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Thank you for downloading this lesson resource packet for the Fact `N Fiction Book "Rana Eclipso Rising—A Total Eclipse of the Sun Story."

In these resources please look for:

1. Learning with Picture Books (LWPB) fact sheet—Explaining how our Fact 'N Fiction Books are unique in offering both fictional and factual information and reading skill practice in a single source about one topic. We hope that when you incorporate one of these books into your lesson planning, you will be very happy with the outcome.

We are not alone in believing in the advantages of **Learning with Picture Books**: "hybrid picture books integrate verse and prose, multiple sources of information, mixtures of styles, and multiple functions. These genres offer readers new ways of making meaning. They may also serve as an invitation to educators and readers to consider new perspectives and new potentials for utilizing these types of picture books..." — May 2017 article; Athens Journal of Education - Volume 4, Issue 2 (https://files.eric.ed.gov/fulltext/EJ1219816.pdf)

- **2. Lesson Resources**—19 pages of ideas, prompts, and question progressions for lesson planning—for a classroom, student group, or a child.
- 3. Funding Classroom Sets, Option 1: School-to-Home Student Book Purchase Form—A form to help the teacher organize a school-to-parent request to purchase a book for their student.
- 4. Funding Classroom Sets, Option 2: Teacher to Local Business, Request to Sponsor a Classroom—This form will help the teacher form a request and process for a local business to sponsor the books for the teacher's classroom. At \$12 per book, a class of 18 would need a Sponsorship of \$216 plus shipping. The actual ordering is best done by the business at graphocity.com that way their credit card remains secure and the shipping costs are apparent. All the teacher has to do is ask, and help them through their order at graphocity.com, if necessary.
- 5. Affix Avery 94104 Thank-You Stickers in Sponsored Books—using Avery 94104 square labels, find the fillable Avry94104-BusSpnsr-Labels PDF form in this packet, which you can use to turn each sponsored book into a thank you promotion for your Sponsor's business.

We believe, with a teacher's prompts, Fact 'N Fiction Picture books can elicit a surprising quality of effort from studentS in any elementary grade across most subjects.

Thank you and best regards,

Liz Bockelman, Author/Illustrator/Publisher

(Please direct feedback to info@graphocity.com)

Fact 'N Fiction Books the mortar between the bricks of learning



More Fact 'N Fiction Books *Coming Soon*

K–5 Students Can Apply Their Skills with Fact 'N Fiction Book Prompts

We believe that a student holding a Fact 'N Fiction Book in their hands and prompted by their teacher will discover powerful, multi-faceted, new ways to apply their skills across subjects



Fact 'N Fiction Books

A Multi-Faceted Genre with Both Factual and Fictional Content

- Short but Sophisticated
- Complex Meanings Built with Multiple Readings
- Thought Inspiring

For Classroom Enrichment

Capture/Feed Student Curiosity

- Reinforce/Evolve Skills
- Apply Student Knowledge
- Multi-layered Support for Learning Objectives

Downloadable Lesson Resources

Resources Designed to support Elementary Grades K–5 use of Fact 'N Fiction books in the classroom

For School, Home, and Homeschool



Capture Their Curiosity about Eclipses with this Fact 'N Fiction Book

"Rana Eclipso Rising, a Total Eclipse of the Sun Story"

Rana the green frog lives in a beautiful bog until the night when "She" captures him in a net and dumps him into a cage for her school solar eclipse science experiment on night noise. But Rana makes no sound at all. Will Rana survive? Will She get an 'A'?

Students practice their reading, comprehension, and critical thinking skills with a fictional story and factual information on the science of eclipses.



LESSON RESOURCES

"Rana Eclipso Rising—A Total Eclipse of the Sun Story"

Thank you for your purchase of this Fact 'N Fiction book on total solar eclipses. How we can make our Fact 'N Fiction books better? Please email us at **info@graphocity.com** to relay your thoughts; or comment on our latest facebook post at **Liz Bockelman Books**.

How to use these resources: Find, mix and match questions and activities that you would like to adapt for your class.

RESOURCE CONTENTS:

Section 1: BOOK REVIEW WITH TIMING GUIDANCE

Section 2: FICTIONAL CONTENT QUESTIONS BY BOOK PAGES

Section 3: FICTIONAL AND FACTUAL CONTENT QUESTIONS/ACTIVITIES BY SUBJECT AND GRADE K-5

READING: (fictional and factual reading skill practice; ask/answer; activities)	. 10-11
WRITING (fictional and factual writing skill practice; activities)	.12–13
SOCIAL SCIENCES (practice to identify/analyze ideas currently being studied; activities)	.14–15
SCIENCE (practice science skills to anaylze/understand the book's fictional and factual content; activities)	.16–17
MATH (🏷 practice math skills with book's fictional and factual content; activities)	18–19

• Don't miss pages 35–37 in the book for more activity ideas and an eclipse phenomena checklist

• Throughout these resources, watch for the "Pitch" icon for challenging questions and activities.

• 😳 NOTE: With its lunar phase information, "Rana Eclipso Rising" might work well for studying leap year.



"Rana Eclipso Rising A Total Eclipse of the Sun Story"

As a green frog, Rana was living a wonderful life in the bog. But in the middle of the concert one night, a human girl caught him, dumped him into a frog tank, and took him home. He was to be part of her solar eclipse night noise science experiment. Being sad and believing he would never be free—Rana made no noise at all. With the eclipse just days away would Rana's silence ruin her experiment? Or would "She" get an "A"?



Section 1: BOOK REVIEW WITH TIMING GUIDANCE

TOPIC	PAGE #	READ ALOUD	DISCUSS	DESCRIPTION	DISCUSSION QUESTIONS/TOPICS
(optional) Introduction	NA	NA	5 min	Briefly discuss a total solar eclipse as a change in how the Moon casts a moving shadow that blocks all the Sun's light along its pathway on Earth; usually lasts less than 5 minutes at any one place on Earth.	 What things do you do everyday? Everyday things are usually done in patterns that are dependent on TIME: wake up, have breakfast, go to school, etc. One of the key visual patterns of TIME is the Earth's rotation causing the daily "rising" and "setting of the Sun" The Moon's pattern of orbit does not determine the many patterns of our daytime activities but it does determine the occurance of a total solar eclipse A period of unusual "night" during the day caused by a total solar eclipse can make creatures behave like it really is night; and humans might feel afraid—like something is "wrong" in nature.
(optional) Overview Book	Cover	1 min	5 min	Front and back cover elements: Title Author Illustrator Illustration Lunar phases Short description 	 Note and discuss the lunar phase illustration Read and discuss the back cover short description Discuss the front cover illustration Read Title, subtitle, author's and ilustrator's name
(optional) Gallery Page	(opposite the fly page)	1 min	1–5 min	Illustration showing illustration and names identifying "She" and her friends and teacher	1) The author did not put this information in the text of the story. Why do you think that is?
(optional) Riddle: What Am I	Opposite the Title Page	2 min	5–6 min	 A first person account (personification) by a total solar eclipse: Chance to occur twice a year—but may not happen for years When total solar eclipses occur, it can be anywhere in the world New Moon lunar phase Invisible Moon casts a narrow shadow on Earth View of totality is only in the Moon's darkest shadow—the umbra Rare in any one place Usually takes average of 375 years to re-occur in same locatiion Once-in-a-lifetime event 	1) Who or what does the riddle describe?





Section 1: BOOK REVIEW WITH TIMING GUIDANCE continued

TOPIC	PAGE #	READ ALOUD	DISCUSS	DESCRIPTION	DISCUSSION QUESTIONS/TOPICS
(optional) Trivia: Near Term Total Solar Eclipses	Opposite the Title Page	2 min	6–10 min	 An article explaining the American public's excitement in seeing a total solar eclipse on August 21, 2017 215 million viewed the 2017 eclipse in person, online, or on TV 2017 eclipse was named "The Great American Solar Eclipse" Its path of totality crossed 14 states; Oregon to South Carolina The next total solar eclipse in the US will be on April 8, 2024 Chester, Illinois will once again be located in the path of totality for the 2024 total solar eclipse Chester, Illinois will host the second "Twice in a Lifetime" celebration Chester, Illinois is the setting for the book "Rana Eclipso Rising" 	 Do the math: 1) How old were you for the last total solar eclipse in 2017? 2) How old will you be for the next total solar eclipse in 2024? 3) How old will you be for the total solar eclipse in 2045?
(optional) Trivia Globe Graphic	Opposite the Title Page	2 min	2 min	• Graphic showing the paths of the 2017, 2024 solar eclipses with total solar eclipses in yellow and the October 14 annular solar eclipse in orange.	1) Why do you think the pathways of each eclipse go in such different directions?
Read the fictional, rhyming story aloud	Pgs 1–32	11 min	15–30 ± min	 Create your own discussion approach or add Bloom's Taxonomy question stems from Section 2 to complete your discussion and activity plan: SEE Section 2) Question stems, organized into the Bloom's Taxonomy 6 levels; choose/mix and match the level of questions you want; for all grades: K–5 SEE Section 3) Questions and activity ideas for factual and fictional content; by subject and by grades K-5 	 What is a total solar eclipse? In the story, who will the coming total solar eclipse affect? How? Make a list of Ranas problems and of She's problems by page. Which problems get solved? When? How? By whom? Put your answers next to the appropriate problem on your list Examine the information shown on the detail tables on the lower right corners of each spread. How many pages have detail tables? Why do the detail tables look like they are attached with tape to the page? Find the table that tells how long the totality of the eclipse lasted. Count how many pages in the book give information on total solar eclipses? Which pages provide the most answers to your eclipse questions? Why might it be important to learn about total solar eclipses?
(optional) Study the non-fiction information	Pgs 33-34	0–30 min	Discuss as the material is read.	 Create your own discussion approach or add questions and activity suggestions from fictional and factual content questions/activities by subject and grade Pgs 33-34:Conditions Needed to View a Total Solar Eclipse (Graphs and Tables) Examine Exhibit A 4 types of solar eclipses Examine Exhibit B Saros cycles Examine Exhibit C Saros series Examine Exhibit D three conditions needed to view a total solar eclipse Read and answer page 33 text questions for each exhibit Read and find each "condition" from the Exhibit D table OR SEE Section 3) Questions and activity ideas for factual and fictional content; by subject and by grades K-5 	 What are the 4 types of solar eclipses (Exhibit A)? What is a Saros cycle (Exhibit B)? How is a Saros series different from a Saros cycle (Exhibit C)? In Exhibit D, what are the three conditions needed to see a total solar eclipse? Find all the listed elements in the Exhibit D table in the large eclipse illustration. Read the "Did You Know?" section of the Exhibit D illustration. Did you know? Ask questions about eclipses or about the exhibits. Can you find answers by using the illustrations?? Why might it be important to learn about total solar eclipses?
TIME	Sub totals:	11–60 min	0–60 min		learning with picture books

ALL GRADES K-5

Section 2: FICTIONAL CONTENT QUESTIONS BY BOOK PAGES continued

	LEV. 1: REMEMBERING	LEV. 2: UNDERSTANDING	LEV. 3: APPLYING	LEV. 4: ANALYZING	LEV. 5: EVALUATING	LEV. 6: CREATING
BLOOM'S TAXONOMY Question stems criteria BY LEVEL	Learn specific information: • 5 Ws; how; name; list; label; locate; match; select; underline	 Understand meaning of basics: Verbs form basis of questions: explain; interpret; outline; discuss; translate; restate; describe; identify; which; summarize 	Demonstrate grasp by solving problems; creating projects: • How would you demonstrate, present, change, modify CRE/	Find patterns in basics to actively use what has been learned for another purpose: • How can you; what can you infer; what ideas would validate; how would you explaingiven; what? Analyze; Identify; Examine; Investigate	 Make judgments combining learned informations and own insights: Evaluate accuracy; find the errors in a problem; select the most appropriate action and justify; decide on a complex plan using factual guidance; evaluate and justify your answer; debate pros and cons; judge the importance; 	 Given specific learned information, parameters, research, own unique thoughts and ideas, etc., create new products, ideas, theories: What alternatives could you suggest? How could what exists be made more effective? What is the best plan to achieve this specific goal? Given this need, what could be invented?
THIS BOOK IS A "FACT 'N FICTION BOOK ABOUT SOLAR ECLIPSES BEFORE READING; TRY GLANCING THROUGH THE BOOK	 Where is the fictional story in the book? Where are the facts about eclipses in the book? Do both parts have illustrations? Do you think the illustrations will help you understand the fictional story and the facts? 	 Can we learn what an eclipse is by glancing at the The fictional writing and illustrations? The factual writing and illustrations? What are some differences between the fictional text and illustrations part of the book and the factual text and illustrations part of the book? 	 Write down Your answers to the level 1 and 2 questions, then read the book. Do you think glancing through the book before reading it can help you understand the story? Can you give an example? 	 Do you usually pick fact books or fiction books to read? Why? Did glancing through the book make it easy for you to guess what the fictional writing would be about? Did glancing through the book make it easy to guess what the factual writing would be about? 	 After glancing through the book, do you expect to like reading both fiction and non-fiction writing about eclipses in the same book? What would kindergarteners prefer? Which would your Mom like best? What kinds of information about eclipses can a story tell? What kinds of information about eclipses can factual writing tell? Show examples in the book. 	 How might previewing the content of this eclipse book make the book more useful to you and other readers? Would reading the factual part of this book first help you understand the fictional part better? Do you see an advantage to presenting the same information in different ways? Explain.
READ AND DISCUSS Riddle and Trivia	 What is the answer to the riddle? In the Trivia article, why do you think the town of Chester, Illlinois is discussed in the article? 	• Can you explain why the town of Chester, Illinois having a second total solar eclipse 7 years is surprising?	 How many total solar eclipses have you seen so far? The next total solar eclipse in the US after the one in 2024 will be in 2045. How old will you be in 2045? 	 Analyze the globe illustration. What do the 2 yellow lines represent? What does the orange line represent? When you glanced through the book did you see where the answers to these questions might be? 	• Would the location of the riddle and trivia article in the front of the book help the reader's understanding of the story and factual information? Explain.	 Count the facts you have learned about solar eclipses so far. How many facts do you estimate you will learn in the whole book? Explain
READ AND DISCUSS SPREAD 1 (Pg 1–2)	 From these pages, what kind of animal hatched from an egg? How many times did the animal change as it grew? What kind of animal is it? What is its name? Does it have another name? Explain. From the illustration, list what things can be found in a bog? 	 What does the text say the frog's name is? Who calls him "Rana"? What do you think "Eclipso" means? Who do you think taped "Eclipso" on the page? Why? 	 In the illustration, did you notice the white paper WEW "taped" over the illustration? What does it say? What do you think it means? Who do you think put it there? Will you listen for an answer to this question as you read the story? 	 Do all types of frogs develop from eggs into polliwogs, tadpoles with 2 legs, tadpoles with 4 legs, and then into adults? Counting all the eggs, embryos, polliwogs, tadpoles and frogs, how many frogs do you think there will be in the bog? 	 Does the big frog look happy? Is there anything wrong with a frog living in a bog? How much do you think the frog likes the bog? Why? 	What are other scientific names for frogs? How could you find out? https://testbook.com/biology/ what-is-the-scientific-name-of- a-frog

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	LEV. 1: REMEMBERING	LEV. 2: UNDERSTANDING	LEV. 3: APPLYING	LEV. 4: ANALYZING	LEV. 5: EVALUATING	LEV. 6: CREATING
BLOOM'S TAXONOMY Question stems criteria BY LEVEL	 Learn specific information: 5 Ws; how; name; list; label; locate; match; select; underline 	 Understand meaning of basics: Verbs form basis of questions: explain; interpret; outline; discuss; translate; restate; describe; identify; which; summarize 	Demonstrate grasp by solving problems; creating projects: • How would you demonstrate, present, change, modify CREA	Find patterns in basics to actively use what has been learned for another purpose: • How can you; what can you infer; what ideas would validate; how would you explaingiven; what? Analyze; Identify; Examine; Investigate	 Make judgments combining learned informations and own insights: Evaluate accuracy; find the errors in a problem; select the most appropriate action and justify; decide on a complex plan using factual guidance; evaluate and justify your answer; debate pros and cons; judge the importance; 	 Given specific learned information, parameters, research, own unique thoughts and ideas, etc., create new products, ideas, theories: What alternatives could you suggest? How could what exists be made more effective? What is the best plan to achieve this specific goal? Given this need, what could be invented?
READ AND DISCUSS SPREAD 2 (Pg 3–4)	 Where are the creatures? What new creatures are shown in the illustration? Which frog do you think is Rana? Why? What are they doing together? 	 What key ideas about the bog are found in the text? The illustration? Does either the illustration or the story text talk about a total solar eclipse? 	• What in the illustration tells us there might be problems in the bog?	 What patterns are talked about in the text? What do the Sun and the Moon have to do with a total solar eclipse? 	 Is your neighborhood in any way like the bog? Explain. If you lived in the bog, which creature would you be? Why? 	 If you were a frog in the story, what about the bog would you change? Keep the same? What if anything would you NEVER change about the bog?
READ AND DISCUSS SPREAD 3 (Pg 5–6)	 From the illustration what time of day is it? What is happening? What extra information do we learn from the text about what is happening? Why do you think this is happening? 	 What type of details does the illustration show? What type of details does the text tell about? Who do you think is calling the girl "She"? 	 Are you glad to have both the illustration and the text for this page? Why? Notice the table taped on in the lower right hand corner. Can you explain what this is. 	 What new element appears on this spread? What kind of information can it give you? What new problems are beginning on this spread? Who's problems are they. 	• How scary is this page? What is the term that means taking someone from where they are by force? Would you say Rana is being kidnapped here? Why or why not?	 In your opinion, who is the most important character in the story? Do you think that might change? Explain using specific points shown in an illustration or the text.
READ AND DISCUSS SPREAD 4 (Pg 7–8)	 Describe the setting in "She's" house. Describe Rana's new cage. What is Rana's new problem? List all the things in the illustration that might have to do with a total solar eclipse. 	 What are the children doing? What is Rana doing? Do you think he will be part of what the children are doing? Explain Look at pages 5-6; 7-8; What changed on the table taped on the lower right hand corner? Can you explain? 	 This spread shows a complete change in setting and characters and activity. Describe what you see. Can you predict what will happen in the rest of the story? 	 How has the Eclipse Countdown table changed? What do you think the children are working on? What's wrong with Rana? Why doesn't She recognize the problem with Rana? 	 Which characters are happiest and why? Which characters are in captivity? Are they happy? Look at the open journal on Dad's desk. What kind of eclipse experiment(s) are the children working on? Explain. 	 What natural light does the frog tank's fake light switching on and off remind you of? How would the tank light turning on and off be worse than natural light? What feeling does the author attach to the light switching on and off?
READ AND DISCUSS SPREAD 5 (Pg 9–10)	 What are the children doing in the illustration? In the text? Can you tell the story of "The Frog and the Prince? What new problem(s) does Rana have? 	• What does it mean in the text: "like he was hers forever for whatever She could think?" Does Rana like this idea?	 On the previous spread, did you predict this would happen to Rana? Can you predict what might solve all of Rana's problems? 	 What does Rana consider his whole name to be? What does She consider Rana's whole name to be? Explain why Rana doesn't like being called "Eclipso." 	 Should kids dress creatures in doll clothes? Why or why not? What can you explain about the importance of a name? How are the names "eclipse," "solar eclipse," and "total solar eclipse" different? 	 What is the purpose of the Total Eclipse Countdown? How are the children keeping track of the countdown? Could they do this math?

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READ AND DISCUSS SPREAD 6 (Pg 11-12)	 Describe the illustration; is She happy? Is Rana happy? Why do you think She is unhappy? Why do you think Rana is unhappy? 	 Predict what would make Rana happy. Predict what would make She happy? How might they both be happy? 	 What do you think She wants Rana to do? Does Rana want to make his sound? Why? Can they both be happy? How? 	 In your opinion, whose happiness is the most important? Why? List She's problems. List Rana's problems. How could they solve the conflicts? 	 Who could She talk to about her problems? Who can Rana talk to about his problems? Do you think She understands Rana's problem? Does she care about Rana? Explain. 	 Why does She need Rana to make his sound? Explain. The Countdown table shows only 2 days away until the total solar eclipse. How could She run an eclipse night noise experiment with a frog that makes no noise?
READ AND Discuss SPREAD 7 (Pg 13-14)	 List the new information the text of the story gives us. List the extra information the illustration gives us. 	• The illustration shows part of the phases of the Moon across the top of the spread. Find the other places in the book that show this. What do the phases of the Moon have to do with eclipses?	 What do phases of the Moon have to do with a total solar eclipse? Where in the book can you p find the answers to that question? 	 Where in the book can you find the teacher's name? What in the illustration shows how busy the teacher is? What is the teacher's advice to She? Is her advice helpful? Why or why not? 	 Is the teacher's advice to "write your notes with accuracy" enough help for She's problem? Why or why not? Remember to ask this question again at the end of the story! 	 The Countdown table shows this is the last day before the eclipse. Do we know what day of the week it is? What day of the week are the reports due? What important advice is written on the chalkboard?
READ AND DISCUSS SPREAD 8 (Pg 15–16)	 Check the countdown table. How many days until the total eclipse of the Sun? Describe what She is doing. Describe what Rana is doing. List the items the children have with them. 	 Did she just FORGET Rana? Why might we think so? What grade would She get if She didn't do her experiment? Is Rana showing signs of actually CARING about She? Explain using the text and the illustration. 	Have you ever been sad but then something really great happens and you realize you are suddenly excited? Do you think Rana might be slightly excited? How can you tell? REMEN	 Can a frog get excited? What else could Rana's expression mean? Can you predict what will happen next? 	 What, if any, eclipse information has been clearly presented to you in this story so far? Explain. Is She doing her best on her Night Noise Experiment? Explain. Predict, yes or no: will She get an 'A'? Explain. 	 Sumarize this spread from She's viewpoint. From Rana's. Which viewpoint do you think is most important? Explain What setting is more important: the bog or She's neighborhood? Why? Has the story reached its climax yet?
READ AND DISCUSS SPREAD 9 (Pg 17–18)	 List the sudden changes shown in the illustration. List the changes mentioned in the text. Did the illustration or text have more changes? 	 Who is shouting "ECLIPS00000!"? What does the the daytime sky turning "less than bright" indicate? 	 What about this part of her experiment do you think She would write accurately in her notes? 	 Explain She's new problems. Does Rana have new problems? Explain 	 What do you understand about Rana and "night noise" at this point in the story? Predict what will happen next. 	 How is She's experiment going? Is Rana better off out of the cage? Explain.

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READ AND DISCUSS SPREAD 10 (Pg 19–20)	 What is the blue circle? What is the pointy yellow shape? What is happening? 	 Describe the illustration. How has the style of illustration changed? How does this style fit what is happening? Has the pace of the story changed? How? How do you know? Is the change appropriate? 	 What has changed about the Countdown table? When did this change happen? How far along is the eclipse? Explain from the table information. 	 Why is the start of the eclipse causing dogs to bark? Would you make an entry in your journal about a dog barking? Why? Why not? 	 List the reasons why total solar eclipse day is exciting. How is She's experiment going so far? Explain? Predict what grade She will get. Explain your answer. 	 Who is the most important character now? Do you think the total eclipse of the Sun has just "eclipsed" everything else going on in the story? Explain.
READ AND DISCUSS SPREAD 11 (Pg 21–22)	 Rana made a sound! List some reasons why this is important to Rana. To She. 	 How many frogs do you think it takes to say "Rrrr" "Aaaa" "Naa"? Explain. 	 Both the story's text and illustrations tell about several new things that are happening. What are they? Which is the most important new thing? Why? 	 How far along is the eclipse now? How is She's experiment going? Explain. Is Rana happy? Explain. 	• List the sounds being made on this page in both the text and the illustration. In your opinion, which is most important? Why? Which are night noises?	 Has the story reached its climax yet? What do you predict Rana's bog friends will do, if anything?
READ AND DISCUSS SPREAD 12 (Pg 23–24)	 What kinds of creatures are shown? Where are they coming from? Where are they going? What are they planning to do there? What word in the text tells you this? 	 Describe this third setting shown in the illustration and why it is important to the story. Describe the solar eclipse so far. 	 Is there time for the bog creatures to help Rana? Even if they get there in time, what could stop them? Make a prediction! 	 What town is the bog near? In what town is She's neighborhood and school? List the information the buildings and signs give about Chester, Illinois. 	 How does this spread change the story? Do you spot a major source of danger to the creatures on the road? Predict what will happen next. 	 Has the story reached a climax yet? Explain. How has the Details table changed now? Using logic and math and the details table, can you predict how long the creatures have before total darkness?
READ AND DISCUSS SPREAD 13 (Pg 25–26)	 Why does the illustration show some creatures free and others in cages and jars? If you were there with Rana, what do you think you would hear? Why did the author change the text to a fast-paced style? 	 How has the rhyming pattern and cadence of the text changed. How does the new style of rhyme change the feel of the story? How does the illustration work in a similar way to the text? 	 Is there "night noise"? Explain. Is Rana making night noise? At what stage is the eclipse? Read the text together. Can you add drama to the story by how your read it? How important is the "beat" to dramatic, entertaining reading? 	 How has the Details table changed now? Who is still looking for Rana? How do you know? Read the text out loud in the most intense way you can. Try it again. 	 Why hasn't She found Rana? Why doesn't She have on her eclipse safety glasses? Challenge your classmates to a dramatic reading contest. Vote on who reads this text with the most drama. 	Do you think this is the climax of the story? There are still some pages left. Make a prediction about what will happen next.

CONTINUEU UN NEXT Page

	LEV. 1: REMEMBERING	LEV. 2: UNDERSTANDING	LEV. 3: APPLYING	LEV. 4: ANALYZING	LEV. 5: EVALUATING	LEV. 6: CREATING
BLOOM'S TAXONOMY Question stems criteria BY LEVEL	 Learn specific information: 5 Ws; how; name; list; label; locate; match; select; underline 	Understand meaning of basics: • Verbs form basis of questions: explain; interpret; outline; discuss; translate; restate; describe; identify; which; summarize	Demonstrate grasp by solving problems; creating projects: • How would you demonstrate, present, change, modify CREA	Find patterns in basics to actively use what has been learned for another purpose: • How can you; what can you infer; what ideas would validate; how would you explaingiven; what? Analyze; Identify; Examine; Investigate	 Make judgments combining learned informations and own insights: Evaluate accuracy; find the errors in a problem; select the most appropriate action and justify; decide on a complex plan using factual guidance; evaluate and justify your answer; debate pros and cons; judge the importance; 	 Given specific learned information, parameters, research, own unique thoughts and ideas, etc., create new products, ideas, theories: What alternatives could you suggest? How could what exists be made more effective? What is the best plan to achieve this specific goal? Given this need, what could be invented?
READ AND DISCUSS SPREAD 14 (Pg 27–28)	 Describe what is happening on this page in the illustration. Describe what is happening in the story text. How many different sounds can you count in the illustration? What animal says "whoooo"? 	 Translate what you think the frogs are saying: "Upp-tooo" "Deee-Toppp," "Rrrrr" "Aaaa" "NAA!" 	 How NOISY is it? What word in the text tells you? What has changed in the Details table? Explain why the text refers to this as a "darky, fakey night." 	 Have you ever heard night noises? Would this be the climax of the story? Can you find "Waa-UNG" in the illustration? 	 Do you like this way of illustrating "night noise"? Why? Can you think of a different way to illustrate it? How do the creaures know to make night noises during an eclipse? Read pages 3-4 again. 	 Are there any other ways you can think of to show "night noise" in an illustration? Do you think this spread is the story's climax? If not, make another prediction about what will happen next.
READ AND Discuss SPREAD 15 (Pg 29–30)	 How did the rhythm change? Does this add drama like it did on pages pages 25-26? Describe what is happening in the illustration on this page. List the two sources of light in this illustration. 	 Explain the changes to the ryming rythm and why the author may have made this change. Explain Rana's full name as it appears in the title of the book. Explain how the eclipse table has changed. 	 What are the key words in the text? How do you know? Which of these words will this make Rana most happy? Why? Explain from the text how we know that all of the bog creatures are free now. 	 Is She happy? Why? What does She and the other children give to Rana and the bog creatures? Where does She want the creatures to go when she says "Go Home, everyone! Eclipso, Go Home? Is Rana happy? What happened that solved both She's and Rana's problems? 	 Look carefully at the Details table. All the eclipse information is now complete. How could we get this kind of detailed information? Did the children make these eclipse time notes or get them from another source? Why do you think so? What kind of skills would it take to be able to figure out all this information? 	 Is this the climax of the story? Explain why you think so. This is not the end of the story. Predict what the last spread will tell us. Do you know the solutions to all the problems. If you wrote notes with accuracy, find your list of problems to check. What don't you know yet?
READ AND Discuss SPREAD 16 (Pg 31–32)	 Compare this illustration with the illustration on pages 2-3. What is the same? What is different? Are the creatures all happy to be back to their old patterns? Would you be happy to be back in the bog if you were a bog creature? Explain. 	 Do you think Rana is glad to be back in the bog? List the reasons. Based on the story's text, why will She and her friends never forget the day of the total solar eclipse? List all the reasons why. 	 What was "less than FIVE minutes"? Was this a surprise to you? Explain Go back and count how many days were the children working on their experiments. Was the total solar eclipse an experience that was worth all their time? Why or why not? 	 List all the things you learned about a total solar eclipse from the story text and illustrations What is the most surprising thing you learned? The most important thing? What questions about eclipses do you still have? Looked at pages 33-34 in the book to try to find answers. 	 Was She's teacher's advice enough? Explain how you know? Who do you think is the main character of the story after all? Why? What parts of the story did you like best? Are there parts of the story you would change? How? 	 Would you like to know more about total solar eclipses? List as many questions about total solar eclipses as you can. Can you find answers for any of your questions in the factual section of this book?

SECTION 3: FICTIONAL AND FACTUAL CONTENT QUESTIONS/ACTIVITIES BY SUBJECT AND GRADE K-5

Section 3: FICTIONAL AND FACTUAL CONTENT QUESTIONS/ACTIVITIES BY SUBJECT AND GRADE K-5 - READING

	KINDERGARTEN	FIRST GRADE	SECOND GRADE
READING STANDARDS	 FACT OR FICTION: With prompting/support can: Recognize types of texts Read common sight words Ask/answer key detail questions in the text Describe relationships between illustrations/graphics and text Actively engage in group reading activities FICTION: With prompting/support can: Identify characters, setting, plot of the book Find rhyming words FACT: Identify main topic and key details in text Ask about unknown words 	 FACT OR FICTION: Ask and answer questions about key details in a text. Retell content, including key details Describe the connections between individuals/ events/ideas/ information FICTION: Retell stories; including key details; demonstrate understanding of central message/lesson. Use illustrations and details in a story to describe characters, setting, or events. Identify words and phrases that suggest feelings/ appeal to the senses. FACT: Know and use various text features (e.g., headings, tables of contents, glossaries, electronic menus, icons) to locate key facts or information 	 FACT OR FICTION: Ask and answer the 5 Ws for a text. Identify the main topic of a multiparagraph text as well as the focus of specific paragraphs within the text. FICTION: Retell content, including key details; determine the central message/lesson/ moral Describe how words and phrases (regular beats, alliteration, rhymes, repeated lines) supply rhythm and meaning in a story/poem. Use information gained from the illustrations and words in a print or digital text to demonstrate understanding of its characters, setting, or plot Acknowledge differences in the points of view of characters, including by speaking in a different voice for each character when reading dialogue aloud. FACT: Know and use various text features (e.g., headings, tables of contents, glossaries, electronic menus, icons) to locate key facts or information Identify the main purpose of a text, including what the author wants to answer, explain, or describe. Explain how specific images (e.g., a diagram showing how a machine works) contribute to and clarify a text.
TO DO:	 FICTION: with help: Read and Rhyme: Which words rhyme? Read a stanza from the story asking students to raise a hand when they hear a rhyme. Make a list the rhyming words. Look for letter patterns Read the list of rhyming words together. FACT: with help Solar eclipses happen when the Sun, Moon, and Earth line up. Look at the illustrations and graphics in the book that show the total solar eclipse as it is happening Have students find sight words in the graphics. Draw an eclipse showing the Sun, Moon, and Earth draw a total solar eclipse. Write "Moon" by your Moon and "Sun" by your Sun and "Earth" by your Earth. Explain what is happening. MBC Rhyming: Write "Moon" on the chalkboard. Read "Moon" out loud. Erase the "M" leaving only the "oon." One at a time, try the sound of each letter of the alphabet next to "oon." Did any other letters make a word? A rhyme? Make a list. Count how many words/rhymes you made.* 	 FICTION: Discuss the key details of the story. Use the illustrations and text to describe characters. Look at each illustration of Rana and describe how he is feeling. From the illustration, are other characters feeling the same as Rana or different? How would you feel if you were Rana? What words or groups of words tell about the same feelings? FACT: Look at the graphics in the non-fiction text. What is a total solar eclipse? Lunar eclipse? What 3 conditions are needed to see a total solar eclipse? ACTIVITY: Using the words "moon," "Sun," and "Earth," try to write your own poem about a total solar eclipse and illustrate it. Using what you read and see on pages 33-34, make your own fact graphic of a total solar eclipse and label all the parts of your drawing. 	 FICTION: Discuss the 5 Ws for the story (who, what, when, where, why) How was the rhyming story's way of describing a total solar eclipse different from the factual articles' descriptions? Which type of text did the best job describing a total solar eclipse? Explain by pointing out examples in the book. Which type of text did the best job of describing what a total solar eclipse is like for humans? For frogs? For other creatures? Support your answer with examples from the book. FACT: Discuss the 5 Ws for the factual text. Would there be a "Who" for the factual text? Could you use the name of the man mentioned in the credit for the Saros Cycle exhibit? What 3 conditions must be true to see a total solar eclipse ACTIVITY: Contest! Have each player list key details of the story or from the main eclipse graphic. Let them use the book.

*A list: boon, coon, doon, foon, goon, hoon, joon, koon, loon, moon, noon, oon, poon, roon, soon, toon, voon, woon, yoon, zoon; a reach and silly, but each is considered a word!



Section 3: FICTIONAL AND FACTUAL CONTENT QUESTIONS/ACTIVITIES BY SUBJECT AND GRADE K-5 — READING, continued

	THIRD GRADE	FOURTH GRADE	FIFTH GRADE
READING STANDARDS	 FACT OR FICTION: Ask/answer questions to demonstrate understanding, referring explicitly to the text as the basis for the answers. Explain how specific aspects of a text's illustrations contribute to what is conveyed by the words in a story FICTION: Determine the meaning of words and phrases as they are used in a text, distinguishing literal from nonliteral language. Recount stories, determine the central message, lesson, or moral and explain how it is conveyed through key details in the text. Describe characters in a story (e.g., their traits, motivations, or feelings) and explain how their actions contribute to the sequence of events FACT: Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur) Ask about unknown words Use text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information relevant to a given topic efficiently. 	 FACT OR FICTION: Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text. FICTION: Determine a theme of a story, drama, or poem from details in the text; summarize the text. Describe in depth a character, setting, or event in a story or drama, drawing on specific details in the text (e.g., a character's thoughts, words, or actions). Compare and contrast the point of view from which different stories are narrated, including the difference between first-and third-person narrations. FACT: Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears. 	 FACT OR FICTION: Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text. FICTION: Compare and contrast two or more characters, settings, or events in a story or drama, drawing on specific details in the text (e.g., how characters interact). Explain how a series of chapters, scenes, or stanzas fits together to provide the overall structure of a particular story, drama, or poem. Describe how a narrator's or speaker's point of view influences how events are described. Analyze how visual elements contribute to the meaning, tone, or beauty of a text (e.g. presentation of fiction, poem). FACT: Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s). Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.
TO DO:	 FICTION: with help: Using the book's content, show that the total solar eclipse was important to the story. Count the number of illustrations that included something about the solar eclipse. Count the number of pages in which the text of the story referred in some way to the solar eclipse. Did the illustrations have more pages about the solar eclipse or did the text? Retell the story in your own words using the total solar eclipse as a major part of the story. Why did the eclipse make Rana say WaaUNG? Why did the eclipse help She get an 'A'? Explain using the illustrations and the text. FACT: with help How did your understanding of solar eclipses change after you studied the graphics on pages 33-34? Did you notice if the graphics worked together? Explain. ACTIVITY: Use the 5 Ws and the graphics on pages 33-34 to explain the science of solar eclipses. Write a solar eclipse story of your own using information you learned from reading pages 33-34. Illustrate your story. 	 FICTION: From Rana's point of view, who were the most important characters? What was the best setting? Where was he happiest? From She's view, who were the most important characters? What was the best setting? Where was She happiest? Of what importance was the total solar eclipse to Rana? Of what importance was it to She? Explain FACT: Are eclipses important to scientists? How do you know? Look through the book and find clues and explicit information to support your claim. From your point of view, are eclipses important? In what way? ACTIVITY: Wave students present to the class 3 things they learned about solar eclipses from a specific exhibit of their choice on pages 33-34. 	 FICTION: Using exact examples from the story, what was the main theme? What were the problems? The conflict? compare and contrast Rana's view of the solar eclipse with She's point of view. How was the eclipse important to Rana? In what ways was the eclipse important to She? When and how did their two viewpoints converge into an agreement—a single viewpoint? Use the illustrations and text of the story to argue your statements. FACT: Explain why the Exhibit D table on page 34 helps a reader learn the key details of Graphic D. Can you explain how other graphics on pages 33-34 work together to explain aspects of eclipses? ACTIVITY: Research eclipse seasons online using NASA eclipse websites or other eclipse websites to find out when the next solar eclipse season will be and when and where the next lunar and solar eclipses will be. On a map, show where on Earth the next eclipses will be viewable.

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Section 3: FICTIONAL AND FACTUAL CONTENT QUESTIONS/ACTIVITIES BY SUBJECT AND GRADE K-5 — WRITING

	KINDERGARTEN	FIRST GRADE	SECOND GRADE
WRITING Standards	 Use a combination of drawing, dictating, and writing to compose opinion pieces in which they tell a reader the topic or the name of the book they are writing about and state an opinion or preference about the topic or book. With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. 	 Write opinion pieces in which they introduce the topic or name the book they are writing about, state an opinion, supply a reason for the opinion, and provide some sense of closure Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure Write narratives in which they recount two or more appropriately sequenced events, include some details regarding what happened, use temporal words to signal event order, and provide some sense of closure. With guidance and support from adults, focus on a topic, respond to questions and suggestions from peers, and add details to strengthen writing as needed. 	 Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words (e.g., because, and, also) to connect opinion and reasons, and provide a concluding statement or section. Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section. Write narratives in which they recount a well elaborated event or short sequence of events, include details to describe actions, thoughts, and feelings, use temporal words to signal event order, and provide a sense of closure.
TO DO:	 FICTION: Make your version of the book cover—On a sheet of paper: Copy the title of the book Draw an illustration of Rana and an eclipse Show your cover and explain what it shows FACT: Play "Find and Write": Have all students turn to pages 13-14 in their book Slowly read the text with the students following along in their own books, ask students to raise their hands when they hear or see a sight word. Stop reading and let every student write the word on a sheet of paper. Together, count: how many different sight words did you all find? Have each student write that number on their paper. How many of each sight word did you find? Have each student write that number on their paper. 	 FICTION: Why was it good that She captured Rana for her night noise experiment? Why was it bad? Discuss all ideas with your class. Have each student write their opinion in one sentence Have each student write two reasons in support of their opinion Have each student write a conclusion sentence that restates his or her opinion. Read your written opinion to your class; listen to their thoughts about what you wrote. Listen to other's written opinions and give your thoughts about what they wrote. FACT: Examine the graphics on pages 33-34 with your class. As a class, choose an exhibit and write one or two details they learned from the information. Or, write down information that is confusing to students with three questions they have about it. Have each student write a conclusion sentence telling why the class chose the exhibit. 	 FICTION: Write your opinion about the title of the book: Is "Rana Eclipso Rising—A Total Eclipse of the Sun Story" a good title? Why or why not? Make sure you write two reasons for your opinion include connecting words like "because" and "also" Think of a different title you would suggest that includes the word "eclipse" and write it down. Write a conclusion sentence that restates your original opinion. Write a poem you think the bog chorus on pages 3-4 would like to sing. FACT: Examine the graphics on pages 33-34 with your class. Either: have each student choose an exhibit and write three details they learned from the information shown. Or: have each student choose an exhibit and write three questions they would ask. Then: have each student write an opening statement about the exhibit they chose, and at the end add a conclusion sentence telling why he or she chose their exhibit.



Section 3: FICTIONAL AND FACTUAL CONTENT QUESTIONS/ACTIVITIES BY SUBJECT AND GRADE K-5 --- WRITING, continued

	THIRD GRADE	FOURTH GRADE	FIFTH GRADE
WRITING	 3rd—Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences. a Establish a situation and introduce a narrator and/or characters; organize an event sequence that unfolds naturally. b Use dialogue and descriptions of actions, thoughts, and feelings to develop experiences and events or show the response of characters to situations. c Use temporal words and phrases to signal event order. d Provide a sense of closure. Write informative/explanatory texts to examine a topic and convey ideas and information clearly. a Introduce a topic and group related information together; include illustrations when useful to aiding comprehension. b Develop the topic with facts, definitions, and details. c Use linking words and phrases (e.g., also, another, and, more, but) to connect ideas within categories of information. d Provide a concluding statement or section 	 4th—Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences. a Orient the reader by establishing a situation and introducing a narrator and/or characters; organize an event sequence that unfolds naturally. b Use dialogue and description to develop experiences and events or show the responses of characters to situations. c Use a variety of transitional words and phrases to manage the sequence of events d Use concrete words and phrases and sensory details to convey experiences and events precisely. e. Provide a conclusion that follows from the narrated experiences or events Write informative/explanatory texts to examine a topic and convey ideas and information clearly. a Introduce a topic clearly and group related information in paragraphs and sections; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension. b Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic. c Link ideas within categories of information using words and phrases (e.g., another, for example, also, because). d Use precise language and domain-specific vocabulary to inform about or explain the topic. 	 5th—Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences. a Orient the reader by establishing a situation and introducing a narrator and/or characters; organize an event sequence that unfolds naturally. b Use narrative techniques, such as dialogue, description, and pacing, to develop experiences and events or show the responses of characters to situations. c Use a variety of transitional words, phrases, and clauses to manage the sequence of events. d Use concrete words and phrases and sensory details to convey experiences and events precisely e Provide a conclusion that follows from the narrated experiences or events. f Provide a conclusion that follows from the narrated experiences or events. write informative/explanatory texts to examine a topic and convey ideas and information clearly. a Introduce a topic clearly, provide a general observation and focus, and group related information logically; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension. b Develop the topic with facts, definitions, concrete details, quotations, or other information and examples on the topic. c Link ideas within and across categories of information using words, phrases, and clauses d Use precise language and domain-specific vocabulary to inform about or explain the topic. e Provide a concluding statement.
TO DO:	 FICTION: Organize an eclipse viewing party. Write an invitation that explains the location, date, time, theme and requests a response by a date you set. Write an itinerary that lists major points in the event and what time they will happen (e.g., eclipse start, eclipse end, games, snacks, etc.) Write a menu (see page 36 for eclipse snack ideas) Write a guest list with a column for responses Now hand out your invitations and throw your party! FACT: Run the perspective experiment on page 36 Write a one page report; include an introduction, details and a conclusion. 	 FICTION: Have students use the story to create She's journal entries for her night noise experiment. Write a journal including made up locations, dates, times, hypotheses, and conclusions (see the night noise experiment on page 35 for ideas). Use your journal to write a 1 page "science report" to summarize your information. Give your report a title and a conclusion about the outcome of your experiment: did night noises happen at the time of totality? Did your creature make its noise? Do you conclude that a total solar eclipse can cause an animal to act like it normally would at real nighttime? FACT: Run the night noise experiment described on page 35 of the book for a real total solar eclipse 	 FICTION: Write a rhyming poem about a total solar eclipse using the book as inspiration FACT: Do the Research NASA website project found on page 36 of the book

Section 3: FICTIONAL AND FACTUAL CONTENT QUESTIONS/ACTIVITIES BY SUBJECT AND GRADE K-5 — SOCIAL SCIENCES

	KINDERGARTEN	FIRST GRADE	SECOND GRADE
SOCIAL SCIENCES STANDARDS ALL GRADES: K–5	T - Developing (The inquiry standards include the following areas for all grades Developing Questions and Planning Inquiries - Constructing Essential Questions - Constructing Supporting Questions - Determining Helpful Sources Evaluating Sources and Using Evidence - Gathering and Evaluating Sources Claims and Using Evidence Communicating Conclusions and Taking - Communicating Conclusions - Critiquing Conclusions - Taking Informed Action	Informed Action
TO DO:	 K— My Social World See above Discuss the 3 social worlds in the story the bog the neighborhood school Traw yourself in your favorite social world listed above with an eclipse happening in it. 	1st—Living, Learning, and Working Together - See above • What does it mean to "work together"? • Were there times in the story when characters worked together? Did not work together? •among bog creatures among She and Rana •among She and her friends among humans and bog creatures • Write a finished sentence for each of the following sentence starts: - Rana worked with the bog to	 2nd—Families, Neighborhoods, and Communities See above List the similarities or differences within the following groups in the story. How were bog creatures the same? How were She and her friends alike? In what ways was She different from Rana? What similarities can you list between the humans' neighborhood and the creatures' bog? Differences? List the ways the humans and bog creatures were similar in the story. Explain each similarity on your list.



Section 3: FICTIONAL AND FACTUAL CONTENT QUESTIONS/ACTIVITIES BY SUBJECT AND GRADE K-5 — SOCIAL SCIENCES, continued

	THIRD GRADE	FOURTH GRADE	FIFTH GRADE
SOCIAL SCIENCES STANDARDS ALL GRADES: K–5	T - Developing (The inquiry standards include the following areas for all grades Developing Questions and Planning Inquiries - Constructing Essential Questions - Constructing Supporting Questions - Determining Helpful Sources Evaluating Sources and Using Evidence - Gathering and Evaluating Sources Claims and Using Evidence Communicating Conclusions and Taking - Communicating Conclusions - Critiquing Conclusions - Taking Informed Action	: Informed Action
	3rd—Communities Near and Far - See above	4th—Our State, Our Nation - See above	5th—Our Nation, Our World - See above
TO DO:	 From Rana's point of view, who's community was near? Who's was far. From She's point of view who's community was near? Who's was far. Were various characters able to communicate? Explain What happens when one character cannot understand another character? Use an example from the story. At what time in the story were both the children and the creatures happy? Why? Wite about the problems a human might have living in a bog. Then write about the problems a frog might have living in a town neighborhood. Who's problems seem most difficult? Why? 	 If "State" refers to a government that makes rules for a group, do you think the bog could be viewed as a "State" for frogs? Crickets? Toads? Worms? What kinds of rules might each state have? If "Nation" refers to a government of smaller state governments, could you apply the term "Nation" to the Bog including the "states" of Frogs, Crickets, Toads, and Worms? Can you find evidence in the story that these States could work together in a Nation? Support your ideas using examples from the book's illustrations and text. Imagine that in the story there are two nations: the "Nation of Bog" and the "Nation of She." Write a list of the rules you might find in the "Nation of Bog" and those you might find in the "Nation of She." Use clues and content from the story to develop your ideas. 	 Can you apply the term "Nation" to the groups of characters in the story? Explain. Like the "nation" of She; the "nation" of Bog Could those "Nations" you identified above, together be considered a "World"? Explain. Regarding the total solar eclipse event, was there a time in the story when the "Nation of Bog" and the "Nation of She" were in conflict with each other? Explain Was there a time when the same nation groups of characters joined forces to end the conflict in their "World"? Explain. Write your answers to the above questions giving explicit examples from the story. In a clear conclusion, summarize your thoughts and ideas.



Section 3: FICTIONAL AND FACTUAL CONTENT QUESTIONS/ACTIVITIES BY SUBJECT AND GRADE K-5 — SCIENCE

	KINDERGARTEN	FIRST GRADE	SECOND GRADE
GENERAL Science Standards	Science standards for all grades include: Progressive development in understanding of the 4 science disciplines - Physical Sciences - Life Sciences - Earth and Space Sciences - Applications of Science Including Engineering, Technology Progressive development of proficiency in: - Recognizing patterns - Formulating questions about the world around them - Gathering, describing, and using information aout the natural and designed world(s) Progressive skill development to: - Explain complex phenomena in the 4 disciplines		lines ed world(s)
	 Earth's systems: Patterns, Systems and System Models Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. Systems in the natural and designed world have parts that work together 	 Earth's place in the universe Patterns of the motion of the sun, moon, and stars in the sky can be observed, described, and predicted. Seasonal patterns of sunrise and sunset can be observed, described, and predicted. Science assumes natural events happen today as they happened in the past. (1-ESS1-1) Many events are repeated 	 Earth's place in the universe Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe Things may change slowly or rapidly. Look for patterns in the eclipse exhibits on pages 33-34: Examine the Lunar Phases graphic across the top of the pages. How many days does it take the Moon to go through all of its phases? That is a pattern!
TO DO:	 With a flashlight and objects demonstrate shadows: big, small, still, and moving Shine the flashlight on one object so that it "casts" a shadow on another object. Align another object behind the first without moving the flashlight. Is the second object now in shadow? How many objects can be aligned in the with the light of the flashlight? Now move the flashlight. How many objects at one time can be totally lit by the flashlight? Make a total solar eclipse: Use an unfolded map on the floor as the "Earth" Use a flashlight beam as the "Sun" (keep room lights off) Hold a small ball still as the "Moon" between the flashlight beam and "Earth" to cast a shadow on "Earth" Outline the Moon's still shadow on the map Now slowly move the "Moon" and outline its moving shadow's path as it moves across the "Earth" Write down any observations Try it again 	 In a total solar eclipse: The Moon in its New Moon Phase can sometimes block all the light of the Sun from some places on Earth. Even though it is invisible, when a New Moon passes above the Earth and is aligned with the Sun its shadow moves across the surface of the Earth causing a total solar eclipse in its path. Since scientists know where the Moon, Sun, and Earth are going to be, they can predict when, where, and in what path a total solar eclipse will occur. Make a total solar eclipse: Use an unfolded map on the floor as the "Earth" Use a flashlight beam as the "Sun" (keep room lights off) Hold a small ball still as the "Moon" between the flashlight beam and "Earth" to cast a shadow on "Earth" Outline the Moon's still shadow on the map Now slowly move the "Moon" and outline its moving shadow's path as it moves across the "Earth" Write down any observations 	 Examine Exhibit D to see the alignment pattern of the Sun, Moon, and Earth that must happen to make a total solar eclipse. Notice a lunar eclipse happens when the moon is on the back side of Earth and Earth's shadow blocks the sunlight from the moon. Since scientists know where the Moon, Sun, and Earth are going to be, they can predict when, where, and in what path a total solar eclipse will occur. Make a total solar eclipse: Use an unfolded map on the floor as the "Earth" Use a flashlight beam as the "Sun" (keep room lights off) Hold a small ball still as the "Moon" between the flashlight beam and "Earth" to cast a shadow on "Earth" Outline the Moon's still shadow on the map Now slowly move the "Moon" and outline its moving shadow's path as it moves across the "Earth" Write down any observations

Section 3: FICTIONAL AND FACTUAL CONTENT QUESTIONS/ACTIVITIES BY SUBJECT AND GRADE K-5 —SCIENCE, continued

	THIRD GRADE	FOURTH GRADE	FIFTH GRADE
GENERAL SCIENCE STANDARDS	Science standards for all grades include: Progressive development in understanding of the 4 science disciplines - Physical Sciences - Life Sciences - Earth and Space Sciences - Applications of Science Including Engineering, Technology Progressive development of proficiency in: - Recognizing patterns - Formulating questions about the world around them - Gathering, describing, and using information aout the natural and designed world(s) Progressive skill development to: - Explain complex phenomena in the 4 disciplines		
	 Earth's systems: Patterns, Systems and System Models Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. Systems in the natural and designed world have parts that work together 	 Earth's Place in the Universe, Patterns Patterns can be evidence to support an explanation. Science assumes consistent patterns in natural systems Identify the evidence that supports particular points in an explanation. 	 Earth's place in the universe: Earth and the Solar System The orbits of Earth and the Moon, together with the rotation of Earth cause observable patterns. These include day and night; daily changes in the length and direction of shadows; and different positions of the Sun, Moon, and stars at different times of the day, month, and year.
TO DO:	 How would a scientist discover information about eclipses? Or use new information about solar eclipses to prove another science experiment? Read and discuss the last bullet point in the "Solar Eclipses Mini Histories" section on page 37 of the book. Work to understand the exhibits on pages 33–34 and then use the exhibits to answer the following: What exactly is an eclipse? How many solar and lunar eclipses happen each year? When do eclipses happen? Are there eclipse conditions—eclipses can not happen unless certain conditions are true? Motion: how does the motion of the Earth and Moon affect eclipses? 	 Examine the factual graphics on pages 33-34 closely to find and explain the following patterns: Explain the phases of the Moon across the top of the pages the total solar eclipse alignment pattern of the Sun, Moon, and Earth. Explain what lunar nodes are; why do they move? How many eclipse seasons are there in a year? How many days does an eclipse season last? How many solar eclipses happen during each eclipse season? How many lunar eclipses happen? Do total solar eclipse paths ever have the same shape? (Hint: see Exhibit C Saros Series) Using Exhibit D, can you explain why at some points in the Moon's orbit is the Moon is closer to Earth (the orbit's Perigee); and why at other points in its orbit is the Moon Further from Earth (the orbit's Apogee)? Using exhibit A, what types of solar eclipses can happen at the lunar orbit's Perigee? Apogee? 	 Examine the factual graphics on pages 33-34 closely to find and explain the following patterns: Explain the phases of the Moon across the top of the pages the total solar eclipse alignment pattern of the Sun, Moon, and Earth. Explain what lunar nodes are; why do they move? How many eclipse seasons are there in a year? How many days does an eclipse season last? How many solar eclipses happen during each eclipse season? How many lunar eclipses happen? Do total solar eclipse paths ever have the same shape? (Hint: see Exhibit C Saros Series) Using Exhibit D, can you explain why at some points in the Moon's orbit is the Moon is closer to Earth (the orbit's Perigee); and why at other points in its orbit is the Moon Further from Earth (the orbit's Apogee)? Using exhibit A, what types of solar eclipses can happen at the lunar orbit's Perigee? Apogee?



Section 3: FICTIONAL AND FACTUAL CONTENT OUESTIONS/ACTIVITIES BY SUBJECT AND GRADE K-5 — MATH

		(INDERGARTEN	FIRST GRADE	SECOND GRADE
GEN Stand	ERAL MATH ARDS ARDS ARDS ARDS ARDS ARDS ARDS ARDS	 2 Shapes: 2 Dimensional shapes 3 Dimensional shapes Shapes and spacial reasoning to model objects and to construct more complex shapes 	 Addition and subtraction strategies within 20 Understanding whole number relationships and place value—grouping in tens and ones Understanding linear measurement Geometric shapes: attributes; composing and decomposing 	 Base-ten notation Fluency with addition and subtraction Standard units of measure Describing and analyzing shapes
	 Counting Pages 1–2: At the top: how In the illustration, he "Embryos?" "Polliw tadpoles"? "Young a In the illustration, he Whow many Stee Counting Pages 3–4: How many frogs ca How many frogs ca How many groups are How many Suns are How many logs are Comparing Pages 5– How many frogs ca Are there more nets How many frogs ca Are there more nets How many people a What number children? What number children? What number repre Representing and co What number repre illustration, includin Count and writ edown the Which has more: th Representing and co Can you find number to the illustration and information in Table Can you find number to the illustration in the text 	w many Moon phases can you count? ow many "eggs" can you count? ogs?" "2-Legged tadpoles"? 4-Legged adults"? "Eclipsos"? ow many Moons are there? uns are there? n you count? can you count? e there? 6: are in this illustration? s than children? n you see? s than frogs? 7–8: are in this illustration? r respresents the people who are obser represents the pumber of adults? sents the number of crickets (9)? unting Pages 9–10: sents how many eyes are shown in this g all creatures? te down the number of the lower case n the illustration, the text, and in the the lower right hand corner (22); Count number of capital "I"s you see (8). e capital "I"s or the lower case "i"s? unting Pages 33–34: ers that are used to represent parts of match them to the same number in the s D? notation that might represent math t?	 Adding Pages 1–2: In the illustration, how many "eggs" can you count? "Embryos?" "Polliwogs?" "2-Legged tadpoles"? 4-Legged tadpoles"? "Young adults"? "Eclipsos"? How many frogs of any age that have no legs are there (20)? How many frogs that have some legs are there (20)? How many frogs that have some legs are there (8)? Counting Pages 3–4: How many frogs can you count (13)? How many crickets can you count (13)? What number represents the number of frogs minus the number of crickets? (13 - 4 = 9) Comparing Pages 5–6: How many children are in this illustration? Are there more nets than children? How many frogs can you see? Are there more nets than frogs? Write an equation that represents that the number of children equals the number of nets. Representing Pages 7–8: What number represents the people who are children? What number represents the number of adults? What number of children plus the number of adults plus the number of crickets. How many creatures are in the illustration? (trick hint: remember to count Rana) Representing and counting Pages 9–10: Count all the creatures' eyes in the illustration by 2s. How many eyes are there? Count all the creatures' eyes in the illustration by 2s. How many eyes are there? Count all the creatures' eyes and the seen? Representing and counting Pages 3–33: Can you find numbers that are used to represent parts of the illustration and match them to the same number in the information in Table D? Count and the then? Count and the then? 	 Analyzing and comparing shapes on Pages 1–2 with those on Pages 7–8: In the illustration on pages 1–2 how would you describe the shapes of all ages of the frogs? In the illustration Counting Pages 3–4: How many frogs can you count (13)? How many crickets can you count (4)? What number represents the number of frogs minus the number of crickets? (13 - 4 = 9) Comparing Pages 5–6: How many children are in this illustration? Are there more nets than children? How many frogs can you see? Are there more nets than frogs? Write an equation that represents that the number of children equals the number of nets. Representing Pages 7–8: What number represents the people who are children? What number represents the people who are children? What number represents the number of adults? Utat number of crickets. How many creatures are in the illustration? (trick hint: remember to count Rana) Representing and counting Pages 9–10: Count all the creatures' eyes in the illustration by 2s. How many eyes are there? Count all the creatures' eyes in the illustration by 2s. How many eyes are there? Count the number of children's fingers that you can see all or part of (8). There are 5 children each with two hands that each have five fingers. Can you figure out how many children's fingers can not be seen? Representing and counting Pages 33–34: In the table on page 34, can you find numbers and numbers with letters that represent illustration parts that match the same number/number with letter in the in Table D? In the table on page 34, can you find numbers and numbers with letters that represent illustration parts that match the same number/number with

continued on next page learning with picture books

Section 3: FICTIONAL AND FACTUAL CONTENT QUESTIONS/ACTIVITIES BY SUBJECT AND GRADE K-5 — MATH, continued

	THIRD GRADE	FOURTH GRADE	FIFTH GRADE
GENERAL MATH STANDARDS	 Multiplication and division within 100 Understanding fractions Understanding the structure of rectangular array and area Describing and analyzing two-dimensional shapes 	 Understanding and fluency with multi-digit multiplication. Developing understanding of dividing to find quotients involving multi-digit dividends Understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers Understanding geometric figures can be analyzed and classified based on their properties: having parallel sides; perpendicular sides; particular angle measures; and symmetry. 	 Developing fluency with addition and subtraction of fractions; understanding multiplication of fractions; limited division of fractions Extending division to 2-digit divisors; integrating decimal fractions into the place value system; Understanding operations with decimals to hundredths; Fluency with whole number and decimal operations Understanding volume.
TO DO: (Career Path: Questions to Research; Ask A professional; Think About)	 What wight a mathematician discover information about eclipses? Of what value are observations in math? Of what value are hypothesis—educated guesses—in math? What in math would be similar to a science experiment? What in math would be similar to a science experiment? What in math would be similar to a science experiment? What in math would a mathematician valuate eclipses? Measurement: Quantity, size, volume, place, speed, etc. Change identification: change frequency/amount, bigger, smaller, part of, rounder, irregular, season, etc. Use of operations tools: addition, subtraction, multiplication, division, etc. to accomplish the above Think like a mathematician, pages 33–34: List eclipse questions that a mathematician might ask: What exactly is an eclipse? What do we already know? How big is the Sun, Earth, Moon? How far away is each from the others? Which moves and In which ways? How fast? Patterns? What math operations that we are familiar with might be used to answer the above questions? What operations that we don't know about might be used to quantify factors like: Motion: how does the motion of the spacial elements affect eclipses? Would scientists like to work with mathematicians? 	 What value are observations in math? What value are observations in math? What value are hypothesis—educated guesses—in math? What in math would be similar to a science experiment? How would a mathematician valuate eclipses? Measurement: Quantity, size, volume, place, speed, etc. Change identification: change frequency/amount, bigger, smaller, part of, rounder, irregular, season, etc. Use of operations tools: addition, subtraction, multiplication, division, etc. to accomplish the above Think like a mathematician, pages 33–34: List eclipse questions that a mathematician might ask: What exactly is an eclipse? What do we already know? How big is the Sun, Earth, Moon? How far away is each from the others? What math operations that we are familiar with might be used to answer the above questions? What operations that we don't know about might be used to quantify factors like: Motion: how does the motion of the spacial elements affect eclipses? Would scientists like to work with mathematicians? 	 What value are observations in math? What value are observations in math? What value are hypothesis—educated guesses—in math? What in math would be similar to a science experiment? What in math would be similar to a science experiment? What in math would a mathematician valuate eclipses? Measurement: Quantity, size, volume, place, speed, etc. Identify change: change frequency/amount, bigger, smaller, part of, rounder, irregular, season, etc. What math operations might they use: (addition, subtraction, multiplication, division, etc). to determine these values Think like a mathematician, pages 33–34: List eclipse questions that a mathematician might ask: What exactly is an eclipse? What do we already know? How far away is each from the others? Whit math operations might be used to answer the above questions? What math operations would a mathmetician use to quantify factors like: Motion: how does the motion of the spacial elements affect eclipses? Can you think of other factors? Why are factors like motion hard to figure out? Do scientists need to work with mathematicians?





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