Utilize QAR Principles
within Content-Area Text and Graphics

Students need to read not only sentences and paragraphs, but they should also be able to read and comprehend information within text features, too (e.g., graphs, charts, captions, etc.). However, students should be able to glean more than just simple facts from content area information.

Introduce the concepts of QAR (Question-Answer-Relationship). Teach students to take note of the different types of questions that can be created from a text or graphic. For many students it never occurred to them that there was anything other than an obvious, right-there question to ask.

1. Right There Questions.
Literal questions that can be answered in one spot within the reading. These are easy questions that are answered right there in the reading. They are typically fast and easy to answer.

2. Think and Search Questions.
Also explain that some questions are answered by putting together several snippets of information from the text and/or text features. They won't find them in one spot but rather have to look through several chunks of information. It's all there in the reading, but it requires students to search a little bit.

3. Author and Me.
Then move on to the most difficult of questions—inferential questions. Explain to students that these questions are not answered directly word-for-word within the reading but require them to apply what they read with their own thinking. They need to formulate a reasonable response, one that is based on the ideas presented by the author/the text. NOTE: For the math teacher, many graphs can be used to solve math problems. When using the information from a graph (considered to be the author's text) and having to apply your own thinking and problem solving to deduce an answer, then it's considered an Author and Me question. These are high-level thinking questions.
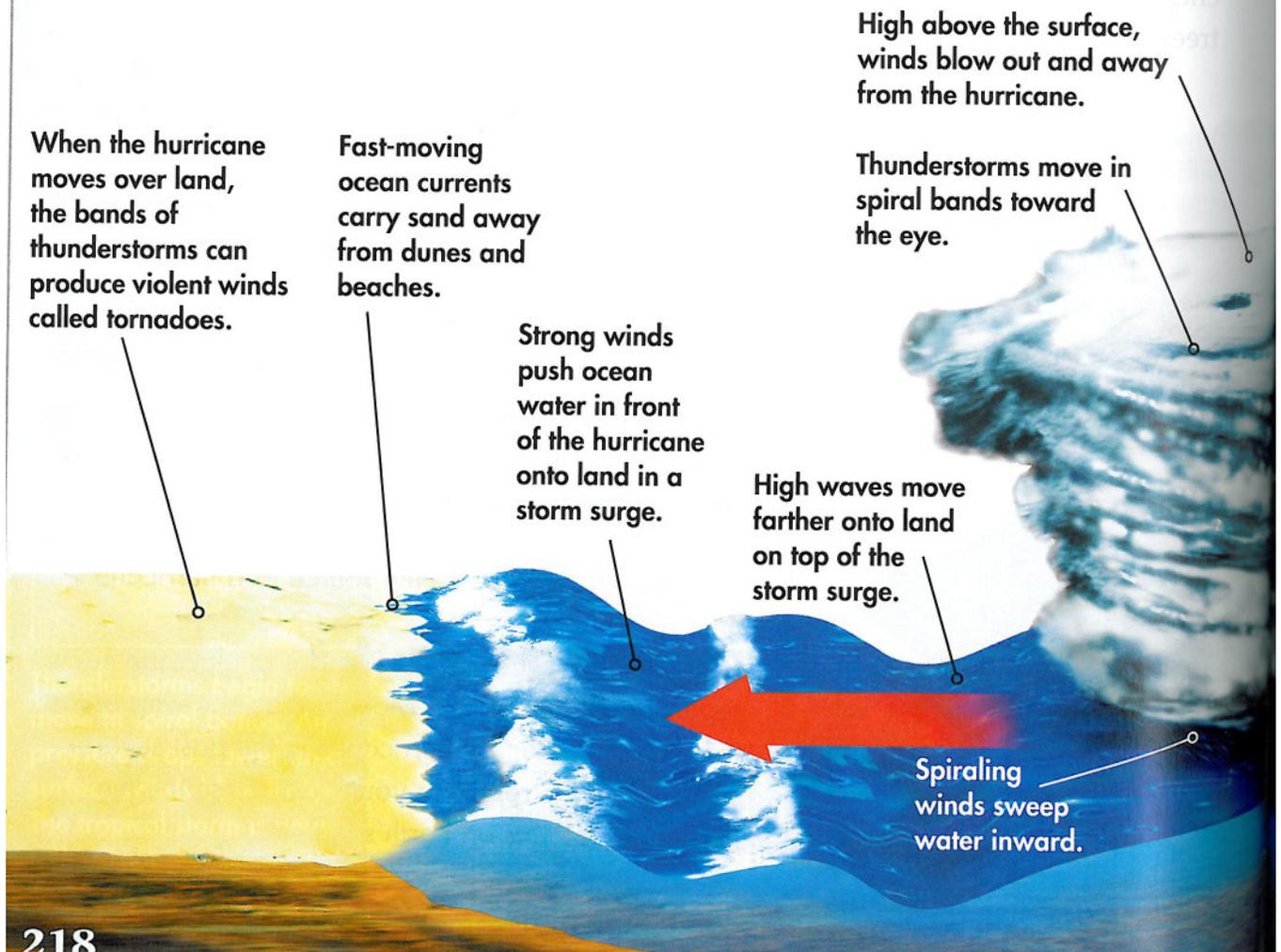
Using the following 2-page science passage on hurricanes, notice how each of these questions targets a different type of QAR. (Answers on page 4 of this downloadable document.)
• **Right There Question:** How do hurricanes lose power?
• **Think and Search Question:** What are 3 specific negative effects of hurricanes, according to the text?
• **Author and Me Question:** How much faster is a Category 1 Hurricane than a low-level tropical storm? Support your answer with evidence from the text.

The Effects of Winds and Water

When a hurricane moves over land, it can destroy many things. Its winds can break tree trunks or lift roofs from houses or completely flatten buildings. Winds pick up and hurl objects. All hurricanes have strong thunderstorms and fast, swirling winds. As you can see in the table, hurricanes are classified by their wind speed.

Rating Hurricanes	
Category of Hurricane	Wind Speed (kilometers per hour)
Category 1	119 to 153
Category 2	154 to 177
Category 3	178 to 209
Category 4	210 to 249
Category 5	Greater than 249

High above the surface, winds blow out and away from the hurricane.

When the hurricane moves over land, the bands of thunderstorms can produce violent winds called tornadoes.

Fast-moving ocean currents carry sand away from dunes and beaches.

Thunderstorms move in spiral bands toward the eye.

Strong winds push ocean water in front of the hurricane onto land in a storm surge.

High waves move farther onto land on top of the storm surge.

Spiraling winds sweep water inward.

This lighthouse is on Key Biscayne, Florida. The photograph shows how the area looked in 1992 before Hurricane Andrew.

After Hurricane Andrew, the lighthouse stands above a wrecked shore and broken forest.

In many hurricanes, water causes the worst damage. The slower the hurricane moves, the more rain that falls on an area. Rain can mix with soil and cause mudslides. A hurricane loses strength quickly after it moves over land or colder water. But it can still cause deadly floods.

When the hurricane is near land, its winds push large waves of ocean water onto shore. This rise in sea level caused by the storm's winds is called a **storm surge.** A storm surge can carry large boats onto land. At high tide, a storm surge can cause even worse flooding. In 1900, a hurricane swept over Galveston, Texas. The storm surge killed more than 6,000 people. Fortunately, modern weather reports give people time to move to safety.

In some ways, a hurricane may be helpful. The rains add water that plants need. Wildfires are less likely. Some rainwater soaks deep into the ground and keeps wells flowing. A hurricane may damage some habitats and create others. It can remove non-native plants so native plants can return.

A Natural Disaster with a Name

To tell listeners about several different storm systems, the National Hurricane Center uses a list to name the storms. Female and male names follow one another in alphabetical order. A tropical storm gets a name when its winds reach 63 kilometers per hour. If the storm becomes a hurricane, it keeps that name. The name may be used again unless the storm causes severe damage. Then another name that starts with the same letter is used. The table lists the first few names for Atlantic storms.

2006	2007	2008
Alberto	Andrea	Arthur
Beryl	Barry	Bertha
Chris	Chantal	Cristobal
Debby	Dean	Dolly
Ernesto	Erin	Edouard
Florence	Felix	Fay

ANSWERS

Right There Question: How do hurricanes lose power?

A hurricane loses strength quickly after it moves over land or colder water. (See the first paragraph on p.219.)

Think and Search Question: What are 3 specific negative effects of hurricanes, according to the text?

Hurricanes cause a loss of sand from dunes and beaches (see the dissected diagram at the bottom of p.218). Second, the rain from a hurricane can mix with soil and cause mud slides (see the first paragraph on p.219). A third negative effect is the storm surges that create massive flooding (see the second paragraph on p.219).

Author and Me Question: How much faster is a Category 1 hurricane than a low-level tropical storm? Support your answer with evidence from the text.

The chart at the top of p.218 states that a Category 1 hurricane is identified at 119 kilometers per hour. Using the text box at the bottom of p.219, it states that a tropical storm is identified when it hits a minimum 63 kilometers per hour. Using those two facts from the text, subtract 119-63 to conclude that a tropical storm becomes an official hurricane when it moves 56 kph faster.