Florida Science

M/J Comprehensive Science 2, Advanced (2024)

Describe the layers of the solid Earth, including the lithosphere, the hot convecting mantle, and the dense metallic liquid and solid cores. SC.7.E.6.1	1 **Describe the layers of the solid Earth, including the lithosphere, the hot convecting mantle, and the dense metallic liquid and solid cores.** SC.7.E.6.1
Identify the patterns within the rock cycle and relate them to surface events (weathering and erosion) and sub-surface events (plate tectonics and mountain building). SC.7.E.6.2	2 **Identify the patterns within the rock cycle and relate them to surface events (weathering and erosion) and sub-surface events (plate tectonics and mountain building).** SC.7.E.6.2
Identify current methods for measuring the age of Earth and its parts, including the law of superposition and radioactive dating. SC.7.E.6.3	3 **Identify current methods for measuring the age of Earth and its parts, including the law of superposition and radioactive dating.** SC.7.E.6.3
Explain and give examples of how physical evidence supports scientific theories that Earth has evolved over geologic time due to natural processes. SC.7.E.6.4	4 **Explain and give examples of how physical evidence supports scientific theories that Earth has evolved over geologic time due to natural processes.** SC.7.E.6.4
Ex[Skip to main content]the[illegible]	**xplore the scientific theory of plate tectonics by describing how the movement of Earth's crustal plates causes both slow and rapid changes in Earth's surface,**

by describing how the movement of Earth's crustal plates causes both slow and rapid changes in Earth's surface, including volcanic eruptions, earthquakes, and mountain building. SC.7.E.6.5	including volcanic eruptions, earthquakes, and mountain building. SC.7.E.6.5
Identify the impact that humans have had on Earth, such as deforestation, urbanization, desertification, erosion, air and water quality, changing the flow of water. SC.7.E.6.6	6 Identify the impact that humans have had on Earth, such as deforestation, urbanization, desertification, erosion, air and water quality, changing the flow of water. SC.7.E.6.6
Recognize that heat flow and movement of material within Earth causes earthquakes and volcanic eruptions, and creates mountains and ocean basins. SC.7.E.6.7	7 Recognize that heat flow and movement of material within Earth causes earthquakes and volcanic eruptions, and creates mountains and ocean basins. SC.7.E.6.7
Recognize that fossil evidence is consistent with the scientific theory of evolution that living things evolved from earlier species. SC.7.L.15.1	8 Recognize that fossil evidence is consistent with the scientific theory of evolution that living things evolved from earlier species. SC.7.L.15.1
Explore the scientific theory of evolution by recognizing and explaining ways in which genetic variation and environmental factors contribute to evolution by natural selection and diversity of or	9 Explore the scientific theory of evolution by recognizing and explaining ways in which genetic variation and environmental factors contribute to evolution by natural selection and diversity of organisms. SC.7.L.15.2

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Explore the scientific theory of evolution by relating how the inability of a species to adapt within a changing environment may contribute to the extinction of that species. SC.7.L.15.3	10 **Explore the scientific theory of evolution by relating how the inability of a species to adapt within a changing environment may contribute to the extinction of that species.** SC.7.L.15.3
Understand and explain that every organism requires a set of instructions that specifies its traits, that this hereditary information (DNA) contains genes located in the chromosomes of each cell, and that heredity is the passage of these instructions from one generation to another. SC.7.L.16.1	11 **Understand and explain that every organism requires a set of instructions that specifies its traits, that this hereditary information (DNA) contains genes located in the chromosomes of each cell, and that heredity is the passage of these instructions from one generation to another.** SC.7.L.16.1
Determine the probabilities for genotype and phenotype combinations using Punnett Squares and pedigrees. SC.7.L.16.2	12 **Determine the probabilities for genotype and phenotype combinations using Punnett Squares and pedigrees.** SC.7.L.16.2
Compare and contrast the general processes of sexual reproduction requiring meiosis and asexual reproduction requiring mitosis. SC.7.L.16.3	13 **Compare and contrast the general processes of sexual reproduction requiring meiosis and asexual reproduction requiring mitosis.** SC.7.L.16.3
Recognize and explore the impact of biotechnology (cloning, genetic engineering, artificial selection) on the an en Skip to main content	14 **Recognize and explore the impact of biotechnology (cloning, genetic engineering, artificial selection) on the individual, society and the environment.** SC.7.L.16.4

Explain and illustrate the roles of and relationships among producers, consumers, and decomposers in the process of energy transfer in a food web. SC.7.L.17.1	**15** **Explain and illustrate the roles of and relationships among producers, consumers, and decomposers in the process of energy transfer in a food web.** SC.7.L.17.1
Compare and contrast the relationships among organisms such as mutualism, predation, parasitism, competition, and commensalism. SC.7.L.17.2	**16** **Compare and contrast the relationships among organisms such as mutualism, predation, parasitism, competition, and commensalism.** SC.7.L.17.2
Describe and investigate various limiting factors in the local ecosystem and their impact on native populations, including food, shelter, water, space, disease, parasitism, predation, and nesting sites. SC.7.L.17.3	**17** **Describe and investigate various limiting factors in the local ecosystem and their impact on native populations, including food, shelter, water, space, disease, parasitism, predation, and nesting sites.** SC.7.L.17.3
Define a problem from the seventh grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend co	**18** **Define a problem from the seventh grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.** SC.7.N.1.1

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Differentiate replication (by others) from repetition (multiple trials). SC.7.N.1.2	**19** **Differentiate replication (by others) from repetition (multiple trials).** SC.7.N.1.2
Distinguish between an experiment (which must involve the identification and control of variables) and other forms of scientific investigation and explain that not all scientific knowledge is derived from experimentation. SC.7.N.1.3	**20** **Distinguish between an experiment (which must involve the identification and control of variables) and other forms of scientific investigation and explain that not all scientific knowledge is derived from experimentation.** SC.7.N.1.3
Identify test variables (independent variables) and outcome variables (dependent variables) in an experiment. SC.7.N.1.4	**21** **Identify test variables (independent variables) and outcome variables (dependent variables) in an experiment.** SC.7.N.1.4
Describe the methods used in the pursuit of a scientific explanation as seen in different fields of science such as biology, geology, and physics. SC.7.N.1.5	**22** **Describe the methods used in the pursuit of a scientific explanation as seen in different fields of science such as biology, geology, and physics.** SC.7.N.1.5
Explain that empirical evidence is the cumulative body of observations of a natural phenomenon on which scientific explanations are based. SC.7.N.1.6	**23** **Explain that empirical evidence is the cumulative body of observations of a natural phenomenon on which scientific explanations are based.** SC.7.N.1.6
Explain that scientific knowledge is the result of a great deal of debate and confirmation within the science co	**24** **Explain that scientific knowledge is the result of a great deal of debate and confirmation within the science community.** SC.7.N.1.7

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Identify an instance from the history of science in which scientific knowledge has changed when new evidence or new interpretations are encountered. SC.7.N.2.1	25 **Identify an instance from the history of science in which scientific knowledge has changed when new evidence or new interpretations are encountered.** SC.7.N.2.1
Recognize and explain the difference between theories and laws and give several examples of scientific theories and the evidence that supports them. SC.7.N.3.1	26 **Recognize and explain the difference between theories and laws and give several examples of scientific theories and the evidence that supports them.** SC.7.N.3.1
Identify the benefits and limitations of the use of scientific models. SC.7.N.3.2	27 **Identify the benefits and limitations of the use of scientific models.** SC.7.N.3.2
Illustrate that the sun's energy arrives as radiation with a wide range of wavelengths, including infrared, visible, and ultraviolet, and that white light is made up of a spectrum of many different colors. SC.7.P.10.1	28 **Illustrate that the sun's energy arrives as radiation with a wide range of wavelengths, including infrared, visible, and ultraviolet, and that white light is made up of a spectrum of many different colors.** SC.7.P.10.1
Observe and explain that light can be reflected, refracted, and/or absorbed. SC.7.P.10.2	29 **Observe and explain that light can be reflected, refracted, and/or absorbed.** SC.7.P.10.2
Recognize that light waves, sound waves, and other waves move at different speeds in different materials. SC.7.P.10.3	30 **Recognize that light waves, sound waves, and other waves move at different speeds in different materials.** SC.7.P.10.3

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Recognize that adding heat to or removing heat from a system may result in a temperature change and possibly a change of state. SC.7.P.11.1	**31** **Recognize that adding heat to or removing heat from a system may result in a temperature change and possibly a change of state.** SC.7.P.11.1
Investigate and describe the transformation of energy from one form to another. SC.7.P.11.2	**32** **Investigate and describe the transformation of energy from one form to another.** SC.7.P.11.2
Cite evidence to explain that energy cannot be created nor destroyed, only changed from one form to another. SC.7.P.11.3	**33** **Cite evidence to explain that energy cannot be created nor destroyed, only changed from one form to another.** SC.7.P.11.3
Observe and describe that heat flows in predictable ways, moving from warmer objects to cooler ones until they reach the same temperature. SC.7.P.11.4	**34** **Observe and describe that heat flows in predictable ways, moving from warmer objects to cooler ones until they reach the same temperature.** SC.7.P.11.4
Describe and differentiate the layers of Earth and the interactions among them. SC.912.E.6.1	**35** **Describe and differentiate the layers of Earth and the interactions among them.** SC.912.E.6.1
Connect surface features to surface processes that are responsible for their formation. SC.912.E.6.2	**36** **Connect surface features to surface processes that are responsible for their formation.** SC.912.E.6.2
Analyze the scientific theory of plate tectonics and identify related major processes and features as a result of moving pla	**37** **Analyze the scientific theory of plate tectonics and identify related major processes and features as a result of moving plates.** SC.912.E.6.3

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Discuss distinguishing characteristics of the domains and kingdoms of living organisms. SC.912.L.15.6	38 **Discuss distinguishing characteristics of the domains and kingdoms of living organisms.** SC.912.L.15.6
Describe the conditions required for natural selection, including: overproduction of offspring, inherited variation, and the struggle to survive, which result in differential reproductive success. SC.912.L.15.13	39 **Describe the conditions required for natural selection, including: overproduction of offspring, inherited variation, and the struggle to survive, which result in differential reproductive success.** SC.912.L.15.13
Discuss observed inheritance patterns caused by various modes of inheritance, including dominant, recessive, codominant, sex-linked, polygenic, and multiple alleles. SC.912.L.16.2	40 **Discuss observed inheritance patterns caused by various modes of inheritance, including dominant, recessive, codominant, sex-linked, polygenic, and multiple alleles.** SC.912.L.16.2
Describe the process of meiosis, including independent assortment and crossing over. Explain how reduction division results in the formation of haploid gametes or spores. SC.912.L.16.16	41 **Describe the process of meiosis, including independent assortment and crossing over. Explain how reduction division results in the formation of haploid gametes or spores.** SC.912.L.16.16
Compare and contrast the relationships among organisms, including predation, parasitism, competition, commensalism, and mutualism. SC.912.L.17.6	42 **Compare and contrast the relationships among organisms, including predation, parasitism, competition, commensalism, and mutualism.** SC.912.L.17.6
Use a food web to ide pr an	43 **Use a food web to identify and distinguish producers, consumers, and decomposers. Explain the pathway of energy transfer through trophic levels and the reduction of available energy at successive trophic levels.** SC.912.L.17.9

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Explain the pathway of energy transfer through trophic levels and the reduction of available energy at successive trophic levels. SC.912.L.17.9	
Differentiate among the various forms of energy and recognize that they can be transformed from one form to others. SC.912.P.10.1	**44** **Differentiate among the various forms of energy and recognize that they can be transformed from one form to others.** SC.912.P.10.1
Relate temperature to the average molecular kinetic energy. SC.912.P.10.5	**45** **Relate temperature to the average molecular kinetic energy.** SC.912.P.10.5
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. MA.K12.MTR.1.1	**46** **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.** MA.K12.MTR.1.1
Demonstrate un rep	**47** **Demonstrate understanding by representing problems in multiple ways.Mathematicians who demonstrate understanding by representing problems in multiple ways: Build understanding through modeling and using**

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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. MA.K12.MTR.2.1	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. MA.K12.MTR.2.1
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. MA.K12.MTR.3.1	48 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. MA.K12.MTR.3.1

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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. MA.K12.MTR.4.1

49 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. MA.K12.MTR.4.1

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 co
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50 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. MA.K12.MTR.5.1

solutions of problems to more complicated large-scale situations. MA.K12.MTR.5.1

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. MA.K12.MTR.6.1

51 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. MA.K12.MTR.6.1

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. MA.K12.MTR.7.1

52 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. MA.K12.MTR.7.1

Cite evidence to explain and justify rea

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

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Read and comprehend grade-level complex texts proficiently. ELA.K12.EE.2.1	**54** **Read and comprehend grade-level complex texts proficiently.** ELA.K12.EE.2.1
Make inferences to support comprehension. ELA.K12.EE.3.1	**55** **Make inferences to support comprehension.** ELA.K12.EE.3.1
Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. ELA.K12.EE.4.1	**56** **Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations.** ELA.K12.EE.4.1
Use the accepted rules governing a specific format to create quality work. ELA.K12.EE.5.1	**57** **Use the accepted rules governing a specific format to create quality work.** ELA.K12.EE.5.1
Use appropriate voice and tone when speaking or writing. ELA.K12.EE.6.1	**58** **Use appropriate voice and tone when speaking or writing.** ELA.K12.EE.6.1
English language learners communicate information, ideas and concepts necessary for academic success in the content area of Science. ELD.K12.ELL.SC.1	**59** **English language learners communicate information, ideas and concepts necessary for academic success in the content area of Science.** ELD.K12.ELL.SC.1
English language learners communicate for social and instructional purposes within the school setting. ELD.K12.ELL.SI.1	**60** **English language learners communicate for social and instructional purposes within the school setting.** ELD.K12.ELL.SI.1
Analyze how environmental factors affect personal he	**61** **Analyze how environmental factors affect personal health.** HE.7.C.1.3

Describe how heredity can affect personal health. HE.7.C.1.7

62 **Describe how heredity can affect personal health.** HE.7.C.1.7