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Grade 4

correlated to the

Minnesota Academic Standards
Science Grade 4

Standards		Page Citations	
4.1. The Nature of Science and Engineering			
4.1.2. Practice of Engineering			
4.1.2.1. Engineers design, create and develop structures, processes and systems that are intended to improve society and may make humans more productive.			
4.1.2.1.1	Describe the positive and negative impacts that the designed world has on the natural world as more and more engineered products and services are created and used.	SE: Flipchart:	50–51, 86–89, 230, 530 5, 8, 9, 10, 23, 24
4.1.2.2. Engineering design is the process of identifying problems, developing multiple solutions, selecting the best possible solution, and building the product.			
4.1.2.2.1	Identify and investigate a design solution and describe how it was used to solve an everyday problem. *For example:* Investigate different varieties of construction tools.	SE: Flipchart:	43, 64–72, 75, 77–78, 80–81, 84–85, 94, 228, 237, 384 5, 6, 8, 9, 25, 53
4.1.2.2.2	Generate ideas and possible constraints for solving a problem through engineering design. *For example:* Design and build an electromagnet to sort steel and aluminum materials for recycling.	SE: Flipchart:	66–72, 75–78, 86–89, 92, 238, 341–342, 557 8, 9, 25, 35, 53, 58
4.1.2.2.3	Test and evaluate solutions, considering advantages and disadvantages of the engineering solution, and communicate the results effectively.	SE: Flipchart:	66–72, 75, 77–78, 94, 237–238, 341–342 5, 6, 7, 8, 9, 10
4.1.3. Interactions Among Science, Technology Engineering, Mathematics, and Society			
4.1.3.3. The needs of any society influence the technologies that are developed and how they are used.			
4.1.3.3.1	Describe a situation in which one invention led to other inventions.	SE: Flipchart:	44, 66–72, 81, 83, 88–89, 285–286, 342, 383–384 11

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4.2. Physical Science			
4.2.1. Matter			
4.2.1.1. Objects have observable properties that can be measured.			
4.2.1.1.1	Measure temperature, volume, weight and length using appropriate tools and units.	SE: Flipchart:	13, 22–23, 30–33, 41–42, 280, 282, 285–286, 352–353, 356–357, 362, 449 29, 37
4.2.1.2. Solids, liquids and gases are states of matter that have unique properties.			
4.2.1.2.1	Distinguish between solids, liquids and gases in terms of shape and volume. *For example:* Water changes shape depending on the shape of its container.	SE: Flipchart:	356–359, 374–380, 382, 396–397 38, 40
4.2.1.2.2	Describe how the states of matter change as a result of heating and cooling.	SE: Flipchart:	268, 272, 370, 374, 376–380, 382, 394–397 26, 40, 42, 44, 46
4.2.3. Energy			
4.2.3.1. Energy appears in different forms, including heat and electromagnetism.			
4.2.3.1.1	Describe the transfer of heat energy when a warm and a cool object are touching or placed near each other.	SE: Flipchart:	329, 406, 448, 450–443, 456 49, 50
4.2.3.1.2	Describe how magnets can repel or attract each other and how they attract certain metal objects.	SE: Flipchart:	520–521, 526, 529 59
4.2.3.1.3	Compare materials that are conductors and insulators of heat and/or electricity. *For example:* Glass conducts heat well, but is a poor conductor of electricity.	SE: Flipchart:	450–453, 456–458, 464–467, 469–470, 472–474, 502–503, 510 51, 52, 57

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4.2.3.2. Energy can be transformed within a system or transferred to other systems or the environment.			
4.2.3.2.1	Identify several ways to generate heat energy. *For example:* Burning a substance, rubbing hands together, or electricity flowing through wires.	SE: Flipchart:	407, 448, 459–460, 475–476, 508–510, 515, 518–519, 529 49, 50
4.2.3.2.2	Construct a simple electrical circuit using wires, batteries and light bulbs.	SE: Flipchart:	490–491, 500, 504–507, 510, 512–514 56, 57, 58
4.2.3.2.3	Demonstrate how an electric current can produce a magnetic force. *For example:* Construct an electromagnet to pick up paperclips.	SE: Flipchart:	522–523, 526, 529 58, 59
4.3. Earth and Space Science			
4.3.1. Earth Structure and Processes			
4.3.1.3. Rocks are Earth materials that may vary in composition.			
4.3.1.3.1	Recognize that rocks may be uniform or made of mixtures of different minerals.	SE:	211, 225
4.3.1.3.2	Describe and classify minerals based on their physical properties. *For example:* Streak, luster, hardness, reaction to vinegar.	SE:	211
4.3.2. Interdependence Within the Earth System			
4.3.2.3. Water circulates through the Earth's crust, oceans and atmosphere in what is known as the water cycle.			
4.3.2.3.1	Identify where water collects on Earth, including atmosphere, ground and surface water, and describe how water moves through the Earth system using the processes of evaporation, condensation and precipitation.	SE: Flipchart:	54, 115–116, 214–217, 246–254, 256–258 26

Standards		Page Citations
4.3.4. Human Interactions with Earth Systems		
4.3.4.1. In order to improve their existence, humans interact with and influence Earth systems.		
4.3.4.1.1	Describe how the methods people utilize to obtain and use water in their homes and communities can affect water supply and quality.	SE: 115–116, 176, 214–217, 220, 224–225, 228–229, 252–254 Flipchart: 23, 24
4.4.4. Interactions with Earth Systems		
4.4.4.2. Microorganisms can get inside one's body and they may keep it from working properly.		
4.4.4.2.1	Recognize that the body has defense systems against germs, including tears, saliva, skin and blood.	This benchmark is beyond the scope of *ScienceFusion* Grade 4 Student Edition.
4.4.4.2.2	Give examples of diseases that can be prevented by vaccination.	This benchmark is beyond the scope of *ScienceFusion* Grade 4 Student Edition.