1A

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| 1. ***Where can you find patterns in nature?***   ***A pattern is a repeating arrangement of colors, shapes, or figures. Nature is the world around that is not made by people. It includes plants, animals, the land, the oceans, and the sky. An example of a pattern in nature would be a unique formation, a form or shape made over time. Patterns in nature also include a leaf, coral, and a honeycomb. There is repetition, or repeated patterns, in the photograph of the salt marsh on pages 190-191 in the Reading/Writing Workshop. A geographic formation such as this salt marsh is often created over time. Wind and water, for example, create patterns like cut-outs in the landscape. Repeating lines, shapes, and colors form patterns in nature. Features in landscape and living things can have patterns. Patterns in nature help us see that things on Earth are connected and that nature works*** |

2A

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| ***type of rock is metamorphic rock, which forms under extreme heat and pressure. Some metamorphic rocks become magma. As magma cools, it becomes igneous rock. This rock cycle is a pattern. In* The Story of Snow*, the author points that patterns in nature can found in snow. Because snow crystals are made of water, each crystal usually has six arms or sides. The combination of moisture and temperature in the cloud in which a snow crystal forms determines the crystal’s own unique pattern. Star-shaped snow crystal have six-fold symmetry. This means that each arm is almost the same. It is a repeating pattern. The author’s use of structure and text features helps readers visualize and understand the complex science of snow. On page 224, I read that if these snow crystals were divided into six wedges, each wedge would have the same shape. On page 219, the diagram*** |

2B

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| ***shows how a snow crystal starts with a speck. On page 227, the photograph on caption demonstrate how quickly snow crystals may erode. In “Fibonacci’s Amazing Find,” I learned that Fibonacci numbers are reflected in the growth patterns of many living things. These numbers are often found in plants. Snow crystals form in patterns of six. They have six sides, six arms, and six points. Pine cones, sunflowers, and nautilus shells have a spiral form with a pattern that relates to the Fibonacci number sequence. On page 235, I read that the sunflower has spirals of seeds in its head, and that fern fronds have a spiral pattern. Both have the Fibonacci sequence. On page 224 of The Story of Snow, I read that six is the magic number for snow crystals. On page 235 of “Fibonacci’s Amazing Find,” I read that plants have a spiral pattern that reflect Fibonacci numbers. The diagrams help us*** |

1B

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| ***in patterns. In “Patterns of Change,” the main idea of the first two paragraphs is that rocks change over time. The text supports this main idea with key details. One key detail is: the third sentence in this paragraph tells how water, wind, and temperature slowly transform, or change, rocks. Igneous rocks are made when magma from deep inside Earth rises up to the surface and slowly cools. Sedimentary rocks are formed when wind and water erode rocks. Particles of broken rock, called sediment, build up in layers. The layers are pressed together and become sedimentary rock. Different sedimentary rocks are made of different materials. For example, sandstone is made of sand, while limestone is made of bones and shells. These layers of rock are generally organized in the same way, i.e., the oldest layers are on the bottom, and the youngest layers are on the top. The third and final*** |

3A

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| ***better understand patterns found in snow crystals, flowers, and other objects in nature by presenting information from the texts in a visual way. In* The Story of Snow*, readers learn about snow crystals and their relationship to the number six. Snow crystals are formed when water molecules attach themselves into groups of six to form a hexagonal ring. These hexagonal rings join together to form a larger crystal, which has six sides. The diagram on page 224 helps the reader understand this by showing the pattern in which snow crystals are formed. In “Fibonacci’s Amazing Find,” readers learn about how the Fibonacci sequence occurs in nature. The author uses the nautilus shell as an example. The diagram of the shell makes the Fibonacci sequence clear, and it shows how the nautilus shell demonstrates this pattern. In conclusion, the diagrams help us better understand*** |

4A

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4B

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| 1. ***Contact: Contact is a touching or meeting of things.*** 2. ***Erode: Erode means “to wear or wash away very slowly.”*** 3. ***Formation: A formation is something that is made or formed.*** 4. ***Moisture: Moisture is a slight wetness caused by water or another liquid.*** 5. ***Particles: Particles are small bits or pieces.*** 6. ***Repetition: Repetition is saying or doing something over and over.*** 7. ***Structure: A structure is an arrangement of parts that fit together.*** 8. ***Visible: When something is visible, it can be seen.*** |

3B

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| ***patterns in nature by providing visual information that makes the text easier to understand. The patterns shown in the selections are similar because all of them show repetition.*** |

5A

“Patterns of Change”

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| 1. ***How does the description of the Wave formation support the idea that one type of rock can be transformed into another?***   ***The Wave formation shows how wind, water, and temperature can transform rocks over time. The Wave formation is made of sandstone, which is sand turned to rock over millions of years.***   1. ***How can we identify key details that point to the main idea?***   ***The heading tells me that this section is about igneous rocks. The text tells me that igneous rocks are formed from magma. Then it explains the details in the process by which magma, a liquid, becomes igneous rock, a solid. These details support the main idea that igneous rocks are formed from magma.*** |

6A

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| 1. ***What comprehension skill can we use in “Patterns of Change”?***   ***Main Idea and Key Details:***  ***Most texts have an overall main idea. This is what the writer most wants us to know about a topic. To find the main idea, we should identify key details. Then we should decide what all the key details mean. For example, after we rea “Sedimentary Rocks” on page 196, we see that the key details are about how different particles form sedimentary rocks. From these details, we can identify the main idea.***   |  | | --- | | ***Main Idea:***  ***Particles such as sand or bones and shells form different sedimentary rocks.*** | | ***Detail:***  ***Wind and water carry away rock particles.*** | | ***Detail:***  ***Particles collect in layers and are pressed together.*** | | ***Detail:***  ***Sedimentary rocks are made from the pressed particles.*** | |

6B

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| 1. ***What is the genre of “Patterns of Change”?***   ***Expository Text:***  ***An expository text explains a topic with reasons and evidence, supports reasons and evidence with facts, examples, and concrete details, and may include text features, such as diagrams or timelines. For example, in “Patterns of Change,” we can tell that it is an expository text. It provides evidence and gives reasons why patterns occur, supporting these with facts and concrete details. A diagram illustrates information. A diagram helps readers visualize information. To read a diagram, we should first read the title, callouts, and labels. Then we should study how the information is arranged. One type of diagram includes arrows, so we should study them by paying attention to the direction in which the arrows point.*** |

5B

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| 1. ***How can we access complex text in “Patterns of Change”?***   ***Connection of Ideas:***  ***We may have difficulty understanding how the different types of rocks are connected in the rock cycle. When metamorphic rock melts, it becomes magma. When the magma cools, it turns into igneous rock. Water and wind break down igneous rock into particles that collect in layers and are pressed to form sedimentary rock.***   1. ***What comprehension strategy can we use in “Patterns of Change”?***   ***Ask and Answer Questions:***  ***One way to be sure we understand a science text is to ask and answer questions about the information. We can ask a question such as,* Why does this happen? *Then we look for information in the text to help you answer the question. For example, in “Patterns of Change,” one question is* How do rocks change? *The text explains that water, wind, and temperature over long periods of time can change one type of rock into another type. They can also shape landscapes and sketch designs on rock.*** |

7A

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| 1. ***What vocabulary strategy can we use in “Patterns of Change”?***   ***Greek Roots:***  ***If we know the meaning of a word’s root, we can use it as a clue to figure out the meaning of an unfamiliar word. Some roots from ancient Greek are* geo*, which means “earth”;* logy*, which means “study”;* chrono*, which means “time”;* bio*, which means “life”; and* morph*, which means “form.” For example, in “Patterns of Change,” we may not be sure what* geologists *means on page 196. We know that* geo *means “earth” and* logy *means “study.” The context clues* who study rocks *also helps me figure out that* geologists *means “someone who studies the earth.”*** |

8A

*The Story of Snow*

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| 1. ***How can we access complex text on page 217?***   ***Specific Vocabulary:***  ***To find the meaning of an unfamiliar word, there are different strategies, including looking for definitions, restatements, and other context clues in the text. Authors may indirectly define an unfamiliar word. Often, the definition is set apart by commas or parentheses. We can use context clues to figure out the meaning of the word* vapor *on page 217.* Water vapor *is water in the form of a gas. The authors help me figure out his definition because they put the definition in parentheses.***   1. ***What is the author’s craft on page 217?***   ***Text Structure:***  ***The word* also *signals a comparison. The authors are comparing air and water vapor to each other by saying that we cannot see both.*** |

8B

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| 1. ***How can we access complex text on page 218?***   ***Main Idea and Key Details:***   |  | | --- | | ***Main Idea:***  ***Snow has a development process.*** | | ***Detail:***  ***Clouds contain tiny particles of dirt, ash, salt, and bacteria.*** | | ***Detail:***  ***A snow crystal needs a speck to start growing.*** | | ***Detail:***  ***The specks are smaller than the eye can see.*** |  1. ***Bacteria: Tiny living cells that can only be seen through a microscope.*** |

7B

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| 1. ***How does the flow chart of the rock cycle help us to better understand the text?***   ***The flow chart helps us better understand the text by using visuals to explain the rock cycle. The arrows show the process of how rocks go through different stages, and how those stages are continuously repeated. The process begins with broken bits of rock. As these bits get squeezed, they cement into sedimentary rock. This rock is then heated into metamorphic rock. Next, the rock gets melted by magma. Then the magma cools and forms igneous rock. The process repeats itself. In conclusion, the diagram helps the reader make sense of a challenging text.*** |

9A

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| 1. ***How can we access complex text on page 218?***   ***Genre:***  ***We should connect diagrams to the text. The last sentence on page 218 says, “But if you could see them…” This sentence and the diagram below it are connected. The sentence describes what is shown in the diagram: how a snow crystal forms. This diagram shows where the specks come from and examples of specks that can turn into snow crystals.***   1. ***What vocabulary strategy can we use on page 219?***   ***Greek Roots:***  ***The word* microscope *on page 219 has a prefix and a Greek root. The prefix* micro- *means “small.” The root* scope *means “see or watch.” So, a* microscope *is an instrument used to help people see small things.*** |

10A

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| 1. ***What comprehension skill can we use on page 221?***   ***Main Idea and Key Details:***   |  | | --- | | ***Main Idea:***  ***Snow crystals have a particular shape or form.*** | | ***Detail:***  ***Snow crystals usually have six arms that reach out from a center point.*** | | ***Detail:***  ***The center point is home to the speck that started the crystal.*** | | ***Detail:***  ***The arms of crystals may look exactly alike but are almost never exactly the same.*** | |

10B

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| 1. ***How can we access complex text on pages 220-221?***   ***Connection of Ideas:***  ***The paragraph on page 220 connects the reader to the diagram on page 219 that explains how snow crystals form. The second sentence on page 220 says that a snow crystal keeps growing as it falls through a cloud. On page 219, I learned that a snow crystal grows as water vapor sticks to a speck. From the photographs on pages 220 and 221, I learn that they all have six branches, but are unique in detail. The text on page 221 says that one common shape for snow crystals is the star shape.***  ***Specific Vocabulary:***  ***Star-shaped snow crystals are called* dendrites *because they have branches that look like the branches of a tree.*** |

9B

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| 1. ***What comprehension strategy can we use on page 219?***   ***Ask and Answer Questions:***  ***As I read, I can pause to ask and answer questions. One question I have asked myself is how snow crystals get their arms. To find out, I can look at the diagram again and reread the captions. The fifth caption has the word* branches *and the sixth has the word* arms*, so I pay special attention to them. Then I paraphrase the text in the captions to make sure I understand it: snow crystals grow their arms because they grow faster on their corners. This cause six branches to grow.***   1. ***Hexagon: A flat shape with six sides.*** 2. ***Sprout: Begin to grow.*** 3. ***What is the genre of the text on page 220?***   ***Expository Text:***  ***We know this text is an expository text because it includes photographs and specific information on a scientific topic.*** |

11A

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| 1. ***How does a snow crystal take shape?***   ***A snow crystal gets its special shape as it falls through a cloud. The shape it takes depends on how wet and how cold the cloud is. A snow crystal may change the way it grows as it passes through a wetter or colder part of its cloud.***   1. ***Hovers: Stays near a specific point.*** 2. ***How does the authors use captions to create more interest in snow crystals? (C)***   ***The author uses photographs and captions to provide more details about how snow crystals form and the ways in which they can end up looking different. This helps the reader picture the information in the text. They show how complex but tiny crystals look like up close. This is something readers would not be able to otherwise see. The crystal is shown much larger than its actual size. The authors also tell that parts of a flake can break and that dendrites, or star-shaped snow crystals, form in very moist clouds. The captions provide more information about snow crystals, including how they form.*** |

12A

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| 1. ***Complicated: Hard to understand.*** 2. ***Range: The highest and lowest limits possible.*** 3. ***Millimeter: A small measurement; one one-thousandth of a meter.*** 4. ***How can we access complex text on page 222?***   ***Organization:***  ***A cause is an event that makes something happen, and an effect is what happens because of the cause. Looking for cause-and-effect relationships can help us better understand what we read. In the photograph of the snow crystal on the bottom of page 222, the arms stopped developing because the crystal fell out of the cloud.***   1. ***How are hollow column crystals different from other types of column crystals?***   ***Hollow crystals are longer and more common that solid crystals. They do not have caps on their ends, like capped crystals do.*** |

12B

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| 1. ***How does the author organize the information to help you understand more about snow crystals? (C)***   ***The author organizes the information about snow crystals by comparing and contrasting the different shapes and forms of star-shaped, plate, and column snow crystals. They also use a cause-and-effect text structure to help organize the information and explain the science behind snow crystals. The authors show plate crystals on page 222, put more details in the captions, and shows column crystals on page 223. The drawings have more details. All this helps the authors contrast the two kinds of crystals. They explain how snow crystals are formed and compare the different types. They support this structure by using headings that chunk related text. The photos, illustrations and caption support the structure by providing a visual representation of the text.*** |

11B

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| 1. ***What is the author’s craft on page 222?***   ***Text Structure:***  ***The word* like *is usually a signal word for comparing, or figuring out how things are the same. The word* but *is usually a signal word for contrasting, or figuring out how things are different. The authors are comparing and contrasting plate crystals and star crystals on page 222. They are both thin. However, plate crystals do not have arms.***   1. ***What comprehension skill can we use on page 223?***   ***Main Idea and Key Details:***  ***The main idea of the text on page 223 is that column-shaped snow crystals have a unique shape and forming process. The details all tell about column-shaped snow crystals.*** |

13A

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| 1. ***How can we connect to content in* The Story of Snow*?***   ***Factors that Determine Weather:***  ***Air temperature, humidity, wind speed, and various forms of precipitation, such as snow, determine the weather in a particular time or place. Snow is part of the water cycle and falls to the ground as a solid. When snow melts, however, it changes form and becomes a liquid. On pages 220-223, we read about how air temperature and the amount of moisture in a cloud form different types of snow crystals.***   1. ***What comprehension strategy can we use on page 224?***   ***Ask and Answer Questions:***  ***I want to be sure I understand why six is such an important number for snow crystals. I will reread the paragraph to make sure I understand. Most crystals have six arms or six sides because water molecules attach themselves into groups of six.*** |

14A

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| 1. ***What comprehension skill can we use on page 225?***   ***Main Idea and Key Details:***   |  | | --- | | ***Main Idea:***  ***Snow crystals can develop into many forms.*** | | ***Detail:***  ***It is rare for snow crystals to turn out perfectly.*** | | ***Detail:***  ***A droplet of water can cause one arm to grow faster.*** | | ***Detail:***  ***Snow crystals can have twelve arms.*** | | ***Detail:***  ***Snow crystals have bumps called as* rime*.*** | |

14B

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| 1. ***What comprehension skill can we use on page 226?***   ***Main Idea and Key Details:***   |  | | --- | | ***Main Idea:***  ***Hundreds or thousands of snow crystals can make one snowflake.*** | | ***Detail:***  ***Snow crystals can bump into each other and stick together.*** | | ***Detail:***  ***Snowflakes can be just one crystal. They are very small and hard to see.*** |  1. ***What comprehension strategy can we use on pages 226-227?***   ***Ask and Answer Questions:***  ***A question I asked myself was, “Why do snow crystals stop growing when they fall from clouds?” The caption on page 227 explains snow crystals must be surrounded by water vapor in clouds to keep growing. Once crystals leave a cloud, they are no longer surrounded by the water vapor they need to keep growing.*** |

13B

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| 1. ***What is the text feature on page 224?***   ***Diagrams:***  ***A larger hexagonal crystal forms from water molecules shaped like hexagonal rings.***   1. ***Wedges: Things with a similar triangle shape.*** 2. ***How can we access complex text on page 224?***   ***Specific Vocabulary:***  ***The restatement of the word* water molecule*, “the smallest units of water,” help us to understand the meaning of the word. In the caption, the word* symmetry *has a context clues, “the same shape,” which shows that an object with symmetry has the same shape when divided equally.***   1. ***What is the author’s purpose on page 225?***   ***The author uses exclamation points in the headings on page 225 because the author is conveying excitement about the complexities of the snow crystals and wants to make readers curious to learn more about snow crystals.*** |

15A

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| 1. ***How can we access complex text on page 226?***   ***Genre:***  ***Photographs and captions connect to expository text and also provide additional information. The photographs of snowflakes helps us understand how snowflakes look like because it shows snow crystals joined together to form snowflakes. This connects to the text because it explains that most snowflakes are made of many snow crystals that are stuck together.***   1. ***How does a snow crystal change after it falls from a cloud?***   ***After a snow crystal falls from the cloud, it stops growing and starts to wither. Its arms break down and its shape becomes more rounded.***   1. ***Immediately: Right away.*** |

16A

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| 1. ***What comprehension skill can we use on page 228?***   ***Main Idea and Key Details:***   |  | | --- | | ***Main Idea:***  ***Most things in nature are not exactly alike, including snowflakes.*** | | ***Detail:***  ***Simple plate crystals may appear alike.*** | | ***Detail:***  ***More complicated snow crystals aren’t exactly alike.*** | | ***Detail:***  ***Not two leaves, flowers, or people are exactly alike.*** | |

16B

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| 1. ***How can we access complex text on pages 228 and 229?***   ***Connection of Ideas:***  ***No two snow crystals are exactly alike because snow crystals start from specks in the clouds. As the snow crystals travel through the cloud, the temperature and moisture affect how they form. No two are exactly alike because no two come from the same specks or go through the same weather conditions.***   1. ***What comprehension skill can we use on page 228?***   ***Make Inferences:***  ***If we look through a microscope and find two snow crystals that look exactly alike, then they are probably simple plate crystals.*** |

15B

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| 1. ***How does the author use captions to create more interest in snow crystals? (C)***   ***The author uses the caption to create more interest by giving readers advice on how to see a snow crystal’s structure in nature for themselves. The text says, “Try catching one on your sleeve or glove to see the crystal structure at its best.” The author wants the reader to try something to illustrate the facts he describes. The photograph also stands out because it is the first photo in the selection to show a snow crystal in a real-life, outdoor situation. The caption encourages readers to see for themselves just how short the life span of a snow crystal is.*** |

17A

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| 1. ***Why do you think Mark Cassino and Jon Nelson chose to write about snow?***   ***Mark Cassino is a fine art and natural history photographer. He first became interested in snow crystals when he noticed them land on his windshield as he was driving. Before long, he was photographing individual crystals to show these tiny structures close up. Jon Nelson is a teacher and physicist who has studied clouds and snow crystals for over 15 years. He has many opportunities to observe them because he likes exploring the outdoors, including rock climbing and taking walks on icy mornings.***   1. ***How do Nora Aoyagi’s illustration help you visualize what the authors are describing?***   ***Nora Aoyagi loves drawing interesting creatures from well-known folk stories. Here, she uses her techniques to help illustrate the story of snow. Nora works in many different mediums, including painting, printmaking, and drawing.*** |

18A

“Fibonacci’s Amazing Find”

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| 1. ***How can we access complex text on page 233?***   ***Prior Knowledge:***  ***An* abacus *consists of beads strung on rows of wires. The wires represent ones, tens, hundreds, and so on. To add or subtract amounts, you slide the beads to different positions on the wire. The Roman system uses letters to represent number values, such as I for 1, V for 5, and X for 10. The number 3 would be III, and 6 would be VI, for example. Hindu-Arabic numerals were helpful to Fibonacci because they helped him to do calculation more easily.***   1. ***What comprehension strategy can we use on page 232?***   ***Ask and Answer Questions:***  ***The Fibonacci sequence relates to nature. The Fibonacci numbers often match the numbers of things in nature.*** |

18B

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| 1. ***What comprehension skill can we use on page 233?***   ***Main Idea and Key Details:***   |  | | --- | | ***Main Idea:***  ***Fibonacci had tremendous impact on mathematics.*** | | ***Detail:***  ***When Fibonacci was a teenager, most Europeans used the abacus.*** | | ***Detail:***  ***In North Africa, where he lived, they used Hindu-Arabic numbers.*** | | ***Detail:***  ***Fibonacci wrote a book on this number system, which we still use today.*** | |

17B

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| 1. ***What is the author’s purpose in* The Story of Snow*?***   ***To Inform:***  ***When authors write to inform, they may include images to clarify their ideas. Snow crystals have many things in common, but each one is different. Showing photographs and diagrams of snow crystals is a visual way to explain the surrounding text.***   1. ***What is the author’s craft in* The Story of Snow*?***   ***Word Choice:***  ***The author uses words such as* water vapor *on page 219,* dendrites *on page 224, and* symmetry *on page 224 because these words are used in the study of science. The author uses these words to express ideas precisely.***   1. ***What patterns can you find in snow crystals?***   ***Star-shaped snow crystal have six-fold symmetry. This means that each arm is almost the same. It is a repeating pattern. The author’s use of structure and text features helps readers visualize and understand the complex science of snow. On page 224, I read that if these snow crystals were divided into six wedges, each wedge would have the same shape. On page 219, the diagram shows how a snow crystal starts with a speck. On page 227, the photograph on caption demonstrate how quickly snow crystals may erode.*** |

19A

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| 1. ***What is the author’s purpose on page 233?***   ***The author includes a story about the rabbit population because it explains how Fibonacci came up with his famous sequence, and how it works. This tells me that Fibonacci took a scientific approach to learning about math.***   1. ***What comprehension strategy can we use on page 235?***   ***Summarize:***  ***The spiral shape can be helpful in nature because it helps things in nature. For example, it allows many seeds to grow in a small area, and it allows leaves to get a lot of sunlight.*** |

20A

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| 1. ***How can we access complex text on page 234?***   ***Connection of Ideas:***  ***The first single graph box in black outline is q in the sequence. The box in the black outline next to that is the second 1 in the sequence. The black square of 2 boxes by 2 boxes is the 2 in the sequence. As this pattern continues, we see that the side lengths of the squares: 1, 1, 2, 3, 5, and 8, are the numbers in the Fibonacci sequence.***   1. ***Where can we find patterns in nature that reflect the Fibonacci sequence?***   ***Fibonacci numbers are reflected in the growth patterns of many living things. These numbers are often found in plants. Snow crystals form in patterns of six. They have six sides, six arms, and six points. Pine cones, sunflowers, and nautilus shells have a spiral form with a pattern that relates to the Fibonacci number sequence. On page 235, I read that the sunflower has spirals of seeds in its head, and that fern fronds have a spiral pattern. Both have the Fibonacci sequence. On page 224 of* The Story of Snow*, I read that six is the magic number for snow crystals. On page 235 of “Fibonacci’s Amazing Find,” I read that plants have a spiral pattern that reflect Fibonacci numbers.*** |

20B

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| 1. ***How do the diagrams in The Story of Snow and “Fibonacci’s Amazing Find” help us better understand patterns in nature?***   ***The diagrams help us better understand patterns found in snow crystals, flowers, and other objects in nature by presenting information from the texts in a visual way. In* The Story of Snow*, readers learn about snow crystals and their relationship to the number six. Snow crystals are formed when water molecules attach themselves into groups of six to form a hexagonal ring. These hexagonal rings join together to form a larger crystal, which has six sides. The diagram on page 224 helps the reader understand this by showing the pattern in which snow crystals are formed. In “Fibonacci’s Amazing Find,” readers learn about how the Fibonacci sequence occurs in nature. The author uses the nautilus shell as an example. The diagram of the shell makes the Fibonacci sequence clear, and it shows how the nautilus shell demonstrates this pattern. In conclusion, the diagrams help us better understand patterns in nature by providing visual information that makes the text easier to understand.*** |

19B

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| 1. ***What does the author do to help you understand the Fibonacci sequence? (C)***   ***The author helps me understand Fibonacci’s sequence by using different methods to give me a picture of what it is in words and pictures. The author uses examples, defines words, uses a diagram of a spiral found in nature, and shows photographs and captions. The diagram illustrates how each chamber is the same shape as the last, but increases in size. The photograph shows a cross-section of an actual nautilus shell with the same curves and shape as shown in the diagram. This all helps readers to visualize the sequence.*** |

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