

## **Picture Perfect Correlations**

Section 1: Best-fit Grade Level Chart

Section 2: Notes Organized by Picture Perfect Lesson

Section 3: Standard Coverage Organized by Grade Level Standards

## Section 1: Best-fit Grade Level Chart

Picture Perfect (2 <sup>nd</sup> Edition)		
PP Lesson	Grade Level	Best Fit
**Ch. 6: Earthlets	5 <sup>th</sup> grade	5 <sup>th</sup>
Ch. 7: Name That Shell!	4 <sup>th</sup> grade	4 <sup>th</sup>
**Ch. 8: Rice is Life	4 <sup>th</sup> grade	4 <sup>th</sup>
Ch. 9: What's Poppin'?	5 <sup>th</sup> grade	5 <sup>th</sup>
**Ch. 10: Mystery Pellets	5 <sup>th</sup> grade	5 <sup>th</sup>
Ch. 11: Close Encounters of the Symbiotic Kind	3 <sup>rd</sup> grade	3 <sup>rd</sup>
Ch. 12: Turtle Hurdles	3 <sup>rd</sup> grade	3 <sup>rd</sup>
Ch. 13: Oil Spill!	5 <sup>th</sup> grade	5 <sup>th</sup>
**Ch. 14: Sheep in a Jeep	3 <sup>rd</sup> grade	3 <sup>rd</sup>
Ch. 15: Sounds of Science	1 <sup>st</sup> grade or the SOUND portion of 4 <sup>th</sup> grade	1 <sup>st</sup>
Ch. 16: Chemical Change Café	5 <sup>th</sup> grade	5 <sup>th</sup>
Ch. 17: The Changing Moon	5 <sup>th</sup> grade	----
Ch. 18: Day and Night	5 <sup>th</sup> grade	5 <sup>th</sup>
**Ch. 19: Grand Canyon	4 <sup>th</sup> grade	4 <sup>th</sup>
**Ch. 20: Brainstorms: From Idea to Invention	4 <sup>th</sup> grade	4 <sup>th</sup>
Ch. 21: Bugs!	4 <sup>th</sup> grade	4 <sup>th</sup>
Ch. 22: Batteries Included	4 <sup>th</sup> grade	4 <sup>th</sup>
Ch. 23: The Secrets of Flight	3 <sup>rd</sup> grade	3 <sup>rd</sup>
Ch. 24: Down the Drain	5 <sup>th</sup> grade	5 <sup>th</sup>
Ch. 25: If I Built a Car	2 <sup>nd</sup> grade	2 <sup>nd</sup>

More Picture Perfect		
PP Lesson	Grade Level	Best Fit
Ch. 6: Bubbles	Kindergarten	K
Ch. 7: How Big Is a Foot?	2 <sup>nd</sup> grade	2 <sup>nd</sup>
Ch. 8: Hear Your Heart	4 <sup>th</sup> grade	4 <sup>th</sup>
Ch. 9: Loco Beans	3 <sup>rd</sup> grade	3 <sup>rd</sup>
Ch. 10: Wiggling Worms	4 <sup>th</sup> grade	4 <sup>th</sup>
Ch. 11: Over in the Ocean	2 <sup>nd</sup> grade	2 <sup>nd</sup>
Ch. 12: Be a Friend to Trees	1 <sup>st</sup> grade	1 <sup>st</sup>
Ch. 13: That Magnetic Dog	3 <sup>rd</sup> grade	3 <sup>rd</sup>
**Ch. 14: Roller Coasters	5 <sup>th</sup> grade	5 <sup>th</sup>
Ch. 15: Mirror, Mirror	1 <sup>st</sup> grade	1 <sup>st</sup>
Ch. 16: If You Find a Rock	2 <sup>nd</sup> grade or Background information for 4 <sup>th</sup> grade	2 <sup>nd</sup>
Ch. 17: Sunshine on My Shoulders	Kindergarten	K
Ch. 18: Stargazers	5 <sup>th</sup> grade	5 <sup>th</sup>
Ch. 19: Imaginative Inventions (does not really meet any standards)	3 <sup>rd</sup> grade, 4 <sup>th</sup> grade, or 5 <sup>th</sup> grade	3 <sup>rd</sup> grade, 4 <sup>th</sup> grade, or 5 <sup>th</sup> grade
Ch. 20: A Sense of Wonder	3 <sup>rd</sup> grade	3 <sup>rd</sup>

Even More Picture Perfect		
PP Lesson	Grade Level	Best Fit
**Ch. 6: Freezing and Melting	2 <sup>nd</sup> grade	2 <sup>nd</sup>
**Ch. 7: Float Your Boat	5 <sup>th</sup> grade	5 <sup>th</sup>
Ch. 8: The Wind Blew	4 <sup>th</sup> grade or 5 <sup>th</sup> grade	
**Ch. 9: Harnessing the Wind	4 <sup>th</sup> grade	4 <sup>th</sup>
Ch. 10: Sounds All Around	1 <sup>st</sup> grade	1 <sup>st</sup>
**Ch. 11: Do You Know Which Ones Will Grow?	Kindergarten	K
Ch. 12: Seeds on the Move	2 <sup>nd</sup> grade	2 <sup>nd</sup>
**Ch. 13: Unbeatable Beaks	1 <sup>st</sup> grade	1 <sup>st</sup>
Ch. 14: Ducks Don't Get Wet	1 <sup>st</sup> grade or 4 <sup>th</sup> grade	4 <sup>th</sup>
Ch. 15: Amazing Caterpillars	?? PP says 1 <sup>st</sup> grade or 3 <sup>rd</sup> grade... but doesn't really meet either one...	
**Ch. 16: Fossils Tell of Long Ago	3 <sup>rd</sup> grade	3 <sup>rd</sup>
Ch. 17: Reduce, Reuse, Recycle!	Kindergarten	K
**Ch. 18: What Will the Weather Be?	3 <sup>rd</sup> grade	3 <sup>rd</sup>
Ch. 19: Sunsets and Shadows	5 <sup>th</sup> grade	5 <sup>th</sup>
Ch. 20: Problem Solvers	5 <sup>th</sup> grade	5 <sup>th</sup>

## Section 2: Notes Organized by Picture Perfect Lesson

Picture Perfect (2 <sup>nd</sup> Edition)			
PP Lesson	Grade Level	Standard(s)	Best Fit
**Ch. 6: Earthlets	5 <sup>th</sup> grade	<p><b>ACOS 5.5/NGSS 5-PS1-3:</b> <u>Make observations and measurements to identify materials based on their properties.</u> (materials: powders, metals, minerals, liquids) (color, hardness, reflectivity, electrical conductivity, thermal conductivity, response to magnets, solubility)</p> <p>Does not meet 100%, but it is an AMAZING lesson that teaches the differences between observations and inferences (also an important reading skill) that will help your students ALL YEAR including DURING ASPIRE.</p>	5 <sup>th</sup>
Ch. 7: Name That Shell!	4 <sup>th</sup> grade	<p><b>ACOS 4.9/NGSS 4-LS1-1:</b> <u>Construct an argument from evidence that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.</u></p>	4 <sup>th</sup>

		Does not meet 100% - Really doesn't even mostly cover. It is a good lesson that lets the students analyze shells and ocean animals for characteristics – good BACKGROUND skill and lesson.	
**Ch. 8: Rice is Life	4 <sup>th</sup> grade	This lesson provides all the background information (evidence) needed for students to construct an argument for the PLANT portion of this standard. This lesson also teaches students about experimental and controlled variables! <b>9: (4-LS1-1) <u>Construct an argument from evidence</u> that <b>plants and animals</b> have <b>internal and external structures</b> that function to <b>support survival, growth, behavior,</b> and <b>reproduction.</b></b>	4 <sup>th</sup>
Ch. 9: What's Poppin'?	5 <sup>th</sup> grade	<b>SAFETY CONCERN:</b> Open flame with oil! Suggest teacher demo rather than letting students do this activity in groups  Probably 5 <sup>th</sup> grade for SAFETY's sake  Could/Need to review the water cycle/phase changes with energy  If you discuss how the popcorn pops in depth, and put emphasis on the student explanation of how popcorn pops in their poster evaluations the student would meet <b>ACOS 5.1/ NGSS 5-PS1-1: <u>Develop a model</u> to describe that <b>matter</b> is made of <b>particles too small to see.</b></b>  HOWEVER, it would be preferable to learn about more examples of this standard before you declare this standard covered.  Also meets: <b>NGSS 3-5-ETS1-3: <u>Plan and carry out fair tests</u> in which <b>variables</b> are <b>controlled</b> and <b>failure points</b> are considered to <b>identify aspects</b> of a model or prototype that can <b>be improved.</b></b>	5 <sup>th</sup>
**Ch. 10: Mystery Pellets	5 <sup>th</sup> grade	100% Coverage of: <b>ACOS 5.11/NGSS 5-LS2-1: <u>Develop a model</u> to describe the <b>movement</b> of <b>matter</b> among <b>plants, animals,</b></b>	5 <sup>th</sup>

		<p><b>decomposers, and the environment.</b></p> <p>Also speaks to (but does not fully cover):  <b>ACOS 5.10/NGSS 5-PS3-1:</b> <u>Construct and interpret models</u> to explain that <b>energy</b> in <b>animals' food</b> is used for <b>body repair, growth, motion, and maintenance of body warmth</b> and was once <b>energy</b> from the <b>sun</b>.</p>	
Ch. 11: Close Encounters of the Symbiotic Kind	3 <sup>rd</sup> grade	<p>Since this one gives evidence of structural and behavioral adaptations, the students will be able to meet:  <b>ACOS 3.8/NGSS 3-LS3-2:</b> <u>Argue from evidence</u> that <b>traits</b> can be <b>influenced</b> by the <b>environment</b>.  IF you give them the opportunity.</p> <p>Students can also meet:  <b>ACOS 3.11b:</b> <u>Create models</u> that illustrate how <b>organisms</b> and <b>their habitats</b> make a <b>system</b> in which the <b>parts depend</b> on each other.  IF you give them the opportunity after reading both books.</p> <p>HOWEVER, it would be preferable to learn about more examples of EACH of these two standards before you declare these standards covered.</p>	3 <sup>rd</sup>
Ch. 12: Turtle Hurdles	3 <sup>rd</sup> grade	<p>In order to meet the following standard, you will have to add to the lesson. The students will actually have to make a <u>claim</u> about the merit of an <u>engineered solution</u> to a <u>problem</u> caused by <u>environmental changes</u>. (One option would be asking students to choose from a few solutions to the turtles' problem(s) and then to use evidence to explain why they believe their choice is the best choice.)</p> <p><b>ACOS 3.12/NGSS 3-LS4-4:</b> <u>Make a claim</u> about the merit of an <b>engineered solution</b> to a <b>problem</b> caused by <b>environmental changes</b> and any <b>resulting impacts</b> on the types and <b>density</b> of <b>plant and animal populations</b> living in the environment.</p>	3 <sup>rd</sup>

Ch. 13: Oil Spill!	5 <sup>th</sup> grade	<p>For 5<sup>th</sup> grade, I encourage you to actually thank a rescuer and check out the animal oil spill rescue organizations in the back of the lesson (the San Francisco one lets you watch a live feed of the rescued animals!!) in order to fully meet (OR thank and talk to our own Environmental Studies Center <a href="http://www.mcpsesc.com/">http://www.mcpsesc.com/</a>):</p> <p><b>ACOS 5.16/5-ESS3-1:</b> <u>Collect and organize scientific ideas</u> that <b>individuals</b> and <b>communities</b> can use to <b>protect Earth's natural resources</b> and its <b>environment</b>.</p> <p>If after activity C in the Oil Spill Cleanup Checkpoint Lab you let the students actually repeat the experiment to revise and to improve the process for cleaning the environment, you will also meet:</p> <p><b>5.17: (-)</b> <u>Design solutions, test, and revise a process</u> for <b>cleaning a polluted environment</b>.</p>	5 <sup>th</sup>
**Ch. 14: Sheep in a Jeep	3 <sup>rd</sup> grade	<p>If you make your students GRAPH their findings in each activity, this activity will completely cover BOTH of the following standards (Suggestion: Students make line graphs of every data table all on the same graph (color code the different lines), and then students make a data table for the "Sheep Leap" activity and make a line graph of that data table.):</p> <p><b>ACOS 3.1/NGSS 3-PS2-1:</b> <u>Plan and conduct an investigation</u> to provide evidence of the <b>effects of balanced and unbalanced forces</b> on the <b>motion</b> of an object. <u>Communicate Findings Graphically</u></p> <p>-----</p> <p><b>ACOS 3.2/NGSS 3-PS2-2:</b> <u>Make observations and/or measurements of an object's motion</u> to <b>provide evidence</b> that a <b>pattern</b> can be used to <b>predict future motion</b>. <u>Communicate Findings Graphically</u></p>	3 <sup>rd</sup>
Ch. 15: Sounds of Science	1 <sup>st</sup> grade or the SOUND portion of 4 <sup>th</sup> grade	<p>Could be 1<sup>st</sup> or 4<sup>th</sup>, but it meets the 1<sup>st</sup> grade standards better, and the <i>The Remarkable Farkle McBride</i> is most appropriate for 1<sup>st</sup>. The non-fiction text is</p>	1 <sup>st</sup>

		<p>on a 4<sup>th</sup>-6<sup>th</sup> grade level, so it would definitely need to be a read-aloud (and since you read so little of the book, I think it will still hold the kids' attention). There is another book called <i>Sound</i> by Kay Manolis on Big Universe that is on more of a 2<sup>nd</sup>-3<sup>rd</sup> grade level. It does discuss vibrations and pitch, and it does have an index. However, it does not discuss the different kinds of instruments.</p> <p>Meets:  <b>ACOS 1.1/NGSS 1-PS4-1:</b> <u>Conduct Investigation</u></p> <ul style="list-style-type: none"> <li>• Sound makes things vibrate</li> <li>• Vibrations make sound</li> </ul> <p>Or covers the JUST the SOUND portion of:  <b>ACOS 4.2/NGSS 4-PS3-2:</b> <u>Plan and carry out investigations</u> that <b>explain</b> that <b>energy</b> can be <b>transferred place to place</b> by <b>sound, light, heat, and electric currents</b>.</p>	
Ch. 16: Chemical Change Café	5 <sup>th</sup> grade	<p>Meets:  <b>ACOS 5.4/NGSS 5-PS1-4:</b> <u>Conduct an investigation</u> to determine whether the <b>mixing</b> of two or more <b>substances results in new substances</b>.</p> <p>HOWEVER, it would be preferable to learn more about the examples of the KINDS OF EVIDENCE for chemical changes and assess that students on those types of evidence before you declare this standard covered.</p>	5 <sup>th</sup>
Ch. 17: The Changing Moon	1 <sup>st</sup> grade	<p>This lesson will cover the moon portion of:  <b>ACOS 1.8/NGSS 1-ESS1-1:</b> <u>Use observations</u> to <b>predict patterns</b> of the <b>sun, moon, &amp; stars</b>. (sunrise, sunset, stars seen at night)</p>	1 <sup>st</sup>
Ch. 18: Day and Night	5 <sup>th</sup> grade	<p>This lesson ONLY covers the “day and night” portion of this standard. Suggestion: Ask students to draw the shadow of their landmark in each picture in the “Where is the Sun?” student page to address the “direction of shadows”</p>	5 <sup>th</sup>

		<p>portion of the standard. You won't cover this part of the standard, but you will activate student thinking.</p> <p><b>ACOS 5.13/NGSS 5-ESS1-2:</b> <u>Represent data in graphical displays</u> to reveal patterns of <b>daily changes</b> in <b>length</b> and <b>direction</b> of <b>shadows, day and night</b>, and the <b>seasonal appearance</b> of some <b>stars</b> in the night sky.</p>	
**Ch. 19: Grand Canyon	4 <sup>th</sup> grade	<p>100% coverage of this standard:</p> <p><b>ACOS 4.15/NGSS 4-ESS2-1:</b> <u>Analyze and interpret data</u> (take measurements if possible) to provide evidence of the <b>effects of weathering</b> or the <b>rate of erosion</b> by <b>water, ice, wind,</b> or vegetation.</p>	4 <sup>th</sup>
**Ch. 20: Brainstorms: From Idea to Invention	4 <sup>th</sup> grade	<p>The closest content standard I found for this lesson is a social studies standard: <b>SS - 4.16.a.</b> <u>Describing how technological advancements</u> brought <b>change</b> to <b>Alabamians</b>, including the <b>telephone; refrigerator; automobile; television;</b> and <b>wireless, Internet, and space technologies</b></p> <p>...and the inventions they learn about in this lesson DO affect these students whether they were in Alabama or not!</p> <p>It also meets ALL engineering standards: <b>3-5-ETS1-1.</b> <u>Define a simple design problem</u> reflecting a <b>need</b> or a <b>want</b> that includes <b>specified criteria</b> for <b>success</b> and <b>constraints</b> on <b>materials, time,</b> or <b>cost.</b></p> <p><b>3-5-ETS1-2.</b> <u>Generate and compare multiple possible solutions</u> to a <b>problem based</b> on <b>how well</b> each is <b>likely to meet</b> the <b>criteria</b> and <b>constraints</b> of the <b>problem.</b></p> <p><b>NGSS 3-5-ETS1-3:</b> <u>Plan and carry out fair tests</u> in which <b>variables</b> are <b>controlled</b> and <b>failure points</b> are considered to <b>identify aspects</b> of a model or prototype that can <b>be improved.</b></p>	4 <sup>th</sup>

Ch. 21: Bugs!	4 <sup>th</sup> grade	<p>Mostly meets this standard (reproduction not addressed):  <b>ACOS 4.9/NGSS 4-LS1-1:</b> <u>Construct an argument from evidence</u> that <b>plants and animals</b> have <b>internal and external structures</b> that function to <b>support survival, growth, behavior, and reproduction.</b></p> <p>Even if this lesson did cover reproduction, it would be preferable to learn about more examples of this standard before you declare this standard covered.</p>	4 <sup>th</sup>
Ch. 22: Batteries Included	4 <sup>th</sup> grade	<p>This lesson 100% covers:  <b>ACOS 4.2.c.</b> <u>Demonstrate</u> that <b>electric circuits</b> need a <b>complete loop</b> for <b>electric current</b> to pass.</p> <p>This lesson also covers the “electric currents” portion of this standard:  <b>ACOS 4.2/NGSS 4-PS3-2:</b> <u>Plan and carry out investigations</u> that <b>explain</b> that <b>energy</b> can be <b>transferred place to place</b> by <b>sound, light, heat, and electric currents.</b></p>	4 <sup>th</sup>
Ch. 23: The Secrets of Flight	3 <sup>rd</sup> grade	<p>If students GRAPH the data in the data tables, this lesson will 100% cover this standard:  <b>ACOS 3.1/NGSS 3-PS2-1:</b> <u>Plan and conduct an investigation</u> to provide evidence of the <b>effects</b> of <b>balanced and unbalanced forces</b> on the <b>motion</b> of an object. <u>Communicate Findings Graphically</u></p> <p>It also meets these engineering standards:  <b>3-5-ETS1-2.</b> <u>Generate and compare</u> multiple <b>possible solutions</b> to a <b>problem based on how well</b> each is <b>likely to meet</b> the <b>criteria</b> and <b>constraints</b> of the <b>problem.</b></p> <p><b>NGSS 3-5-ETS1-3:</b> <u>Plan and carry out fair tests</u> in which <b>variables</b> are <b>controlled</b> and <b>failure points</b> are considered to <b>identify aspects</b> of a model or prototype that can <b>be improved.</b></p>	3 <sup>rd</sup>
Ch. 24: Down the Drain	5 <sup>th</sup> grade	Picture Perfect says that this one best fits	5 <sup>th</sup>

		<p>4<sup>th</sup> grade, but it doesn't really cover any 4<sup>th</sup> grade standards.</p> <p>Technically, this lesson covers this standard, BUT since this lesson only discusses water, it would be better if you discussed more examples before declaring this standard covered.</p> <p><b>ACOS 5.16/NGSS 5-ESS3-1:</b> <u>Collect and organize scientific ideas</u> that <b>individuals</b> and <b>communities</b> can use to <b>protect Earth's natural resources</b> and its <b>environment</b>.</p> <p>This lesson also speaks to this standard:  <b>ACOS 15/NGSS 5-ESS2-2:</b> <u>Describe and graph</u> the <b>amounts</b> and <b>percentages</b> of <b>salt water</b> and <b>fresh water</b> in various reservoirs to provide evidence about the <b>distribution of water on Earth</b>.</p> <p>In order for students to meet the (above) standard, they need to GRAPH the water distribution on their own (so you may not want to show them p6 in <i>Down the Drain</i> until they have had a chance to make the graph themselves.</p>	
Ch. 25: If I Built a Car	2 <sup>nd</sup> grade	<p>This lesson meets the following SOCIAL STUDIES standards.</p> <p><b>SS 2.7.</b> Explain production and distribution processes.</p> <p><b>SS.2.7.b.</b> Describing the impact of consumer choices and decisions on supply and demand</p> <p>This lesson also meets ALL engineering standards:</p> <p><b>K-2-ETS1-1.</b> <u>Ask questions, make observations, and gather information</u> about a <b>situation</b> people <b>want to change</b> to <b>define</b> a <b>simple problem</b> that can be <b>solved</b> through the <b>development</b> of a <b>new</b> or <b>improved object</b> or <b>tool</b>.</p> <p><b>K-2-ETS1-2.</b> <u>Develop a simple sketch, drawing, or physical model</u> to illustrate how the <b>shape</b> of an <b>object</b> helps it <b>function</b> as <b>needed</b> to <b>solve</b> a <b>given problem</b>.</p> <p><b>K-2-ETS1-3.</b> <u>Analyze data</u> from <b>tests</b> of</p>	2 <sup>nd</sup>

		<p><b>two objects</b> designed to <b>solve</b> the <b>same problem</b> to <b>compare</b> the <b>strengths</b> and <b>weaknesses</b> of how each <b>performs</b>.</p> <p>IF you ask the students to take the cars apart and build SOMETHING NEW (at the end of the lesson) and then EXPLAIN what they have made, you will also meet:</p> <p><b>ACOS 2.3/NGSS 2-PS1-3:</b> <u>Demonstrate and explain</u> how an <b>object made of small pieces</b> can be <b>disassembled</b> and made into a <b>new object</b>.</p>	
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More Picture Perfect			
PP Lesson	Grade Level	Standard(s)	Best Fit
Ch. 6: Bubbles	Kindergarten	<p>This lesson does not meet any of the specific AL science standards, but it does meet all three engineering standards.</p> <p><b>K-2-ETS1-1.</b> <u>Ask questions, make observations, and gather information</u> about a <b>situation</b> people <b>want to change</b> to <b>define a simple problem</b> that can be <b>solved</b> through the <b>development</b> of a <b>new or improved object or tool</b>.</p> <p><b>K-2-ETS1-2.</b> <u>Develop a simple sketch, drawing, or physical model</u> to illustrate how the <b>shape</b> of an <b>object</b> helps it <b>function</b> as <b>needed to solve a given problem</b>.</p> <p><b>K-2-ETS1-3.</b> <u>Analyze data from tests of two objects</u> designed to <b>solve the same problem</b> to <b>compare the strengths and weaknesses</b> of how each <b>performs</b>.</p> <p>It also meets the following MATH standards:</p> <p><b>MATH K.18.</b> Correctly name shapes regardless of their orientations or overall size.</p> <p><b>MATH K.20.</b> Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices or "corners"), and other attributes (e.g., having sides of equal length).</p> <p><b>MATH K.21.</b> Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes. [K-G5]</p>	K
Ch. 7: How Big Is a Foot?	2 <sup>nd</sup> grade	<p>This meets these two engineering standards:</p> <p><b>K-2-ETS1-1.</b> <u>Ask questions, make observations, and gather information</u> about a <b>situation</b> people <b>want to change</b> to <b>define a simple problem</b> that can be <b>solved</b> through the <b>development</b> of a</p>	2 <sup>nd</sup>

		<p><b>new or improved object or tool.</b></p> <p><b>K-2-ETS1-3.</b> <u>Analyze data</u> from <b>tests</b> of <b>two objects</b> designed to <b>solve</b> the <b>same problem</b> to <b>compare</b> the <b>strengths</b> and <b>weaknesses</b> of how each <b>performs</b>.</p> <p>It also can meet the following MATH standards:</p> <p><b>MATH 2.14.</b> Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.</p> <p><b>MATH 2.15.</b> Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.</p> <p><b>MATH 2.16.</b> Estimate lengths using units of inches, feet, centimeters, and meters.</p> <p><b>MATH 2.17.</b> Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.</p>	
Ch. 8: Hear Your Heart	4 <sup>th</sup> grade	<p>This lesson was originally written for 1<sup>st</sup> graders, and it is more developmentally appropriate for 1<sup>st</sup> than 4<sup>th</sup>.</p> <p>However, it best speaks to (but DOES NOT MEET) a 4<sup>th</sup> grade standard:</p> <p><b>ACOS 4.10/ NGSS 4-LS1-1:</b> <u>Obtain and communicate information</u> explaining that <b>humans</b> have <b>systems</b> that <b>interact</b> for <b>digestion, respiration, circulation, excretion, movement, control, coordination, and protection from disease</b>.</p> <p>It mostly discusses heartbeat and pulse, but <i>The Busy Body Book</i> provides an overview of many of the human body systems.</p>	4 <sup>th</sup>
Ch. 9: Loco Beans	3 <sup>rd</sup> grade	<p>This lesson will speak to this standard:</p> <p><b>ACOS 3.6/NGSS 3-LS1-1:</b> <u>Develop models</u> to describe that <b>organisms</b> have <b>unique</b> and <b>diverse life cycles</b> but all have <b>birth, growth, reproduction, and death in common</b>.</p>	3 <sup>rd</sup>

		The lesson will NOT completely cover the standard because the standard requires that students know that there are many kinds of unique life cycles, and this lesson only focuses on the life cycle of one organism.	
Ch. 10: Wiggling Worms	4 <sup>th</sup> grade	Ideally, you would study/learn about more than just one animal to justify this standard, but this lesson technically covers the animal portion of this standard.  <b>ACOS 4.9/NGSS 4-LS1-1:</b> <u>Construct an argument from evidence</u> that <b>plants and animals</b> have <b>internal and external structures</b> that function to <b>support survival, growth, behavior, and reproduction.</b>	4 <sup>th</sup>
Ch. 11: Over in the Ocean	2 <sup>nd</sup> grade	Since this lesson only addresses one habitat, this lesson only partially covers this standard:  <b>ACOS 2.7/NGSS 2-LS4-1:</b> <u>Obtain information</u> to show that there are <b>many kinds of living things</b> and they live in <b>different habitats.</b>	2 <sup>nd</sup>
Ch. 12: Be a Friend to Trees	1 <sup>st</sup> grade	This lesson 100% covers this SS standard: <b>SS 1.9.</b> Differentiate between natural resources and human-made products. <ul style="list-style-type: none"> <li>• Listing ways to protect our natural resources</li> </ul>	1 <sup>st</sup>
Ch. 13: That Magnetic Dog	3 <sup>rd</sup> grade	This lesson just provides good BACKGROUND information for this standard: <b>ACOS 3.3/NGSS 3-PS2-3:</b> <u>Ask Questions &amp; Explore Objects</u> to determine <b>cause and effect relationships</b> of <b>electric or magnetic interactions</b> between two objects <b>not in contact</b> with one another.	3 <sup>rd</sup>
**Ch. 14: Roller Coasters	5 <sup>th</sup> grade	If you discuss p.8 in <i>I Fall Down</i> to teach that gravity pulls toward the center of Earth and give students the opportunity to argue that point with evidence, then this lesson 100% covers this standard: <b>ACOS 5.6/NGSS 5-PS2-1:</b> <u>Support an argument</u> that the <b>gravitational force</b>	5 <sup>th</sup>

		<p>exerted by <b>Earth</b> on <b>objects</b> is directed <b>downward towards the center of Earth</b>.</p> <p>This lesson also speaks to the following standard, but does not cover it because the STUDENT would need to design the test.</p> <p><b>ACOS 5.7:</b> <u>Design and conduct a test</u> to <b>modify</b> the <b>speed</b> of a <b>falling object</b> due to <b>gravity</b>.</p>	
Ch. 15: Mirror, Mirror	1 <sup>st</sup> grade	<p>Even though this lesson is about mirrors, it does address this standard:</p> <p><b>ACOS 1.2/NGSS 1-PS4-2:</b> <u>Explain based on observations</u> <b>objects</b> can only be <b>seen</b> when <b>illuminated</b></p> <p>If given the chance, students will most likely be able to explain that objects can only be seen when illuminated (especially based on the activity in <i>I See Myself</i> about going into the closet with a mirror).</p>	1 <sup>st</sup>
Ch. 16: If You Find a Rock	2 <sup>nd</sup> grade or Background information for 4 <sup>th</sup> grade	<p>This lesson best fits 2nd grade standards, but it speaks to/provides information for some 4th grade standards (<b>ACOS 4.12/NGSS 4-ESS1-1</b> and <b>ACOS 4.14</b>) as well.</p> <p>Students are not planning the investigation, so this lesson would not completely meet standard 2.1/2-PS1-1. Participating in this lesson would give the students some practice in investigating and classifying materials by their properties.</p> <p><b>ACOS 2.1/NGSS 2-PS1-1:</b> <u>Plan and conduct an investigation</u> to <b>describe</b> and <b>classify materials</b> by their <b>observable properties</b>. (color, texture, hardness, flexibility, state of matter)</p> <p>IF you also provide students with an opportunity to guess and to research the uses of the rocks they investigate they would also be meeting:</p> <p><b>ACOS 2.2/NGSS 2-PS1-2:</b> <u>Analyze data collected from testing materials</u> to <b>determine</b> which <b>materials</b> are <b>best for</b></p>	2 <sup>nd</sup>

		<p><b>an intended purpose.</b> (strength, texture, hardness, flexibility, absorbency, etc.)</p> <p>This lesson also speaks to, but in no way meets:</p> <p><b>ACOS 2.8/NGSS 2-ESS1-1:</b> <u>Make observations</u> from media about <b>Earth's events</b> that happen <b>quickly</b> (like a tornado) or <b>slowly</b> (like erosion of rocks).</p>	
Ch. 17: Sunshine on My Shoulders	Kindergarten	<p>Although this lesson does not completely meet the following standard (ACOS K.7/NGSS K-PS3-1), it provides WONDERFUL background information for BOTH of the following standards (and it is a LOT of fun...).</p> <p><b>ACOS K.7/NGSS K-PS3-1:</b> <u>Observe &amp; Describe</u> the <b>effects</b> of <b>sunlight</b> on <b>Earth's surface</b></p> <p><b>ACOS K.8/NGSS K-PS3-2:</b> <u>Design &amp; Construct</u> a <b>structure</b> to <b>reduce</b> the <b>effects of sunlight</b></p>	K
Ch. 18: Stargazers	5 <sup>th</sup> grade	<p>So... this lesson does not meet either of the following standards; it does provide good background information for both of these standards, though.</p> <p>I actually have reservations about the following standard (ACOS 5.12/NGSS 5-ESS1-1). Since the students are supposed to argue that the apparent brightness of stars is due to their distance, learning other reasons for the brightness of stars may confuse the students (p. 10 – 13) of <i>Spots of Light</i>. The rest of the book, though, is simple and wonderful background information for BOTH of the following standards.</p> <p><b>ACOS 5.12/NGSS 5-ESS1-1:</b> <u>Support an argument</u> that one factor determining the apparent <b>brightness</b> of the <b>sun compared</b> to other <b>stars</b> is the relative <b>distance from Earth</b>.</p> <p>Part of the lesson teaches the students about constellations which provides great background knowledge for the “seasonal appearance of some stars in the night</p>	5 <sup>th</sup>

		sky” portion of the following standard. <b>ACOS 5.13/5-ESS1-2:</b> <u>Represent data in graphical displays</u> to reveal patterns of <b>daily changes in length</b> and <b>direction of shadows, day and night</b> , and the <b>seasonal appearance</b> of some <b>stars</b> in the night sky.	
Ch. 19: Imaginative Inventions ⊖	3 <sup>rd</sup> grade, 4 <sup>th</sup> grade, or 5 <sup>th</sup> grade	<b>NGSS 3-5-ETS1-3:</b> <u>Plan and carry out fair tests</u> in which <b>variables</b> are <b>controlled</b> and <b>failure points</b> are considered to <b>identify aspects</b> of a model or prototype that can <b>be improved</b> .	3 <sup>rd</sup> grade, 4 <sup>th</sup> grade, or 5 <sup>th</sup> grade
Ch. 20: A Sense of Wonder	3 <sup>rd</sup> grade	This lesson in no way meets the following standard. As far as the science part of the lesson goes, this lesson merely familiarizes the students with some of the scientists that were passionate about nature (this standard’s topic). As far as reading and writing, though, this lesson asks students to compare, contrast, synthesize, and write descriptive details...  <b>ACOS 12/NGSS 3-LS4-4:</b> <u>Make a claim about the merit</u> of an <b>engineered solution</b> to a <b>problem caused by environmental changes</b> and any <b>resulting impacts</b> on the types and <b>density of plant and animal populations</b> living in the environment.	3 <sup>rd</sup>

Even More Picture Perfect			
PP Lesson	Grade Level	Standard(s)	Best Fit
**Ch. 6: Freezing and Melting	2 <sup>nd</sup> grade	Students will still need to “construct an argument from evidence” in order to fully meet the standard, but after this lesson, students will have more than enough evidence to make that argument! <b>ACOS 2.4/NGSS 2-PS1-4:</b> <u>Construct an argument with evidence</u> that some <b>changes</b> caused by <b>heating and cooling</b> can be <b>reversed</b> and some <b>cannot</b> .  This lesson also speaks to (but in no way meets): <b>ACOS 2.1/NGSS 2-PS1-1:</b> <u>Plan and</u>	2 <sup>nd</sup>

		<p>conduct an investigation to <b>describe</b> and <b>classify materials</b> by their <b>observable properties</b>.</p> <p>(color, texture, hardness, flexibility, state of matter)</p>	
**Ch. 7: Float Your Boat	5 <sup>th</sup> grade	<p><b>ACOS 5.5:</b> <u>Construct explanations from observations</u> to determine how the <b>density</b> of an <b>object</b> affects whether it <b>sinks or floats</b> in a liquid.</p> <p>This lesson also speaks to the following standard (very well!):</p> <p><b>ACOS 5.6/NGSS 5-PS2-1:</b> <u>Support an argument</u> that the <b>gravitational force</b> exerted by <b>Earth</b> on <b>objects</b> is directed <b>downward towards the center of Earth</b>.</p>	5 <sup>th</sup>
Ch. 8: The Wind Blew	4 <sup>th</sup> grade or 5 <sup>th</sup> grade	<p>Technically, this lesson is about the changes in energy that occur when objects collide with air molecules so this lesson would not completely cover this 4<sup>th</sup> grade standard. Some actual objects would need to collide, but it is a great lesson – and it provides great background for wind energy.</p> <p><b>ACOS 4.3/NGSS 4-PS3-3:</b> <u>Ask questions and predict outcomes</u> about the <b>changes in energy</b> that occur [in <b>speed</b>] when <b>objects collide</b>.</p> <p>This lesson would help explain the following standard as well:</p> <p><b>ACOS 5.1/NGSS 5-PS1-1:</b> <u>Develop a model</u> to describe that <b>matter</b> is made of <b>particles too small to see</b>.</p>	
**Ch. 9: Harnessing the Wind	4 <sup>th</sup> grade	<p>This lesson covers the electric currents portion of the following standard:</p> <p><b>ACOS 4.2/NGSS 4-PS3-2:</b> <u>Plan and carry out investigations</u> that <b>explain</b> that <b>energy</b> can be <b>transferred place to place</b> by <b>sound, light, heat, and electric currents</b>.</p> <p>This lesson meets the following standard 100% through the research project portion of the lesson:</p> <p><b>ACOS 4.5/NGSS 4-ESS3-1:</b> <u>Obtain and combine information</u> to describe how the <b>use of energy</b> derived from <b>natural renewable</b> and <b>nonrenewable</b> resources</p>	4 <sup>th</sup>

		<p><b>affects the environment.</b></p> <p>This lesson also provides WONDERFUL background information for the following standard:  <b>ACOS 4.4/NGSS 4-PS3-4:</b> <u>Design, construct, test, and refine a device that converts energy from one form to another.</u></p>	
Ch. 10: Sounds All Around	1 <sup>st</sup> grade	<p>This lesson meets the following standard 100%:  <b>ACOS 1.1/NGSS 1-PS4-1:</b> <u>Conduct Investigation</u></p> <ul style="list-style-type: none"> <li>• Sound makes things vibrate</li> <li>• Vibrations make sound</li> </ul> <p>If you do not give the kids the direction sheet for the final activity and do not tell them how to construct the final project (just give them the supplies and let them figure it out), this lesson will also meet the following standard:  <b>ACOS 4/NGSS 1-PS4-4:</b> <u>Design and Construct a device that uses light or sound to send a communication signal over a distance</u></p>	1 <sup>st</sup>
**Ch. 11: Do You Know Which Ones Will Grow?	Kindergarten	<p>This lesson will meet the following standard 100%:  <b>ACOS K.3/NGSS K-LS1-1:</b> <u>Use observations to distinguish &amp; describe:</u></p> <ul style="list-style-type: none"> <li>• <b>Living &amp; Nonliving</b></li> <li>• What living things <b>need to survive</b></li> </ul>	K
Ch. 12: Seeds on the Move	2 <sup>nd</sup> grade	<p>The <u>student</u> will still need to develop a model to <u>simulate</u> how animals disperse seeds or pollinate plants. This lesson does provide all the necessary background knowledge needed for the student to develop that model, though.  <b>ACOS 2.6/NGSS 2-LS2-2:</b> <u>Develop a model that simulates how animals disperse seeds or pollinate plants.</u></p>	2 <sup>nd</sup>
**Ch. 13: Unbeatable Beaks	1 <sup>st</sup> grade	<p>The <u>student</u> will still need to <u>design</u> a solution to a human problem using animal or plant parts. This lesson does provide all the necessary background knowledge needed for the student to develop that model, though.</p>	1 <sup>st</sup>

		<b>ACOS 1.5/NGSS 1-LS1-1:</b> <u>Design a solution to a human problem using animal or plant parts</u> that help them survive, grow, and meet needs.	
Ch. 14: Ducks Don't Get Wet	1 <sup>st</sup> grade or 4 <sup>th</sup> grade	<p>This lesson would provide some background information for this standard (but would in no way meet it):  <b>1.5/NGSS 1-LS1-1:</b> <u>Design a solution to a human problem using animal or plant parts</u> that help them survive, grow, and meet needs.</p> <p>This lesson would actually be better for 4<sup>th</sup> grade, though; it helps students understand the difference between structures and behaviors. Students learn about the external structures of ducks, their behaviors, and how those structures and behaviors help it survive. This lesson only partially covers this standard.  <b>ACOS 4.9/NGSS 4-LS1-1:</b> <u>Construct an argument from evidence that plants and animals have internal and external structures</u> that function to <b>support survival, growth, behavior, and reproduction.</b></p>	4 <sup>th</sup>
Ch. 15: Amazing Caterpillars	?? PP says 1 <sup>st</sup> grade or 3 <sup>rd</sup> grade... but doesn't really meet either one...	<p>This lesson is more age appropriate for 1<sup>st</sup> grade, but it doesn't meet the following standard at all:  <b>ACOS 1.6/NGSS 1-LS1-2:</b> <u>Obtain information to provide evidence to determine behavior of parents and offspring</u> that help the <b>offspring survive.</b></p> <p>This lesson better meets the 3<sup>rd</sup> grade standard, but leaves out the "death" portion of life cycles AND students are supposed to develop a model to show there are many <u>kinds</u> of life cycles, but that they have birth, growth, reproduction, and death in common. This lesson only teaches about ONE life cycle and leaves out the death portion.  <b>ACOS 3.6/NGSS 3-LS1-1:</b> <u>Develop models to describe that organisms have unique and diverse life cycles</u> but all have <b>birth, growth, reproduction, and death in common.</b></p>	

<p>**Ch. 16: Fossils Tell of Long Ago</p>	<p>3<sup>rd</sup> grade</p>	<p>This lesson meets this standard 100%:  <b>ACOS 3.9/NGSS 3-LS4-1:</b> <u>Analyze and interpret data</u> from <b>fossils</b> to provide <b>evidence</b> of <b>organisms</b> and the <b>environments</b> in which they lived <b>long ago</b>.</p>	<p>3<sup>rd</sup></p>
<p>Ch. 17: Reduce, Reuse, Recycle!</p>	<p>Kindergarten</p>	<p>This lesson meets this standard 100%. (You may need to modify this lesson's writing activities to drawing pictures, depending on the time of year.):  <b>ACOS K.6/NGSS K-ESS3-3:</b> <u>Find Solutions to human impact</u> on the <b>environment</b></p>	<p>K</p>
<p>**Ch. 18: What Will the Weather Be?</p>	<p>3<sup>rd</sup> grade</p>	<p>This lesson will meet this standard completely for the time of year you teach this lesson IF YOU GRAPH THE DATA. In order for the students to describe the typical weather conditions in other seasons, you can let the students complete the "Daily Reports" several times during the year and/or track the data using the NWS website.  <b>ACOS 3.13/NGSS 3-ESS2-1:</b> <u>Represent data in tables and graphical displays</u> to describe <b>typical weather</b> conditions <b>expected</b> during a <b>particular season</b>.</p>	<p>3<sup>rd</sup></p>
<p>Ch. 19: Sunsets and Shadows</p>	<p>5<sup>th</sup> grade</p>	<p>This lesson provides the background information students need for reveal patterns of daily changes in length and direction of shadows and of day and night, but students will still need to represent the data for those concepts in graphical displays. Students will also need to learn about and represent data in graphical displays for the seasonal appearance of some stars in the night sky.  <b>ACOS 5.13/NGSS 5-ESS1-2:</b> <u>Represent data in graphical displays</u> to reveal patterns of <b>daily changes</b> in <b>length</b> and <b>direction</b> of <b>shadows, day and night</b>, and the <b>seasonal appearance</b> of some <b>stars</b> in the night sky.</p>	<p>5<sup>th</sup></p>
<p>Ch. 20: Problem Solvers</p>	<p>5<sup>th</sup> grade</p>	<p>Since this is an engineering lesson, it can actually be used in 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, or 5<sup>th</sup> grade. As far as the engineering part of the lesson goes, this lesson is appropriate for 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, or 5<sup>th</sup> grade.  <b>K-2-ETS1-1.</b> <u>Ask questions, make observations, and gather information</u> about a <b>situation</b> people <b>want to change</b> to <b>define a simple problem</b> that can be</p>	<p>5<sup>th</sup></p>

	<p><b>solved</b> through the <b>development</b> of a <b>new</b> or <b>improved object</b> or <b>tool</b>.</p> <p><b>K-2-ETS1-2.</b> <u>Develop a simple sketch, drawing, or physical model</u> to illustrate how the <b>shape</b> of an <b>object</b> helps it <b>function</b> as <b>needed</b> to <b>solve</b> a <b>given problem</b>.</p> <p><b>K-2-ETS1-3.</b> <u>Analyze data</u> from <b>tests</b> of <b>two objects</b> designed to <b>solve</b> the <b>same problem</b> to <b>compare</b> the <b>strengths</b> and <b>weaknesses</b> of how each <b>performs</b>.</p> <p><b>3-5-ETS1-1.</b> <u>Define a simple design problem</u> reflecting a <b>need</b> or a <b>want</b> that includes <b>specified criteria</b> for <b>success</b> and <b>constraints</b> on <b>materials, time, or cost</b>.</p> <p><b>3-5-ETS1-2.</b> <u>Generate and compare multiple possible solutions</u> to a <b>problem</b> based on <b>how well</b> each is <b>likely</b> to <b>meet</b> the <b>criteria</b> and <b>constraints</b> of the <b>problem</b>.</p> <p><b>3-5-ETS1-3:</b> <u>Plan and carry out fair tests</u> in which <b>variables</b> are <b>controlled</b> and <b>failure points</b> are considered to <b>identify aspects</b> of a model or prototype that can <b>be improved</b>.</p> <p>From a social studies perspective, since this lesson centers on Benjamin Franklin, it is most appropriate for 2<sup>nd</sup> grade or 5<sup>th</sup> grade. He is specifically mentioned in the 2<sup>nd</sup> grade course of study, and he is bound to come up in any of the following 5<sup>th</sup> grade course of study standards:</p> <p><b>SS 2.2.</b> Identify national historical figures and celebrations that exemplify fundamental democratic values, including equality, justice, and responsibility for the common good.</p> <p><b>SS 2.2.b.</b> Recognizing our country's founding fathers, including...Benjamin Franklin...</p> <p><b>SS 5.5.b.</b> Identifying influential leaders in colonial society</p> <p><b>SS 5.6.</b> Describe colonial economic life and labor systems in the Americas.</p> <p><b>SS 5.7.</b> Determine causes and events</p>	
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		<p>leading to the American Revolution...</p> <p><b>SS 5.8.</b> Identify major events of the American Revolution...</p> <p>From a science perspective, different activities in the <i>Build It</i> book are appropriate for different grade levels. The snack raft and egg parachute activities speak DIRECTLY to 5<sup>th</sup> grade standards:</p> <p><b>ACOS 5.5:</b> <u>Construct explanations from observations</u> to determine how the <b>density</b> of an <b>object</b> affects whether it <b>sinks or floats</b> in a liquid.</p> <p><b>ACOS 5.7:</b> <u>Design and conduct a test to modify the speed of a falling object</u> due to <b>gravity</b>.</p> <p>In fact, it ALMOST speaks to ACOS 7 TOO WELL, because the students are supposed to design and conduct the tests. They do in the “explore” section of this lesson, but only if they are assigned that problem. After reading the <i>Build It</i> book during the “explain” portion of the lesson, students will know how to successfully complete ACOS 7. SO...if you do teach this lesson as a 5<sup>th</sup> grade teacher, give everyone the egg problem during “explore,” so that you can meet ACOS 7. The snack raft would be a great one for ACOS 5, but only if you have something to hold enough water to try it...</p> <p>The door pulley uses principles from ACOS 1 for 3<sup>rd</sup> grade, but it does not meet the standard.</p> <p><b>ACOS 3.1/NGSS 3-PS2-1:</b> <u>Plan and conduct an investigation</u> to provide evidence of the <b>effects</b> of <b>balanced and unbalanced forces</b> on the <b>motion</b> of an object. <u>Communicate Findings Graphically</u></p> <p>If students take the newspaper fort and/or toothpick bridge apart and then use the principles from those activities to make something else out of those same materials (and EXPLAIN their process), they will meet ACOS 3 for 2<sup>nd</sup> grade.</p> <p><b>ACOS 2.3/NGSS 2-PS1-3:</b> <u>Demonstrate</u></p>	
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		<p>and explain how an <b>object made of small pieces</b> can be <b>disassembled</b> and made into a <b>new object</b>.</p> <p>All in all, it BEST meets 5<sup>th</sup> grade standards, but parts of it would be great for other grade levels. I would say for all other grade levels to PLEASE NOT use the egg activity at all and for 5<sup>th</sup> grade teachers to use the egg activity for every student.</p>	
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Picture Perfect K-2 Lessons			
PP Lesson	Grade Level	Standard(s)	Best Fit
Ch. 6: The Handiest Things	2 <sup>nd</sup>	<p>This lesson is first and foremost an ENGINEERING LESSON.</p> <p><b>K-2-ETS1-1.</b> <u>Ask questions, make observations, and gather information</u> about a <b>situation</b> people <b>want to change</b> to <b>define a simple problem</b> that can be <b>solved</b> through the <b>development</b> of a <b>new or improved object</b> or <b>tool</b>.</p> <p><b>K-2-ETS1-2.</b> <u>Develop a simple sketch, drawing, or physical model</u> to illustrate how the <b>shape</b> of an <b>object</b> helps it <b>function</b> as <b>needed</b> to <b>solve a given problem</b>.</p> <p>It would be a stretch, but if I had to pick a content standard for this lesson, the closest one is the following one. It does not really speak to the following standard, but you could fit this standard into the lesson pretty easily by adding a component of the lesson in which students must test materials to see which ones best serve the purpose for the better backpack project.</p> <p><b>ACOS 2.2/NGSS 2-PS1-2:</b> <u>Analyze data collected from testing materials</u> to <b>determine</b> which <b>materials</b> are <b>best for an intended purpose</b>. (strength, texture, hardness, flexibility, absorbency, etc.)</p> <p>FYI – Engineering in Our Everyday Lives is available on Big Universe and Epic FYI – <i>The Handiest Things in the World</i> is available on YouTube <a href="https://www.youtube.com/watch?v=oF7JRR7Y92A">https://www.youtube.com/watch?v=oF7JRR7Y92A</a></p> <p>FYI – I highly recommend that you also read <i>Rosie Revere, Engineer</i> (...if for no other reason than it is SUPER cute... but it also references an American icon, Rosie the Riveter, as Rosie's great aunt and it explains what engineers are in a fun, kid-friendly way) which is available on YouTube <a href="https://www.youtube.com/watch?v=AOQkAvAzr14">https://www.youtube.com/watch?v=AOQkAvAzr14</a></p>	2 <sup>nd</sup>
Ch. 7: Build It!	2 <sup>nd</sup>	<b>ACOS K.3/NGSS 2-PS1-3:</b> <u>Demonstrate</u>	2 <sup>nd</sup>

		<p>and explain how an <b>object made of small pieces</b> can be <b>disassembled</b> and made into a <b>new object</b>.</p> <p>FYI – Iggy Peck Architect available on YouTube <a href="https://www.youtube.com/watch?v=hRj4FBX6pHw">https://www.youtube.com/watch?v=hRj4FBX6pHw</a>  FYI – 100 Most Famous Buildings/Structures of All Time FYI – Iggy Peck Architect available on YouTube <a href="https://www.youtube.com/watch?v=dA3Ak-FLk_A">https://www.youtube.com/watch?v=dA3Ak-FLk_A</a></p> <p>*WONDERFUL lesson, but does not completely meet the standard. Students would need to use at least one of the materials they used in their first building in their second building, and they would have to EXPLAIN how the first was disassembled and how the pieces from that first building were used to create the second building.</p> <p>Engineering Standard:  <b>K-2-ETS1-2.</b> <u>Develop a simple sketch, drawing, or physical model</u> to illustrate how the <b>shape</b> of an <b>object</b> helps it <b>function</b> as <b>needed</b> to <b>solve a given problem</b>.</p>	
Ch. 8: Robots Everywhere	1 <sup>st</sup>	<p>This lesson is first and foremost an ENGINEERING LESSON.  <b>K-2-ETS1-2.</b> <u>Develop a simple sketch, drawing, or physical model</u> to illustrate how the <b>shape</b> of an <b>object</b> helps it <b>function</b> as <b>needed</b> to <b>solve a given problem</b>.  <b>K-2-ETS1-3.</b> <u>Analyze data from tests of two objects</u> designed to <b>solve the same problem</b> to <b>compare</b> the <b>strengths</b> and <b>weaknesses</b> of how each <b>performs</b>.</p> <p>It would be a stretch, but if I had to pick a content standard for this lesson, the closest one is the following one. The students attempt to solve a <i>human</i> problem using <i>human</i> or <i>robot characteristics</i>. This lesson is a good pre-lesson for a later 1<sup>st</sup> grade lesson from this book (Ch. 15 Pillbots), and it even uses one of the same books from that lesson. This lesson is more heavily engineering based, and Pillbots is more content based. They both go hand-in-hand in that they both analyze features of robots to solve</p>	1 <sup>st</sup>

		<p>human problems. Just know, though, that this lesson will in no way meet the following standard, but will instead be good background information for it.</p> <p><b>ACOS 1.5/NGSS 1-LS1-1:</b> <u>Design a solution to a <b>human problem</b> using <b>animal or plant parts</b> that help them survive, grow, and meet needs.</u></p> <p>FYI – <i>Beep! Beep! Go to Sleep!</i> is available on YouTube <a href="https://www.youtube.com/watch?v=j22Lek8-58U">https://www.youtube.com/watch?v=j22Lek8-58U</a></p>	
**Ch. 9: Feel the Heat	K	<p>COMPLETELY COVERS BOTH of the following STANDARDS ☺:</p> <p><b>ACOS K.7/NGSS K-PS3-1:</b> <u>Observe &amp; Describe</u> the <b>effects of sunlight</b> on <b>Earth’s surface</b></p> <p><b>ACOS K.8/NGSS K-PS3-2:</b> <u>Design &amp; Construct</u> a <b>structure</b> to <b>reduce</b> the <b>effects of sunlight</b></p> <p><u>Engineering Standard:</u>  <b>K-2-ETS1-2.</b> <u>Develop a simple sketch, drawing, or physical model</u> to illustrate how the <b>shape</b> of an <b>object</b> helps it <b>function</b> as <b>needed</b> to <b>solve a given problem</b>.</p>	K
Ch. 10: Move It!	K	<p>COMPLETELY COVERS:</p> <p><b>ACOS K.2/NGSS K-PS2-2:</b> <u>Analyze data</u> to determine if a <b>design solution changes</b> the <b>speed or direction</b> of an object with a <b>push or pull</b>.</p> <p>Technically covers the following standard, but the lesson does not give students many opportunities to investigate pulls. Ideally, students would get more opportunities to investigate.</p> <p><b>ACOS K.1/NGSS K-PS2-1:</b> <u>Investigate</u> different <b>strengths &amp; directions</b> of <b>pushes &amp; pulls</b>.</p> <p>FYI – <i>Newton and Me</i> is available on Big Universe (English AND Spanish version)</p> <p><u>Engineering Standard:</u>  <b>K-2-ETS1-3.</b> <u>Analyze data</u> from <b>tests of two objects</b> designed to <b>solve the same problem</b> to <b>compare</b> the <b>strengths</b> and <b>weaknesses</b> of how each <b>performs</b>.</p>	K
**Ch. 11: Design a Habitat	K	<p>COMPLETELY COVERS:</p> <p><b>ACOS K.3/NGSS K-LS1-1:</b> <u>Use</u></p>	K

		<p>observations to distinguish &amp; describe:</p> <ul style="list-style-type: none"> <li>• <b>Living &amp; Nonliving</b></li> <li>• What living things <b>need to survive</b></li> </ul> <p>FYI – <i>I Wanna Iguana</i> is available on YouTube <a href="https://www.youtube.com/watch?v=ethKslAQvo4">https://www.youtube.com/watch?v=ethKslAQvo4</a></p> <p>FYI – <i>Where Do Animals Live?</i> is available on Big Universe</p> <p>Engineering Standard:  <b>K-2-ETS1-2.</b> <u>Develop</u> a simple sketch, drawing, or <u>physical model</u> to illustrate how the <b>shape</b> of an <b>object</b> helps it <b>function</b> as <b>needed</b> to <b>solve</b> a <b>given problem</b>.</p>	
Ch. 12: Plant a Tree	K	<p><b>ACOS K.6/NGSS K-ESS3-3: Find Solutions to human impact on the environment</b></p> <p>This is a good lesson, but it only partially meets the standard. NGSS wants students to communicate solutions to the impact of humans on land, water, air, and other living things. ACOS wants students to identify and plan possible solutions to lessen human impact on the environment. Although this lesson does meet that standard as far as trees are concerned, the lesson does not address how water and specific living things are affected. It also does not address recycling (an example specifically mentioned in ACOS).</p> <p>FYI – <i>Wangari’s Trees of Peace: A True Story from Africa</i> is available on YouTube <a href="https://www.youtube.com/watch?v=jK1NndEf6f0">https://www.youtube.com/watch?v=jK1NndEf6f0</a></p> <p>FYI – <i>We Planted a Tree</i> is available on YouTube <a href="https://www.youtube.com/watch?v=_ONVce6_nRQ">https://www.youtube.com/watch?v=_ONVce6_nRQ</a></p> <p>Engineering Standard:  <b>K-2-ETS1-1.</b> <u>Ask questions</u>, <u>make observations</u>, and <u>gather information</u> about a <b>situation</b> people <b>want</b> to <b>change</b> to <b>define</b> a <b>simple problem</b> that can be <b>solved</b> through the <b>development</b> of a <b>new</b> or <b>improved object</b> or <b>tool</b>.</p>	K
Ch. 13: Let’s Drum!	1 <sup>st</sup>	<p>Technically, COMPLETELY COVERS:  <b>ACOS 1.1/NGSS 1-PS4-1: Conduct Investigation</b></p> <ul style="list-style-type: none"> <li>• Sound makes things vibrate</li> <li>• Vibrations make sound</li> </ul>	1 <sup>st</sup>

		<p>Disclaimer: If it were me, I would offer opportunities for students to explore vibrations and sounds in other ways (throat vibrating, plucking a guitar string or rubberband, etc.) just so students realize that sound vibrations are not exclusive to drums.</p> <p>This lesson is great because it truly lets the students plan and conduct their own investigation (Elaboration section) and makes the student explain (Evaluate section).</p> <p><u>Engineering Standard:</u>  <b>K-2-ETS1-2.</b> <u>Develop a simple sketch, drawing, or physical model</u> to illustrate how the <b>shape</b> of an <b>object</b> helps it <b>function</b> as <b>needed</b> to <b>solve a given problem</b>.</p>	
Ch. 14: Get the Message	1 <sup>st</sup>	<p>COMPLETELY COVERS:  <b>ACOS 1.4/NGSS 1-PS4-4:</b> <u>Design and Construct</u> a <b>device</b> that <b>uses light or sound</b> to send a <b>communication signal</b> over a <b>distance</b></p> <p>Truly lets students <i>design</i> and construct their own devices!</p> <p><u>Engineering Standard:</u>  <b>K-2-ETS1-3.</b> <u>Analyze data</u> from <b>tests</b> of <b>two objects</b> designed to <b>solve the same problem</b> to <b>compare</b> the <b>strengths</b> and <b>weaknesses</b> of how each <b>performs</b>.</p>	1 <sup>st</sup>
Ch. 15: Pillbots	1 <sup>st</sup>	<p>Technically covers (My reservations are listed below.):  <b>ACOS 1.5/NGSS 1-LS1-1:</b> <u>Design a solution</u> to a <b>human problem</b> using <b>animal or plant parts</b> that help them survive, grow, and meet needs.</p> <p>In my opinion, this lesson is a little far-fetched. The students are asked to design a robot version of a pillbug. They are given plenty of background knowledge for this task, but they are not given materials parameters because the teacher does not give them the opportunity to actually make the design.</p> <p>I also feel that this lesson does not technically cover this standard completely because it only focuses on one <i>animal</i></p>	1 <sup>st</sup>

		<p>(and no plants)! A teacher would have to expose students to lessons on other animals and plants as well to fully meet the standard.</p> <p>Engineering Standard:  <b>K-2-ETS1-2.</b> <u>Develop a simple sketch, drawing, or physical model to illustrate how the <b>shape</b> of an <b>object</b> helps it <b>function</b> as <b>needed</b> to <b>solve a given problem</b>.</u></p>	
Ch. 16: A Birthday is No Ordinary Day	1 <sup>st</sup>	<p>This lesson technically covers the following standard, but it would be better if students had more opportunities to observe more of the patterns of daylight at different times of the year (whether through photos, video, actually going outside and recording observations several times throughout the year, etc.)</p> <p><b>ACOS 1.9/NGSS 1-ESS1-2:</b> <u>Observe patterns in <b>sunrise and sunset</b> to discover</u></p> <ul style="list-style-type: none"> <li>• Longer days in summer</li> <li>• Shorter days in winter</li> </ul> <p>FYI – More worksheets, crafts, and extra activities that go with <i>A Birthday Cake is No Ordinary Cake</i> are available at <a href="http://www.debrafrasier.com/pages/books-events/birthday-cake/">http://www.debrafrasier.com/pages/books-events/birthday-cake/</a></p>	1 <sup>st</sup>
Ch. 17: Science Mysteries	2 <sup>nd</sup>	<p><i>Students would need to plan and conduct their own investigations in order to meet this standard.</i> This lesson provides great background information to help students use observable properties of <i>powders</i>, but it does not let the students plan and conduct their investigations. The lesson is, instead, very teacher directed.</p> <p>In my opinion, students would need to practice describing <i>several types</i> of materials based on their observable properties, and at some point students would need to <i>plan and conduct</i> their own investigation to describe and classify materials based on simple observable properties.</p> <p><b>ACOS 2.1/NGSS 2-PS1-1:</b> <u>Plan and conduct an investigation to <b>describe</b> and <b>classify materials</b> by their <b>observable properties</b>.</u>  (color, texture, hardness, flexibility, state of matter)</p>	2 <sup>nd</sup>

Ch. 18: Crayons	2 <sup>nd</sup>	<p>This lesson is great background knowledge for the following standard, but it will not cover nor will it provide enough background knowledge for students to construct an argument with evidence to explain that some changes caused by heating and cooling can be changed and some cannot. This lesson focuses on a change that can be reversed. Students will need more examples of reversible changes, and they will need examples of irreversible changes in order to be able to perform task requested by the standard.</p> <p><b>ACOS 2.4/NGSS 2-PS1-4:</b> <u>Construct an argument with evidence</u> that some <b>changes</b> caused by <b>heating and cooling</b> can be <b>reversed</b> and some <b>cannot</b>.</p> <p>FYI – <i>The Day the Crayons Came Home</i> is available on YouTube <a href="https://www.youtube.com/watch?v=3_ggr7O1YkQ">https://www.youtube.com/watch?v=3_ggr7O1YkQ</a></p> <p>Just FYI – A friend of mine did a Christmas project with her kids last year. Each child got an empty clear ornament (from Hobby Lobby), filled it with broken crayons of their choice, and then used hair dryers to melt and swirl the colors. SO CUTE.</p> <p><u>Engineering Standard:</u>  <b>K-2-ETS1-1.</b> <u>Ask questions, make observations, and gather information</u> about a <b>situation</b> people <b>want</b> to <b>change</b> to <b>define</b> a <b>simple problem</b> that can be <b>solved</b> through the <b>development</b> of a <b>new</b> or <b>improved object</b> or <b>tool</b>.</p>	2 <sup>nd</sup>
Ch. 19: Flight of the Pollinators	2 <sup>nd</sup>	<p>Partially covers (See reservations below):  <b>ACOS 2.6/NGSS 2-LS2-2:</b> <u>Develop a model</u> that <b>simulates</b> how animals <b>disperse seeds</b> or <b>pollinate plants</b>.</p> <p>This lesson DOES allow students to develop and create their own model to pollinate plants. This lesson does not cover/address seed dispersal at all. The teacher would still need to teach about seed dispersal, but they would not <i>have</i> to let students make a model of animals dispersing seeds because the standard</p>	2 <sup>nd</sup>

		<p>does say that the student can make a simulation on how animals disperse seeds OR pollinate plants.</p> <p>FYI – <i>What is Pollination?</i> is available on Epic.</p> <p><u>Engineering Standard</u>  <b>K-2-ETS1-2.</b> <u>Develop a simple sketch, drawing, or physical model</u> to illustrate how the <b>shape</b> of an <b>object</b> helps it <b>function</b> as <b>needed</b> to <b>solve</b> a <b>given problem</b>.</p>	
Ch. 20: Our Blue Planet	2 <sup>nd</sup>	<p>Students do obtain information to identify where water is found on Earth by using Google Earth/Google Maps.</p> <p>The students are not identifying whether the water on earth is solid or liquid. The teacher does point out some places that are frozen or that are ice, but the students need an opportunity to identify clearly where the frozen water is and where the liquid water is.</p> <p>This lesson does not give students the opportunity to develop a model to represent the shapes and kinds of land and bodies of water in an area.</p> <p>They do get to label and color code a map (for water, land, and ice), but that task is not the same as the student developing a model to represent the shapes and kinds of land and bodies of water in an area.</p> <p>So, although the lesson does speak to the following two standards, it does not cover them.</p> <p><b>ACOS 2.9/NGSS 2-ESS2-2:</b> <u>Create model(s)</u> to identify <b>physical features of Earth</b>.</p> <p><b>ACOS 2.10/NGSS 2-ESS2-3:</b> <u>Obtain information</u> to identify where <b>water is found on Earth</b> and that it can be <b>solid or liquid</b>.</p> <p>FYI – <i>All the Water in the World</i> is available on YouTube  <a href="https://www.youtube.com/watch?v=XXoAE0htDkc">https://www.youtube.com/watch?v=XXoAE0htDkc</a></p>	2 <sup>nd</sup>



### Section 3: Standard Coverage Organized by Grade Level Standards

<b>Kindergarten Topics</b>	
<b>PUSH &amp; PULL</b>	
<b>K.1: (K-PS2-1)</b> <u>Investigate</u> different <b>strengths &amp; directions</b> of pushes & pulls.	
- None	
<b>K.2: (K-PS2-2)</b> <u>Analyze data</u> to determine if a <b>design solution</b> changes the <b>speed or direction</b> of an object with a <b>push or pull</b> .	
- None	
<b>PLANTS &amp; ANIMALS</b>	
<b>K.3: (K-LS1-1)</b> <u>Use observations</u> to distinguish & describe:	
<ul style="list-style-type: none"><li>• <b>Living &amp; Nonliving</b></li><li>• What living things <b>need to survive</b></li></ul>	
- <i>Even More Picture Perfect</i> Chapter 11 – Do You Know Which Ones Will Grow? 100% Coverage	
<b>K.4: (K-ESS2-2)</b> <u>Argument supported by Evidence</u> – How living things <b>change</b> their <b>environment</b> to <b>meet</b> their <b>needs</b>	
- None	
<b>K.5: (K-ESS3-1)</b> <u>Construct a model</u> – Show a natural <b>habitat</b> that <b>meets the needs</b> of living things	
- None	
<b>K.6: (K-ESS3-3)</b> <u>Find Solutions</u> to <b>human impact</b> on the <b>environment</b>	
- <i>Even More Picture Perfect</i> Chapter 17 – Reduce, Reuse, Recycle! 100% Coverage	
<b>WEATHER WALK</b>	
<b>K.7: (K-PS3-1)</b> <u>Observe &amp; Describe</u> the <b>effects</b> of <b>sunlight</b> on <b>Earth’s surface</b>	
- <i>More Picture Perfect</i> Chapter 17 – Sunshine on My Shoulders – BACKGROUND INFO only	
<b>K.8: (K-PS3-2)</b> <u>Design &amp; Construct</u> a <b>structure</b> to <b>reduce</b> the <b>effects</b> of <b>sunlight</b>	
- <i>More Picture Perfect</i> Chapter 17 – Sunshine on My Shoulders – BACKGROUND INFO only	
<b>K.9: (K-ESS2-1)</b> <u>Observe &amp; Record</u> <b>weather</b> conditions <b>over time</b>	
- None	
<b>K.10: (K-ESS3-2)</b> <u>Ask Questions</u> about <b>weather forecasts</b> to <b>prepare</b> and to <b>respond</b> to <b>severe weather</b> .	

- None

## 1<sup>st</sup> Grade Topics

### SOUND, LIGHT, & SKY

#### 1.1: (1-PS4-1) Conduct Investigation

- Sound makes things vibrate
- Vibrations make sound
- *Picture Perfect* Chapter 15 – Sounds of Science – 100% Coverage
- *Even More Picture Perfect* Chapter 10 – Sounds All Around – 100% Coverage

#### 1.2: (1-PS4-2) Explain based on observations **objects** can only be **seen** when **illuminated**

- *More Picture Perfect* Chapter 15 – Mirror, Mirror – if given a chance to explain, students will MOST LIKELY be able to meet

#### 1.3: (1-PS4-3) Investigate to discover how **transparent**, **translucent**, and **opaque** materials react in **light**

- None

#### 1.4: (1-PS4-4) Design and Construct a **device** that **uses light or sound** to send a **communication signal** over a **distance**

- *Even More Picture Perfect* Chapter 10 – Sounds All Around – if you only provide materials (no directions, only constraints) for the final project, can meet

#### 1.8: (1-ESS1-1) Use observations to **predict patterns** of the **sun, moon, & stars**. (sunrise, sunset, stars seen at night)

- *Picture Perfect* Chapter 17 – The Changing Moon – Covers the moon portion of the standard

#### 1.9: (1-ESS1-2) Observe patterns in **sunrise and sunset** to discover

- Longer days in summer
- Shorter days in winter
- None

### WILD ORGANISMS

#### 1.5: (1-LS1-1) Design a solution to a **human problem** using **animal or plant parts** that help them survive, grow, and meet needs.

- *Even More Picture Perfect* Chapter 13 – Unbeatable Beaks – provides all information for students to design a solution to meet this standard

#### 1.6: (1-LS1-2) Obtain information to provide evidence to **determine behavior** of **parents** and **offspring** that help the **offspring survive**.

- None

**1.7: (1-LS3-1)** Make observations to determine **similarities and differences** of **parents** and their **offspring** (applies to plants & animals)

- None

## 2<sup>nd</sup> Grade Topics

### MATTER

**2.1: (2-PS1-1)** Plan and conduct an investigation to **describe** and **classify materials** by their **observable properties**.

(color, texture, hardness, flexibility, state of matter)

- *More Picture Perfect* Chapter 16 – If You Find a Rock – would not meet b/c the students are not planning the investigation, but good BACKGROUND
- *Even More Picture Perfect* Chapter 6 – Freezing and Melting – just speaks to the topic (if you allow the students to describe and classify the ingredients)

**2.2: (2-PS1-2)** Analyze data collected from **testing materials** to **determine** which **materials** are **best for an intended purpose**.

(strength, texture, hardness, flexibility, absorbency, etc.)

- *More Picture Perfect* Chapter 16 – If You Find a Rock – if you give students an opportunity to guess/research the uses for the rocks

**2.3: (2-PS1-3)** Demonstrate and explain how an **object made of small pieces** can be **disassembled** and made into a **new object**.

- *Picture Perfect* Chapter 25 – If I Built a Car – if AFTER the lesson you disassemble the car and make something else with it and then *explain*

**2.4: (2-PS1-4)** Construct an argument with evidence that some **changes** caused by **heating and cooling** can be **reversed** and some **cannot**.

- *Even More Picture Perfect* Chapter 6 – Freezing and Melting – provides all evidence students need to make the argument – which will meet 100%

### PLANTS & BUGS

**2.5: (2-LS2-1)** Plan and conduct an investigation (use one variable at a time) to determine what **plants need to grow**.

- None

**2.6: (2-LS2-2)** Develop a model that **simulates** how animals **disperse seeds** or **pollinate plants**.

- *Even More Picture Perfect* Chapter 12 – Seeds on the Move – provides all the BACKGROUND info needed to develop a model

**2.7: (2-LS4-1)** Obtain information to show that there are **many kinds of living things** and they live in **different habitats**.

- *More Picture Perfect* Chapter 11 – Over in the Ocean – covers only one habitat

### SOILS & SHORES

**2.8: (2-ESS1-1)** Make observations from media about **Earth's events** that happen **quickly** (like a

tornado) or **slowly** (like erosion of rocks).

- *More Picture Perfect* Chapter 16 – If You Find a Rock – just speaks to the topic; IN NO WAY meets

**2.9: (2-ESS2-2)** Create model(s) to identify **physical features of Earth**.

- None

**2.10: (2-ESS2-3)** Obtain information to identify where **water is found on Earth** and that it can be **solid or liquid**.

- None

**2.11: (2-ESS2-1)** Compare and test solutions that are designed to **slow or prevent wind and water** from **changing the shape of the land**.

- None

## 3<sup>rd</sup> Grade Topics

### FORCES & INTERACTIONS

**3.1: (3-PS2-1)** Plan and conduct an investigation to provide evidence of the **effects of balanced and unbalanced forces** on the **motion** of an object. Communicate Findings Graphically

- *Picture Perfect* Chapter 14 – Sheep in a Jeep – If graph, 100% coverage
- *Picture Perfect* Chapter 23 – Secrets of Flight – If graph, 100% coverage

**3.2: (3-PS2-2)** Make observations and/or measurements of an **object's motion** to **provide evidence** that a **pattern** can be used to **predict future motion**. Communicate Findings Graphically

- *Picture Perfect* Chapter 14 – Sheep in a Jeep – If graph, 100% coverage

**3.3: (3-PS2-3)** Ask Questions & Explore Objects to determine **cause and effect relationships** of **electric or magnetic interactions** between two objects **not in contact** with one another.

- *More Picture Perfect* Chapter 13 – That Magnetic Dog – only provides BACKGROUND

**3.4: (3-PS2-4)** Define a simple design problem that can be **solved** by applying **scientific ideas about magnets**.

- None

### HEREDITY & DIVERSITY

**3.5: (-)** Obtain and combine information **Classify as living or nonliving** things based on **ability to use resources, grow, reproduce, and maintain stable internal conditions**.

- None

**3.6: (3-LS1-1)** Develop models to describe that **organisms** have **unique and diverse life cycles** but all have **birth, growth, reproduction, and death in common**.

- *More Picture Perfect* Chapter 9 – Loco Beans – covers only one life cycle – need more to meet
- *Even More Picture Perfect* Chapter 15 – Amazing Caterpillars – does not meet, just example of one life cycle without the death portion

**3.7: (3-LS3-1)** Examine data to provide evidence that **plants and animals**, excluding humans, have traits **inherited from parents** and that **variation** of these traits **exists in a group** of **similar organisms**.

(fur color/pattern in animals)

- None

**3.8: (3-LS3-2)** Argue from evidence that **traits** can be **influenced** by the **environment**.

(stunted growth from lack of water)

- *Picture Perfect* Chapter 11 – Close Encounters of the Symbiotic Kind – students could argue based on the lesson, but would be better if more examples

**3.9: (3-LS4-1)** Analyze and interpret data from **fossils** to provide **evidence** of **organisms** and the **environments** in which they lived **long ago**.

- *Even More Picture Perfect* Chapter 16 – Fossils Tell of Long Ago – 100% coverage

**3.10: (3-LS4-2)** Investigate how **variations** in **characteristics** among **individuals** among the **same species** may **provide advantages** in **surviving, finding mates, and reproducing**.

- None

**3.11: (3-LS4-3)** Construct an argument with evidence that in a particular **habitat** some **organisms** can **survive well**, some survive **less well**, and some **cannot survive** at all.

- None

**3.11a: (3-LS2-1)** Construct an argument that some **animals form groups** that **help** members **survive**.

- None

**3.11b:** Create models that illustrate how **organisms** and **their habitats** make a **system** in which the **parts depend** on each other.

- *Picture Perfect* Chapter 11 – Fossils Tell of Long Ago – possibility, but more examples would be better

**3.11c:** Categorize resources in various **habitats** as **basic materials, produced materials, or as nonmaterial**.

- None

**3.12: (3-LS4-4)** Make a claim about the merit of an **engineered solution** to a **problem caused** by **environmental changes** and any **resulting impacts** on the types and **density** of **plant and animal populations** living in the environment.

- *Picture Perfect* Chapter 12 – Turtle Hurdles – speaks to the topic; students still have to make a claim

#### WEATHER & CLIMATE

**3.13: (3-ESS2-1)** Represent data in tables and graphical displays to describe **typical weather** conditions **expected** during a **particular season**.

- *Even More Picture Perfect* Chapter 18 – What Will the Weather Be? – meets completely if implemented several times in a year/over time

**3.14: (3-ESS2-2)** Obtain and combine information to describe **climates** in **different regions** around the **world**.

- None

**3.15: (3-ESS3-1) Make a claim about the merit of a design solution that reduces the impact of a weather hazard.**

- None

## 4<sup>th</sup> Grade Topics

### ENERGY & WAVES

**4.1: (4-PS3-1)** Use evidence to explain the **relationship** of the **speed** of an **object** to the **energy** of that object.

Faster = More Energy

- None

**4.2: (4-PS3-2)** Plan and carry out investigations that explain that **energy** can be **transferred place to place** by **sound, light, heat, and electric currents**.

- *Picture Perfect* Chapter 22 – Batteries Included – Covers electric currents portion of the standard
- *Even More Picture Perfect* Chapter 9 – Harnessing the Wind – Covers electric currents portion of the standard

**4.2a:** Provide evidence that **heat** can be **produced** in **many ways** and **can move** from one object to another by **conduction**.

- None

**4.2b:** Demonstrate that **different objects** can **absorb, reflect,** and/or **conduct energy**.

- None

**4.2c:** Demonstrate that **electric circuits** need a **complete loop** for **electric current** to pass.

- *Picture Perfect* Chapter 22 – Batteries Included – 100% Coverage

**4.3: (4-PS3-3)** Ask questions and predict outcomes about the **changes** in **energy** that occur [in **speed**] when **objects collide**.

- None

**4.4: (4-PS3-4)** Design, construct, test, and refine a **device** that **converts energy** from **one form to another**.

- *Even More Picture Perfect* Chapter 9 – Harnessing the Wind – BACKGROUND INFO

**4.5: (4-ESS3-1)** Obtain and combine information to describe how the **use of energy** derived from **natural renewable** and **nonrenewable** resources **affects** the **environment**.

- *Even More Picture Perfect* Chapter 9 – Harnessing the Wind – 100% coverage through the research project

**4.6: (4-PS4-1)** Develop a model of **waves** to **describe patterns** in terms of **amplitude** and **wavelength** and that **waves** can **cause objects to move**.

- None

**4.7: (4-PS4-3)** Develop and use models to show **multiple solutions** in which **patterns** are used to **transfer information**; compare models.

- None

**4.8: (4-PS4-2)** Construct a model to explain that an **object can be seen** when **light reflected** from its **surface enters** the **eyes**.

- None

#### ANIMAL STUDIES

**4.9: (4-LS1-1)** Construct an argument from evidence that **plants and animals** have **internal and external structures** that function to **support survival, growth, behavior, and reproduction**.

- *Picture Perfect* Chapter 7 – Name that Shell – doesn’t cover...not even close; Background only
- *Picture Perfect* Chapter 8 – Rice is Life – covers Plant Portion (gives evidence needed to argue); Experimental and Controlled Variables
- *Picture Perfect* Chapter 21 – Bugs – meets all but reproduction of animal portion, more examples preferred
- *More Picture Perfect* Chapter 10 – Wiggling Worms – meets animal portion, more examples needed
- *Even More Picture Perfect* Chapter 14 – Ducks Don’t Get Wet – learn the difference between behaviors and structures, meets many of the animal portion

**4.10: (4-LS1-1)** Obtain and communicate information explaining that **humans** have **systems** that **interact for digestion, respiration, circulation, excretion, movement, control, coordination, and protection from disease**.

- *More Picture Perfect* Chapter 8 – Hear Your Heart – not age appropriate – mostly about heartbeat and pulse but The Busy Body Book gives an overview of most body systems

**4.11: (4-LS1-2)** Investigate and create a model of the different ways **animals receive information** through **senses, process the information, and respond** to it.

- None

#### WATER & LAND

**4.12: (4-ESS1-1)** Explain using evidence from **patterns** in **rock formations** and **fossils** in **rock layers** that **Earth changes over time** through both **slow and rapid processes**.

- None

**4.13: (-)** Plan and carry out investigations to examine **properties of soils** and **soil types**.

- None

**4.14: (-)** Support the claim that **landforms** are the **result** of **constructive forces** (**crustal deformation, volcanic eruptions, and sediment deposition**) and of **destructive forces** (including **erosion** and **weathering**).

- *Picture Perfect* Chapter 19 – Grand Canyon – 100% coverage

**4.15: (4-ESS2-1)** Analyze and interpret data (take measurements if possible) to provide evidence of the **effects of weathering** or the **rate of erosion** by **water, ice, wind,** or vegetation.

- None

**4.16: (4-ESS2-2)** Analyze and interpret data from **maps** to **describe patterns** of **Earth's features**. (for ocean and land)

- None

**4.17: (4-ESS3-2)** Generate and compare multiple **solutions** to **reduce** the **impacts** of **natural Earth processes** on **humans**.

- None

## 5<sup>th</sup> Grade Topics

### MATTER & INTERACTIONS

**5.1: (5-PS1-1)** Develop a model to describe that **matter** is made of **particles too small to see**.

- *Picture Perfect* Chapter 9 – What’s Poppin?

**5.2: (5-PS1-2)** Measure and graph quantities to provide **evidence** that regardless of the **type of change** that occurs when **heating, cooling, or mixing substances**, the **total weight** of matter is **conserved**.

- None

**5.3: (5-PS1-3)** Make observations and measurements to identify **materials** based on their **properties**.

(materials: powders, metals, minerals, liquids)

(color, hardness, reflectivity, electrical conductivity, thermal conductivity, response to magnets, solubility)

- *Picture Perfect* Chapter 6 – Earthlets – (Not total coverage); Difference between observation and inferences

**5.4: (5-PS1-4)** Conduct an investigation to determine whether the **mixing** of two or more **substances** results in **new substances**.

- *Picture Perfect* Chapter 16 – Chemical Change Café’ – 100% coverage, but more examples preferred

**5.5: (-)** Construct explanations from observations to determine how the **density** of an **object** affects whether it **sinks or floats** in a liquid.

- *Even More Picture Perfect* Chapter 7 – Float Your Boat – 100% coverage
- *Even More Picture Perfect* Chapter 20 – Problem Solvers (part of the lesson)

### EARTH, GRAVITY, & SPACE

**5.6: (5-PS2-1)** Support an argument that the **gravitational force** exerted by **Earth** on **objects** is directed **downward towards the center of Earth**.

- *More Picture Perfect* Chapter 14 – Roller Coasters – use p8 of *I Fall Down* - give students time to argue with evidence to meet 100%
- *Even More Picture Perfect* Chapter 7 – Float Your Boat – speaks to the topic; does not meet

**5.7: (-)** Design and conduct a test to **modify** the **speed** of a **falling object** due to **gravity**.

- *More Picture Perfect* Chapter 14 – Roller Coasters – speaks to the topic
- *Even More Picture Perfect* Chapter 20 – Problem Solvers – if explore and explain egg activity, it meets 100%

**5.12: (5-ESS1-1)** Support an argument that one factor determining the apparent **brightness** of the **sun** compared to other **stars** is the relative **distance from Earth**.

- *More Picture Perfect* Chapter 18 – Stargazers – BACKGROUND INFO ONLY (Trade Book – *Spots*)

*of Light* by Rau)

**5.13: (5-ESS1-2)** Represent data in graphical displays to reveal patterns of **daily changes** in **length** and **direction** of **shadows, day and night**, and the **seasonal appearance** of some **stars** in the night sky.

- *Picture Perfect* Chapter 18 – Day & Night – only covers day/night part of the standard
- *More Picture Perfect* Chapter 18 – Stargazers – BACKGROUND INFO only
- *Even More Picture Perfect* Chapter 19 – Sunsets & Shadows – background only

#### ECOSYSTEMS

**5.8: (5-LS1-1)** Support an argument that **plants** get the **materials they need** for growth primarily from **air and water**.

- None

**5.9: (-)** Construct an illustration to explain how **plants** use **light energy** to **convert carbon dioxide** and **water** into a storable **fuel, carbohydrates**, and a waste product, **oxygen**, during **photosynthesis**.

- None

**5.10: (5-PS3-1)** Construct and interpret models to explain that **energy** in **animals' food** is used for **body repair, growth, motion**, and **maintenance of body warmth** and was once **energy** from the sun.

- *Picture Perfect* Chapter 10 – Mystery Pellets – speaks to the topic; does not meet

**5.11: (5-LS2-1)** Develop a model to describe the **movement** of **matter** among **plants, animals, decomposers**, and the **environment**.

- *Picture Perfect* Chapter 10 – Mystery Pellets – 100% Coverage

**5.14: (5-ESS2-1)** Develop a model using an example (only 2 spheres at a time) to describe **ways** the **geosphere, biosphere, hydrosphere**, and/or **atmosphere interact** and **support life**.

- None

**5.15: (5-ESS2-2)** Describe and graph the **amounts** and **percentages** of **salt water** and **fresh water** in various reservoirs to provide evidence about the **distribution** of **water on Earth**.

- *Picture Perfect* Chapter 24 – Down the Drain – speaks to the topic

**5.16: (5-ESS3-1)** Collect and organize scientific ideas that **individuals** and **communities** can use to **protect Earth's natural resources** and its **environment**.

- *Picture Perfect* Chapter 13 – Oil Spill – partial coverage
- *Picture Perfect* Chapter 24 – Down the Drain – technically 100% coverage, more examples preferred

**5.17: (-) Design solutions, test, and revise a process for cleaning a polluted environment.**

- *Picture Perfect* Chapter 13 – Oil Spill – after activity C, repeat experiment and improve the process