

Movie-Watching Locusts

- 1 Locusts are some of the most destructive insects on the planet. In the solitary phase, these short-horned grasshoppers are harmless. One locust can't do much damage. This all changes when locusts swarm. Large swarms can consist of billions of insects. Some swarms are so huge that when the locusts take flight, they darken the sky for days. The air roars with the sound of their wings. When they land, they consume everything. They will eat every bit of green in minutes. Nothing is left but bare ground.
- 2 Scientists have studied why locusts swarm. One scientist did something else with these destructive insects. The scientist's name was Dr. Claire Rind, a biologist and a robotics expert. Rind made the locusts watch a movie. She made them watch *Star Wars*.
- 3 Rind wanted to design a collision-avoidance system for cars. She wanted to make cars that wouldn't crash into each other. Rind knew that locusts don't bump into each other, even when there are so many insects that the swarm blocks out the sun. Locusts have simple eyes and brains, and yet they avoid collisions. Rind wanted cars to be able to do what locusts do.
- 4 While the locusts watched *Star Wars*, Rind kept track of what was going on in their eyes and in their brains. She found out that locusts have special neurons that respond to objects moving at them. (A neuron is a special cell that carries messages between the brain and other parts of the body.) *Star Wars* was the perfect movie to have the locusts watch, because it contains several scenes where spaceships seem to fly toward the viewer, away from the viewer, and to the left and right of the viewer.
- 5 Once Rind understood how the locust's neural system worked, she made a robot. It had cameras for eyes, and its inner workings reacted in the same way the locusts' neural system did. Rind sent her robot zooming through an obstacle course. It did hit some obstacles, but the project was off to a great start. Thanks to movie-watching locusts, the robot was able to avoid collisions about nine out of ten times!

Your Name: _____ Partner: _____

Movie-Watching Locusts *(cont.)*

First Silently read "Movie-Watching Locusts." You might see words you do not know and read parts you do not understand. Keep reading! Determine what the story is mainly about.

Then Sum up only paragraphs 2–5 of the story. Write the main idea and most important information. If someone reads your summary, that person should know it is this story that you are writing about, not a different story!

After That Read the story again. Use a pencil to circle or mark words you don't know. Note places that confuse you. Underline the main action or idea of each paragraph.

Next Meet with your partner. Help each other find these new words in the text.

solitary swarm consume collision obstacle

Read the sentences around the words. Think about how they fit in the whole story. Discuss how the author helped you know what the words meant. Then pick one word each. Make sure you each choose a different word. Fill in the blanks.

a. My partner's word: _____

My partner thinks that in this passage the word must mean _____

I agree because in the passage, _____

b. My word: _____

I think that in this passage this word must mean _____

My partner agrees because in the passage, _____

Your Name: _____

Movie-Watching Locusts *(cont.)*

Now

Answer the story questions below.

1. What does Rind want to design? _____

Why? _____

2. Why does the phrase “the air roars with the sound of their wings” help you understand how large a locust swarm can be?

3. Which movie did Rind have locusts watch? _____

Why did Rind choose this movie? _____

Can you think of another movie that would have worked just as well as this one? Name the movie, and explain your answer.

4. Use the information given in the story to answer this question: Is the robot system that Rind made ready to be tested in cars? Why or why not? Defend your answer with evidence from the text.

Your Name: _____

Movie-Watching Locusts *(cont.)*

Then

Reread the entire story once more. Think about how paragraph 1 relates to the rest of the story.

5. What is paragraph 1 mainly about? Sum it up in two or three sentences.

6. Was paragraph 1 necessary for the rest of the passage to make sense? Explain.

Why do you think the author included it? What do you think she hoped that readers would take from it?

7. Imagine you are the one writing the story about locusts watching *Star Wars*. Using information from the story you just read, write the first two lines of the “newer and better” story. Make it exciting. Hook your reader into wanting more!

Learn More

Find out more about locusts by looking in books or online. On the back of this paper, write one paragraph discussing what you have learned. Your paragraph should have at least five facts.

“Flashlights Skyward” (pages 8–11)

Summary: The Leadville 100 is a grueling endurance race. Tarahumara runners from Mexico came to race three times. The first time they lost because they didn’t even know what a flashlight was. They easily won the second and third times.

Vocabulary: a. False; b. True; c. False; d. False; e. True

1. They dropped out before the halfway point. They suffered from culture shock.
2. The race is 100 miles, so it’s 50 miles in and 50 miles out.
3. It takes place deep in the middle of the mountains. It has high mountains, rugged trails, ice and snow, etc.
4. 1st picture: brand-name running shoes; 2nd picture: sandals; They “tore the shoes off their feet and threw them away” at the first check-in station.
5. Information is given about the Leadville Trail 100 Run; information is given about the Tarahumara racing in the Leadville Trail 100 Run.
6. She wanted you to understand what a hard race it was and to picture the Tarahumara failing but then winning so easily.

“Mystery Solved” (pages 12–15)

Summary: Ada and Ethan want to be detectives, and their father advises that they read a lot. They solve two mysteries because of what they learned while reading.

Vocabulary: b. Summer firmly, or insists that the bill is hers; c. The docent is a volunteer guide, and volunteers aren’t paid; d. Ada claims the picture is fake; e. Ada says that a food’s origins are where it came from.

1. The painting was said to be from 14th century France. Potatoes and tomatoes were not brought to Europe until the late 15th century.
2. even; “I know because all books have odd-numbered pages on the right.”
4. The docent says that the painting depicts a typical scene from a 14th-century country kitchen in France, and the woman is kneading bread.
5. Reading is very important, because it provides a foundation for any kind of work; the characters use information learned from books to solve two mysteries.

“New Flag Needed!” (pages 16–19)

Summary: National flags identify countries. Almost all countries have rectangular flags. The flags of some countries are very similar to the flags of others.

Vocabulary: *horizontal* = “going across, from side to side”; *displayed* = “shown”; *retain* = “keep”; *tricolor* = “made of three colors”

1. They discovered that Haiti had the same flag, and they needed to make theirs different. The crown was added onto the blue; the story tells us that the crown was added in the top left corner, and the top half of the flag is blue.
2. Per the information given in the story, students should draw a ship with a rectangular flag (not square) featuring a cross in the center.
3. It means that something really looks identical or alike; if you just looked quickly at the flags from Monaco and Indonesia, you would think they were the same.
4. from left to right: Republic of Ireland = green, white, orange; Ivory Coast = orange, white, green.

“Garrulous Gabby” (pages 20–23)

Summary: A girl hates her nickname — Garrulous Gabby — which she has been given because she talks so much. She wins a story contest when she writes about a lonely girl who learns to listen. She is so surprised, she is speechless.

Vocabulary: a. False; b. True; c. False; d. True

1. Gabby; she feels it had a wonderful and happy ring to it.
2. At first, the advice seems to have fallen on deaf ears because Gabriela keeps talking. The story Gabriela writes seems to show that she finally understands her mom’s advice.

3. It means that she got really hot and angry; she says it when she is complaining angrily about how she despises being called “garrulous.”
4. An elephant’s ears are big and thin with lots of veins. When an elephant flaps them, this action can cool a lot of blood.
5. a. It’s an adjective, because it describes something (a person); b. no; c. The author shows you its meaning by having the character of Gabriela talk so much while saying so little.
6. The big lesson is that conversations can’t be one-sided. As Gabriela’s mother says, “You need to learn to listen.”

“Knocked Flat” (pages 24–27)

Summary: One is asked if children should be shielded before being introduced to an author’s cautionary poems. Details are given about the author and his poems.

Vocabulary: *deeds* = “things one does”; *dire* = “terrible or horrible”; *consequences* = “results”; *abhors* = “hates”; *prolific* = “productive, creative”

1. She is knocked flat and killed when a marble statue falls on her that was above the door she slammed.
2. Yes, because one of his cautionary tales is about “Sarah Byng, who could not read and was tossed into a thorny hedge by a bull.”
3. It means that everything is rosy and good, and nothing bad is happening.
4. *Quote:* “because my children are howling for pearls and caviar”; *Meaning:* I need money to raise my children, and they ask for a lot of expensive things; *Examples:* Pearls and caviars are luxury items that are very expensive.
6. No, because she says “the jury is still out.” It is still being decided.

“Hard to Believe” (pages 28–31)

Summary: Parents want grown-up time, but they keep hearing wild laughing from their children’s room. The children keep claiming it is a hyena under the bed. The parents get angry and don’t believe the children, and then they meet a talking crocodile.

Vocabulary: a. innocent; b. ridiculous; d. wearily; e. irate

1. They heard wild laughter, and they wanted the children to go to sleep.
2. They thought the children were lying. They thought it was a ridiculous story.
3. It means they came in angrily, quickly, and with unstoppable force; the parents say they are getting madder, and they want the laughter to stop.
4. Students should draw a crocodile on a couch and use words like *surprised*. Mrs. Martinez stopped suddenly, made funny sounds, and had a shaky hand.
5. Accept appropriate responses. Before paragraph 5, there was no reason to think the children were telling the truth.

“Movie-Watching Locusts” (pages 32–35)

Summary: A scientist studied locusts’ brains while they watched *Star Wars* to learn why they don’t crash into each other. Her goal is to make cars that avoid accidents.

Vocabulary: *solitary* = “only one, alone”; *swarm* = “a large group moving together”; *consume* = “eat”; *collision* = “crash”; *obstacle* = “something in your way”

1. Rind wants to design a collision-avoidance system for cars; she wants to make cars that won’t crash into each other.
2. Locusts are small animals, and a roar is a really loud noise. For small wings to make a roaring sound, there has got to be a whole lot of them!
3. *Star Wars*; It has lots of spaceships coming at the viewer from all directions. This helped show how locusts’ special neurons reacted to the movement of the ships.
4. No, because it is still only successful nine out of ten times. There would still be too many accidents.
5. Paragraph 1 is mainly about how destructive the locust can be when it swarms. Huge swarms can leave nothing but bare ground.