; <b>1.1 ML</b> p. 16; <b>1.1 LA</b> p. 20, #1, 2, 6; <b>1 CT</b> p. 32, #14–17, 22, 26–28	
SC.912.N.2.2 Identify which questions can be answered through science and which questions are outside the boundaries of scientific investigation, such as questions addressed by other ways of knowing, such as art, philosophy, and religion.*	<b>1.1</b> pp. 9–20; <b>1.1 DA</b> p. 14; <b>1.1 ML</b> p. 16; <b>1.1 LA</b> p. 18, #1, 2; <b>1.1 LA</b> p. 20, #6; <b>1 CT</b> p. 32 #14–17, 22, 26–28	
SC.912.N.2.3 Identify examples of pseudoscience (such as astrology, phrenology) in society.*	<b>1.1</b> pp. 13–14; <b>1.1 LA</b> p. 20, #6; <b>1 CT</b> p. 32, #14, 22	
SC.912.N.2.4 Explain that scientific knowledge is both durable and robust and open to change. Scientific knowledge can change because it is often examined and re-examined by new investigations and scientific argumentation. Because of these frequent examinations, scientific knowledge becomes stronger, leading to its durability.	<b>1.1</b> pp. 9–20; <b>1.1 LA</b> p.20 #3; <b>1 CT</b> p. 32, #17	<b>1 PTT,</b> #12
SC.912.N.2.5 Describe instances in which scientists' varied backgrounds, talents, interests, and goals influence the inferences and thus the explanations that they make about observations of natural phenomena and describe that competing interpretations (explanations) of scientists are a strength of science as they are a source of new, testable ideas that have the potential to add new evidence to support one or another of the explanations.	<b>1.1</b> pp 15–16	

STANDARD	STUDENT/TEACHER EDITION	ONLINE RESOURCES
SC.912.N.3.1 Explain that a scientific theory is the culmination of many scientific investigations drawing together all the current evidence concerning a substantial range of phenomena; thus, a scientific theory represents the most powerful explanation scientists have to offer.	<b>1.1</b> pp. 15–18; <b>1.1 ML</b> p. 16; <b>1.1 LA</b> p. 20, #2; <b>1 CT</b> p. 30, #17, 28	
SC.912.N.3.4 Recognize that theories do not become laws, nor do laws become theories; theories are well supported explanations and laws are well supported descriptions.*	<b>1.1</b> pp 15–16; <b>1.1 ML</b> p. 16; <b>1.1 LA</b> p. 20, #2; <b>1 CT</b> p. 32 #17, 28	
<b>SC.912.N.3.5</b> Describe the function of models in science, and identify the wide range of models used in science.	<b>1.1</b> pp. 14–15; <b>1.1</b> LA p. 20, #5; <b>1</b> CT p. 32, #19; <b>2.1</b> ML p. 46; <b>4.1</b> ML p. 101; <b>10.2</b> ML p. 316; <b>14.3</b> ML p. 466; <b>19.3</b> ML p. 633	
SC.912.N.4.1 Explain how scientific knowledge and reasoning provide an empirically-based perspective to inform society's decision making.	<b>1.1</b> p. 10; <b>1.1</b> CK p. 10; <b>6.3</b> LA p. 184, #4, <b>6.4</b> LA p. 189, #4; <b>14.3</b> LA p. 470, #5; <b>17</b> CT p. 579, #29; <b>21.5</b> LA p. 714, #5	
SC.912.N.4.2 Weigh the merits of alternative strategies for solving a specific societal problem by comparing a number of different costs and benefits, such as human, economic, and environmental.*	<b>6 TIAT</b> p. 190, #2; <b>6 PT</b> p. 193, #4; <b>17.2</b> pp. 557–561	
SC.912.P.10.4 Describe heat as the energy transferred by convection, conduction, and radiation, and explain the connection of heat to change in temperature or states of matter.	<b>7.3</b> p. 215; <b>7.3</b> ML p. 217; <b>7</b> PT p. 229; <b>19.1</b> pp. 621–625; <b>19.1</b> LA p. 628, #2; <b>19.1</b> CK p. 655; <b>19.2</b> p. 629; <b>19.2</b> LA p. 631, #1, 2; <b>19.2</b> CK pp. 632, 635; <b>19.3</b> p. 632, 634, 635; <b>19.3</b> ML p. 633; <b>19.3</b> LA p. 635, #1, 2, 3, 4; <b>19.3</b> CK p. 635; <b>19</b> CT p. 645, #16, 18, 21; <b>24.2</b> p. 797; <b>24.2</b> LA p. 781, #1	<b>19 INV</b> ; <b>19 PTT,</b> #6
SC.912.P.10.10 Compare the magnitude and range of the four fundamental forces (gravitational, electromagnetic, weak nuclear, strong nuclear).	<b>22.3</b> p. 735–739; <b>22.3</b> DA p. 739; <b>22.3</b> ML p. 740; <b>22.3</b> CK p. 730; <b>22.3</b> LA p. 745, #2; <b>22</b> TIAT p. 752; <b>22</b> CT p. 754, #21, 31; <b>24</b> TIAT p. 809	
SC.912.P.10.11 Explain and compare nuclear reactions (radioactive decay, fission and fusion), the energy changes associated with them and their associated safety issues.	<b>5.4</b> p. 148–150; <b>5.4</b> ML p. 150; <b>5.4</b> CK pp. 149, 151; <b>5.4</b> LA p. 151, #1, 2; <b>5</b> CT p. 160, #24; <b>6.2</b> p. 179–181; <b>6.2</b> LA p. 181, #2; <b>6.2</b> CK p. 181; <b>6</b> CT p. 192, #21; <b>24.1</b> p. 793; <b>24.1</b> LA p. 794, #1 <b>24.3</b> p. 801–803; <b>24.3</b> CK p. 803; <b>24</b> TIAT p. 809; <b>25.2</b> p. 823–825	
SC.912.P.10.16 Explain the relationship between moving charges and magnetic fields, as well as changing magnetic fields and electric fields, and their application to modern technologies.	<b>11.2</b> p. 335; <b>19.1</b> pp.623–624; <b>19 CT</b> p. 645, #32	<b>19 PTT,</b> #8
SC.912.P.10.18 Explore the theory of electromagnetism by comparing and contrasting the different parts of the electromagnetic spectrum in terms of wavelength, frequency, and energy, and relate them to phenomena and applications.	19.1 pp. 621, 623–624; 19.1 CK p. 624; 19.1 LA p. 628, #2, 3–5; 19 CT p. 645, #17, 18, 32; 19.1 CK p. 624, 625, 628; 19.2 p. 624–631; 19.2 LA p. 631, #1, 2; 24.4 p. 807–808; 25 CS p. 818; 25 EAW pp.816–817; 25.2 p. 826–828; 25.3 p. 828–829; 25.3 LA p. 831, #1; 25 CT p. 835, #26	<b>24 INV</b> ; <b>24 PTT,</b> #5, 9
SC.912.P.10.19 Explain that all objects emit and absorb electromagnetic radiation and distinguish between objects that are blackbody radiators and those that are not.	<b>19.1</b> p. 623–625; <b>19.1 CK</b> p. 625; <b>19 CT</b> p. 645, #16, 17, 18	<b>19 PTT,</b> #8

STANDARD	STUDENT/TEACHER EDITION	ONLINE RESOURCES
SC.912.P.10.20 Describe the measurable properties of waves and explain the relationships among them and how these properties change when the wave moves from one medium to another.	8.1 pp. 240–242; 8.1 ML p. 244; 8.1 DA p. 245; 8.4 pp. 259–262; 8.4 CK p. 260; 8.4 LA p. 263, #1–3; 8 CT p. 266, #21, 22, 29; 16.2 p. 515–516; 16.2 LA p. 516, #6; 16.2 CK p. 516; 16.4 pp. 526–528; 16.4 CK p. 527; 16 CT p. 544, #19, 20; 19.1 p. 621; 19.1 LA p. 628, #2; 22.4 p. 745	<b>8 PTT,</b> #2, 9; <b>16 PTT,</b> #4, 12
SC.912.P.12.2 Analyze the motion of an object in terms of its position, velocity, and acceleration (with respect to a frame of reference) as functions of time.	<b>8.1</b> pp. 237–240; <b>8.1 LA</b> p. 246, #3; <b>8 CT</b> p. 267, #26	<b>8 PTT,</b> #5
SC.912.P.12.4 Describe how the gravitational force between two objects depends on their masses and the distance between them.	<b>22.3</b> p. 735–739; <b>22.3 DA</b> p. 739; <b>22.3 CK</b> p. 739; <b>22.3 ML</b> p. 740; <b>22.3 LA</b> p. 745, #2; <b>22 TIAT</b> p. 752; <b>22 CT</b> p. 754, #21, 31; <b>24 TIAT</b> p. 809	<b>22 PTT,</b> #7



# **Additional Standards for Earth/Space Science**

The following table includes Florida's Benchmarks for Excellent Student Thinking (B.E.S.T.)

Standards and the English Language Development (ELD) Standards associated with Earth/Space Science.

# **EARTH/SPACE SCIENCE**

## STUDENT/TEACHER EDITION

## **ONLINE RESOURCES**

MA.K12.MTR.1.1 Actively participate in effortful learning both individually and collectively. Mathematicians who participate in effortful learning both individually and with others:

- Analyze the problem in a way that makes sense given the task.
- Ask questions that will help with solving the task.
- Build perseverance by modifying methods as needed while solving a challenging task.
- Stay engaged and maintain a positive mindset when working to solve tasks.
- Help and support each other when attempting a new method or approach.

#### **Clarifications:**

Teachers who encourage students to participate actively in effortful learning both individually and with others:

- Cultivate a community of growth mindset learners.
- · Foster perseverance in students by choosing tasks that are challenging.
- Develop students' ability to analyze and problem solve.
- Recognize students' effort when solving challenging problems.

1.1 DA p. 14; 1.1 ML p. 16; 3.4 DA p. 84; 3 TIAT p. 92; 3 PT p. 95; 5.3 LA p. 148; 5.4 ML p. 150; 5 TIAT p. 158; 6.3 ML p. 184; 6.4 DA p. 188; 6 TIAT p. 190; 7.3 ML p. 217; 7.3 ML p. 220; 7 TIAT p. 226; 7 PT p. 229; 8.1 ML p. 244; 8 TIAT p. 264; 9 PT p. 297; 10.2 ML p. 316; 11 TIAT p. 354; 13.8 ML p. 437; 13 PT p. 443; 15 TIAT p. 500; 16 TIAT p. 542; 18.2 ML p. 595; 18 TIAT p. 610; 19.1 LA p. 628; 20.3 ML p. 665; 20.4 DA p. 680; 20 PT p. 685; 21 PT p. 718–719; 22.3 DA p. 739; 22 TIAT p. 752; 23.3 LA p. 776; 25.2 DA p. 825

1 INV; 2; INV; 3 INV; 4 INV; 5 INV; 6 INV; 7 INV; 8 INV; 9 INV; 10 INV; 11 INV; 12 INV; 13 INV; 14 INV; 15 INV; 16 INV; 17 INV; 18 INV; 19 INV; 20 INV; 21 INV; 22 INV; 23 INV; 24 INV; 25 INV

### **ONLINE RESOURCES**

MA.K12.MTR.2.1 Demonstrate understanding by representing problems in multiple ways. Mathematicians who demonstrate understanding by representing problems in multiple ways:

Build understanding through modeling and using manipulatives.

Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations.

Progress from modeling problems with objects and drawings to using algorithms and equations.

Express connections between concepts and representations.

Choose a representation based on the given context or purpose.

**Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways:

Help students make connections between concepts and representations.

Provide opportunities for students to use manipulatives when investigating concepts.

Guide students from concrete to pictorial to abstract representations as understanding progresses.

Show students that various representations can have different purposes and can be useful in different situations.

1.1 ML p. 16; 1.2 DA p. 28; 1 PT p. 33; 2.3 DA p. 59; 2 TIAT p. 62; 2 PT p. 65; 3.1 ML p. 74; 3.1 LA p. 75; 3.3 LA p. 81; 3.4 DA p. 84; 3 PT p. 95; 4 PT p. 125; 5.3 LA p. 148; 5.4 ML p. 150; 5 TIAT p. 158; 6.3 ML p. 184; 6.4 DA p. 188; 7.3 ML p. 217; 7.3 ML p. 220; 7 PT p. 229; 8.1 DA p. 245; 8 TIAT p. 264; 8 PT p. 267; 9.1 ML p. 277; 9 PT p. 297; 10.2 ML p. 316; 10.3 DA p. 320; 11.3 ML p. 344; 11 TIAT p. 354; 12.3 DA p. 377; 13.5 DA p. 421; 13.8 ML p. 437; 13 PT p. 443; 14.3 ML p. 466; 14 PT p. 475; 15.2 ML p. 488; 16.3 ML p. 525; 17.4 ML p. 573; 18.2 ML p. 594; 18.2 ML p. 595; 18 TIAT p. 610; 19.1 LA p. 628; 20.3 ML p. 665; 20.3 ML p. 666; 20.4 DA p. 680; 20 PT p. 685; 21 PT pp. 718–719; 22.3 DA p. 739; 22 TIAT p. 752; 22 PT p. 755; 23.3 LA p. 776; 24.3 DA p. 802; 24 PT pp. 812–813; 25.2 DA p. 825

1 INV; 2; INV; 3 INV; 4 INV; 5 INV; 6 INV; 7 INV; 8 INV; 9 INV; 10 INV; 11 INV; 12 INV; 13 INV; 14 INV; 15 INV; 16 INV; 17 INV; 18 INV; 19 INV; 20 INV; 21 INV; 22 INV; 23 INV; 24 INV; 25 INV

MA.K12.MTR.3.1 Complete tasks with mathematical fluency. Mathematicians who complete tasks with mathematical fluency:

- Select efficient and appropriate methods for solving problems within the given context.
- Maintain flexibility and accuracy while performing procedures and mental calculations.
- Complete tasks accurately and with confidence.
- Adapt procedures to apply them to a new context.
- Use feedback to improve efficiency when performing calculations.

#### Clarifications:

Teachers who encourage students to complete tasks with mathematical fluency:

- Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately.
- Offer multiple opportunities for students to practice efficient and generalizable methods.
- Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.

**2.1** ML p. 44; **2** PT p. 65; **3** PT p. 95; **4** TIAT p. 122; **5.4** ML p. 150; **6.4** DA p. 188; **7.1** DA p. 205; **7.3** ML p. 217; **7.3** ML p. 220; **7** TIAT p. 226; **7** PT p. 229; **8.1** ML p. 244; **9.1** ML p. 277; **10.2** ML p. 316; **11** TIAT p. 354; **13** PT p. 443; **14.3** ML p. 466; **15.2** ML p. 488; **15** TIAT p. 500; **18** TIAT p. 610; **20.3** ML p. 666; **22** PT p. 755; **24** PT pp. 812–813

1 INV; 2; INV; 3 INV; 4 INV; 5 INV; 6 INV; 7 INV; 8 INV; 9 INV; 10 INV; 11 INV; 12 INV; 13 INV; 14 INV; 15 INV; 16 INV; 17 INV; 18 INV; 19 INV; 20 INV; 21 INV; 22 INV; 23 INV; 24 INV; 25 INV

#### **ONLINE RESOURCES**

MA.K12.MTR.4.1 Engage in discussions that reflect on the mathematical thinking of self and others. Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others:

- · Communicate mathematical ideas, vocabulary and methods effectively.
- Analyze the mathematical thinking of others.
- Compare the efficiency of a method to those expressed by others.
- Recognize errors and suggest how to correctly solve the task.
- Justify results by explaining methods and processes.
- Construct possible arguments based on evidence.

#### Clarifications:

Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others:

- Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for
- Create opportunities for students to discuss their thinking with peers.
- Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods.
- Develop students' ability to justify methods and compare their responses to the responses of their peers.

2.2 LA p. 56; 2.3 DA p. 59; 2 PT p. 65; 3.1 ML p. 74; 3.1 LA p. 75; **3.4 DA** p. 84; **3 TIAT** p. 92; **4.1 ML** p. 103; **4.3 DA** pp. 120–121; 4 TIAT p. 122; 4 PT p. 125; 5 TIAT p. 158; 5 PT p. 161; 6.3 ML p. 184; 6.4 DA p. 188; 6 PT p. 192; 7.1 DA p. 205; 7.3 ML p. 217; 7.3 ML p. 220; **7 TIAT** p. 226; **7 PT** p. 229; **8.1 DA** p. 245; **8.1 ML** p. 244; 8 TIAT p. 264; 8 PT p. 267; 10.3 DA p. 320; 11.3 ML p. 345; 13.5 DA p. 421; **13.8 ML** p. 437; **13 PT** p. 443; **14.3 ML** p. 466; **14 PT** p. 475; **15.2 ML** p. 488; **15 TIAT** p. 500; **16.3 ML** p. 525; **16 TIAT** p. 542; 18.2 ML p. 594; 18.2 ML p. 595; 18 TIAT p. 610; 19.1 LA p. 628; **20.3 ML** p. 665; **20.4 DA** p. 680; **20 PT** p. 685; **21 PT** pp. 718–719; **22.3 DA** p. 739; **22 TIAT** p. 752; **22 PT** p. 755; **23.3 LA** p. 776; **24.3 DA** p. 802; **24 PT** pp. 812–813; **25.2 DA** p. 825

1 INV; 2; INV; 3 INV; 4 INV; 5 INV; 6 INV; 7 INV; 8 INV; 9 INV; 10 INV; 11 INV; 12 INV; 13 INV; 14 INV; 15 INV; 16 INV; 17 INV; 18 INV; 19 INV; 20 INV; 21 INV; 22 INV; 23 INV; 24 INV; 25 INV

MA.K12.MTR.5.1 Use patterns and structure to help understand and connect mathematical concepts. Mathematicians who use patterns and structure to help understand and connect mathematical concepts:

- Focus on relevant details within a problem.
- Create plans and procedures to logically order events, steps or ideas to solve problems.
- Decompose a complex problem into manageable parts.
- · Relate previously learned concepts to new concepts.
- Look for similarities among problems.
- Connect solutions of problems to more complicated large-scale situations.

#### Clarifications:

Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts:

- Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts.
- Support students to develop generalizations based on the similarities found among problems.
- Provide opportunities for students to create plans and procedures to solve problems.
- Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.

2 PT p. 65; 3.1 ML p. 74; 3.1 LA p. 75; 3.3 LA p. 81; 3.5 LA p. 91; 3 PT p. 95; 4.3 DA pp. 120-121; 4 TIAT p. 122; 5 TIAT p. 158; 5 PT p. 161; **6.3 ML** p. 184; **7.1 DA** p. 205; **7.3 ML** p. 220; **7 TIAT** p. 226; **7 PT** p. 229; **8 TIAT** p. 264; **8 PT** p. 267; **9.1 ML** p. 277; **9 PT** p. 297; 10.3 DA p. 320; 10 PT p. 325; 13.5 DA p. 421; 13.8 ML p. 437; 13 PT p. 443; 14.3 ML p. 466; 15.2 ML p. 488; 16 TIAT p. 542; 17.4 ML p. 573; 18.2 ML p. 594; 18.2 ML p. 595; 18 TIAT p. 610; 19.1 LA p. 628; 20.4 DA p. 680; 20 PT p. 685; 22.3 DA p. 739; 24 PT pp. 812-813; **25.2 DA** p. 825

1 INV; 2; INV; 3 INV; 4 INV; 5 INV; 6 INV; 7 INV: 8 INV: 9 INV: 10 INV: 11 INV: 12 INV: 13 INV; 14 INV; 15 INV; 16 INV; 17 INV; 18 INV; 19 INV; 20 INV; 21 INV; 22 INV; 23 INV; 24 INV; 25 INV

#### **ONLINE RESOURCES**

MA.K12.MTR.6.1 Assess the reasonableness of solutions. Mathematicians who assess the reasonableness of solutions:

- Estimate to discover possible solutions.
- Use benchmark quantities to determine if a solution makes sense.
- Check calculations when solving problems.
- Verify possible solutions by explaining the methods used.
- Evaluate results based on the given context.

#### Clarifications:

Teachers who encourage students to assess the reasonableness of solutions:

- Have students estimate or predict solutions prior to solving.
- Prompt students to continually ask, "Does this solution make sense? How do you know?"
- Reinforce that students check their work as they progress within and after a task.
- Strengthen students' ability to verify solutions through justifications.

**2** PT p. 65; **3.4** DA p. 84; **4.1** ML p. 103; **4** TIAT p. 122; **4** PT p. 125; **5.4** ML p. 150; **5** TIAT p. 158; **5** PT p. 161; **6.3** ML p. 184; **6** PT p. 192; **7.1** DA p. 205; **7.3** ML p. 217; **7.3** ML p. 220; **8.1** DA p. 245; **8** TIAT p. 264; **8** PT p. 267; **10.2** ML p. 316; **10** PT p. 325; **11.3** ML p. 344; **13.5** DA p. 421; **14.3** ML p. 466; **16** TIAT p. 542; **18.2** ML p. 595; **20** PT p. 685; **21** PT pp. 718–719; **22.3** DA p. 739; **22** TIAT p. 752; **24.3** DA p. 802; **25.2** DA p. 825

1 INV; 2; INV; 3 INV; 4 INV; 5 INV; 6 INV; 7 INV; 8 INV; 9 INV; 10 INV; 11 INV; 12 INV; 13 INV; 14 INV; 15 INV; 16 INV; 17 INV; 18 INV; 19 INV; 20 INV; 21 INV; 22 INV; 23 INV; 24 INV; 25 INV

MA.K12.MTR.7.1 Apply mathematics to real-world contexts. Mathematicians who apply mathematics to real-world contexts:

- Connect mathematical concepts to everyday experiences.
- Use models and methods to understand, represent and solve problems.
- Perform investigations to gather data or determine if a method is appropriate.
- Redesign models and methods to improve accuracy or efficiency.

#### Clarifications:

Teachers who encourage students to apply mathematics to real-world contexts:

- Provide opportunities for students to create models, both concrete and abstract, and perform investigations.
- Challenge students to question the accuracy of their models and methods.
- Support students as they validate conclusions by comparing them to the given situation.
- Indicate how various concepts can be applied to other disciplines. efficiency.

**3.5** LA p. 91; **3** PT p. 95; **4.1** ML p. 103; **4.3** DA pp. 120–121; **4** TIAT p. 122; **4** PT p. 125; **5.4** ML p. 150; **5** TIAT p. 158; **5** PT p. 161; **6.3** ML p. 184; **6.4** DA p. 188; **6** PT p. 192; **7.1** DA p. 205; **7.3** ML p. 217; **7.3** ML p. 220; **7** TIAT p. 226; **7** PT p. 229; **8.1** ML p. 244; **8** TIAT p. 264; **8** PT p. 267; ; **9.1** ML p. 277; **10.2** ML p. 316; **10** PT p. 325; **13.8** ML p. 437; **13** PT p. 443; **14.3** ML p. 466; **15.2** ML p. 488; **17.4** ML p. 573; **18.2** ML p. 595; **19.1** LA p. 628; **20** PT p. 685; **22.3** DA p. 739; **24** PT pp. 812–813

1 INV; 2; INV; 3 INV; 4 INV; 5 INV; 6 INV; 7 INV; 8 INV; 9 INV; 10 INV; 11 INV; 12 INV; 13 INV; 14 INV; 15 INV; 16 INV; 17 INV; 18 INV; 19 INV; 20 INV; 21 INV; 22 INV; 23 INV; 24 INV; 25 INV

**ELA.K12.EE.1.1** Cite evidence to explain and justify reasoning.

#### **Clarifications:**

9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.

National Geographic Earth and Space Science includes opportunities throughout the program for students to cite evidence and justify reasoning. For example: 1.2 DA p. 28, #3; 1 CT p. 32, #26; 2 CT p. 64, #24, #25, #26, #27; 3 CT p. 94, #29; 4.1 LA p. 106, #3; 4 TIAT p. 122, #2; 4 CT p. 124, #21; 5 CT p. 160, #17; 5 CT p. 161, #28; 6.4 DA p. 188 #3; 7.1 LA p.208, #6; 7 TIAT p. 226, #4; 7 CT p. 228, #15; 7 CT p. 229, #18; 8 CT p. 267, #30; 9 CT p. 297, #25; 10 PT p. 325, #4; 11.3 LA p. 347, #3; 15 TIAT p. 500, #2; 17 CT p. 580, #26, #27; 18 PT p. 615, #1B, #1C; 19 LA p. 631, #5; 20.3 ML p. 666, #5; 23.2 LA p. 769, #5; 23 PT p. 785

9 INV; 21 INV; 23 INV; 25 INV

**ONLINE RESOURCES** 

ELA.K12.EE.2.1 Read and comprehend grade-level complex texts proficiently.

#### **Clarifications:**

See Text Complexity for grade-level complexity bands and a text complexity rubric.

National Geographic Earth and Space Science *includes opportunities* throughout the program for students to demonstrate that they can read and comprehend the text proficiently. For example: **1.1** LA p. 20, #5; **2.1** ML p. 44, #6; **3** TIAT p. 92; **4.2** LA p. 109, #4; **4** TIAT p. 122; **5.1** LA p. 135, #4; **7.1** LA p. 208, #6; **7** TIAT p. 226; **8.4** LA p. 263, #3; **10.3** LA p. 321, #5; **12.1** LA p. 370, #4; **13.5** LA p. 422, #3; **13.8** LA p. 437, #3; **14.1** LA p. 455, #5; **15.3** LA p. 499, #5; **16** EAW pp. 506-507; **16.6** LA p. 541, #3; **18.1** LA p. 590, #4; **18.4** DA p. 603, #2; **18** PT p.615; **19** EAW p. 616; **20.4** DA p. 680; **21.2** LA p. 699, #5; **21.5** LA p. 714, #4; **24.2** LA p. 797, #4

8 INV; 9 INV; 20 INV; 21 INV

**ELA.K12.EE.3.1** Make inferences to support comprehension.

#### Clarifications:

Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like "Why is the girl smiling?" or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.

National Geographic Earth and Space Science *includes opportunities* throughout the program for students to make inferences to support comprehension. For example: **1** EAW pp. 6–7; **1.1** DA p. 14, #3; **1** TIAT p. 30, #2–3; **1** PT p. 33; **2.1** ML p. 44, #2–6; **3** EAW pp. 70–71; **3.4** LA p. 85, #5; **4.4** DA p. 121, #3; **4** CT p. 124, #21, 22, 25, 26; **4** PT p. 125, #2; **5.4** DA p. 151, #1, 3, 4; **5.4** LA p. 151, #3, 4; **5** CT p. 161, #22–28; **7** EAW pp. 198–199; **7.2** LA p. 213, #5, 6; **7.3** ML p. 217, #2; **7.3** CK p. 218; **8** EAW pp. 232–233; **8.1** ML p. 244; **8.4** p. 261; **8.4** LA p. 263, #2, 4; **9** CT p. 297, #25–28; **10** EAW pp. 300–301; **10.2** LA p. 316, #5; **10** CT p. 324, #27–30; **11** EAW pp. 328–329; **13.4** p. 416; **15.2** DA p. 491, #2, 3; **16.1** LA p. 512, #5; **16.4** p. 527; **17.1** LA p. 556, #3; **18** EAW pp. 586–587; **21.3** LA p. 706, #2; **24.3** p. 804; **25** PT p. 835

1 PTT, #27–30; 2 PTT, #24–27; 5 INV; 8 PTT, #26–30; 14 PTT, #26–31; 15 INV; 18 INV; 24 INV

**ELA.K12.EE.4.1** Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations.

#### Clarifications:

In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.

National Geographic Earth and Space Science includes opportunities throughout the program for students to collaborate and engage in active listening. For example: 1.1 ML p. 16; 3 TIAT p. 92; 4 TIAT p. 122, #2; 5 TIAT p. 158; 5 TIAT p. 158; 7 TIAT p. 226; 9 PT p. 297; 11 TIAT p. 354; 12.1 ML p. 370; 12 TIAT p. 395; 13 TIAT p. 438; 13 PT p. 443; 14 TIAT p. 472; 14 PT p. 475; 15 TIAT p. 500; 16 TIAT p. 542; 17 TIAT p. 577, #3-5; 18.2 ML p. 595; 18 TIAT p. 610; 19.3 ML p. 633; 19 TIAT p. 643; 20.3 ML p. 665

1 INV; 4 INV; 22 INV; 25 INV

**ELA.K12.EE.5.1** Use the accepted rules governing a specific format to create quality work.

#### Clarifications:

Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.

National Geographic Earth and Space Science includes opportunities throughout the program for students to use accepted rules to create quality work. For example: 2 TIAT p. 62, #4; 3 PT p. 95, #1D; 6 TIAT p. 190, #3; 7 PT p. 229, #1B; 8 TIAT p. 264; 9 TIAT p. 294, #6; 12 TIAT p. 395, #4; 13 TIAT p. 438, #5; 14 TIAT p. 472, #3; 14 PT p. 472, #4; 15 TIAT p. 500, #4; 15 PT p. 503; 16 TIAT p. 542; 16 PT p. 545, #1C; 17 PT p. 581, #1C; 18 TIAT p. 610, #3; 20 TIAT p. 681; 21 TIAT p. 715, #5; 23 TIAT p. 782, #1, #3; 23 PT p. 785

1 INV: 5 INV: 23 INV: 23 INV: 25 INV

# STUDENT/TEACHER EDITION ONLINE RESOURCES

**ELA.K12.EE.6.1** Use appropriate voice and tone when speaking or writing.

#### **Clarifications:**

In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.

National Geographic Earth and Space Science includes opportunities throughout the program for students to use appropriate voice and tone when speaking or writing. For example: **3 CT** p. 94, #29; **3 PT** p. 95; **4 CT** p. 124, #21; **5 PT** p. 161; **6 CT** p. 192, #26; **7 CS** p. 200; **7 TIAT** p. 226, #4; **8 TIAT** p. 264; **9 TIAT** p. 294; **10 PT** p. 325; **13.TIAT** p. 438; **14 TIAT** p. 472; **14 PT** p. 475; **15 TIAT** p. 500, #2; **15 PT** p. 503, #B; **17 TIAT** p. 577, #4, #6; **17 PT** p. 581; **18.4 DA** p. 603, #2; **18 PT** p. 615; **22 CT** p. 754, #34; **24 PT** p. 811, #2

**ELD.K12.ELL.SC.1** English language learners communicate information, ideas and concepts necessary for academic success in the content area of Science.

1 EAW p. 7; 1.1 p. 9; 1.2 p. 25; 2 EAW p. 37; 2.1 p. 39; 3.1 p. 73; 3.4 p. 83; 4 EAW p. 99; 4.1 p. 101; 4.3 p. 113; 5 EAW p. 129; 5.3 p. 143; 6 EAW p. 165; 6.2 p.173; 7.2 p. 210; 8 EAW p. 232; 8.1 p. 235; 9 EAW p. 271; 9.1 p. 275; 9.2 p. 284; 10 EAW p. 301; 10.1 p. 303; 10.3 p. 318; 11.3 p. 339; 11.3 p. 343; 11.4 p. 353; 12.1 p. 367; 13 EAW p. 403; 13.1 p. 406; 13.2 p. 409; 13.6 p. 426; 14 EAW p. 447; 14.3 p. 468; 15 EAW p. 481; 15.1 p. 483; 16 CS p. 508; 16.2 p. 513; 16.5 p. 537; 17.1 p. 553; 17.4 p. 574; 17 CT p. 579; 18.2 p. 593; 18.4 p. 604; 18.4 p. 607; 19.1 p. 622; 19.3 p. 632; 19.4 p. 636; 19 CT p. 645; 20 EAW p. 651; 20.1 p. 653; 20.3 p. 662; 20.4 p. 676; 21 EAW p. 689; 21.1 p. 691; 21.3 p. 702; 21.4 p. 708; 22 CS p. 726; 22.3 p. 735; 22.4 p. 747; 23.1 p. 761; 23.2 p. 769; 24.4 p. 807; 25 CS p. 818; 25.1 p. 819; 25.2 p. 827

**ELD.K12.ELL.SI.1** English language learners communicate for social and instructional purposes within the school setting.

1 EAW p. 7; 1.2 p. 25; 2 EAW p. 37; 2.1 p. 39; 2.2 p. 50; 3.1 p. 73; 3.2 p. 75; 3.3 p. 77; 3.4 p. 83; 3.5 p. 89; 4.1 p. 101; 4.3 p. 113; 4.3 p. 116; 5 EAW p. 129; 5.1 p. 131; 5.3 p. 143; 5.5 p. 155; 6.3 p. 181; 6.4 p. 187; 7.2 p. 210; 7.2 p. 211; 7.2 p. 213; 7.3 p. 215; 8 EAW p. 232; 8.2 p. 249; 9 EAW p. 271; 9.1 p. 275; 9.2 p. 284; 9.2 p. 285; 9.2 p. 286; 10 EAW p. 301; 10.1 p. 303; 10.1 p. 304; 11 EAW p. 329; 11.3 p. 339; 11.3 p. 343; 11.4 p. 353; 12.1 p. 367; 12.4 p. 388; 12 CT p. 397; 13 EAW p. 397; 13.1 p. 406; 13.7 p. 431; 14 EAW p. 447; 14.2 p. 461; 15 EAW p. 481; 15.1 p. 483; 15.2 p.481; 16.4 p. 531; 16.5 p. 537; 16.6 p. 540; 17 EAW p. 549; 17.1 p. 553; 17.2 p. 558; 17.3 p. 568; 17.4 p. 574; 17 CT p. 579; 18.2 p. 593; 18.3 p.588; 19.1 p. 622; 19.3 p. 632; 19.4 p. 636; 19 CT p. 645; 20.1 p. 653; 20.4 p.664; 20 CT p. 683; 21 EAW p. 689; 21.2 p. 695; 21.4 p. 708; 22.2 p. 733; 22.3 p. 735; 22.4 p. 747; 23.2 p. 769; 23.5 p. 781; 24.1 p. 793; 24.4 p. 807; 25 CS p. 818; 25.1 p. 819; 25.2 p. 827; 25.3 p. 830