Name _____ Date _____

Problem and Solution Text Structure and Main Idea: Protecting Steel Bridges from Rust Damage

Directions: Read the passage about rust and steel bridges. As you answer, look for the main idea, what each part adds and how the parts fit together.

Protecting Steel Bridges from Rust Damage

Rust can hurt even a strong steel bridge. As rust eats into the steel, less metal is left to hold up the bridge. Steel is mostly iron, and iron can rust when water and oxygen reach it. Salty sea spray can make the rust spread faster.

One way to protect the steel is paint. Paint covers the metal and helps keep air and water away from it. But over time, paint can crack or peel. On California's Golden Gate Bridge, crews keep coming back to paint the steel again.

On that bridge, the coat of paint closest to the steel does a second job. It holds a metal called zinc. If water and air get through the paint, the zinc near that spot can wear away first, which helps protect the steel. Where that zinc is used up, the extra protection ends.

Weathering steel fights rust another way. As its surface rusts, it can form a thin, tight coat that slows the rust underneath. The New River Gorge Bridge in West Virginia was built with unpainted weathering steel. But the coat works best when the steel can dry after it gets wet. If it stays wet, rust can keep eating into it.

Even with these protections, bridges still need checks. Under U.S. rules, teams led by trained inspectors check highway bridges on public roads. Some bridges are on a two-year schedule. The time between checks can be shorter or longer, depending on the bridge. Rust on steel parts is one thing the teams look for.

1. What is the main idea of "Protecting Steel Bridges from Rust Damage"?

A. Rust can weaken steel bridges. A layer people put on and a layer the steel can make both help slow it down.

B. Paint with zinc helps protect steel bridges, and crews still have to check the steel for rust.

C. Rust is one of several problems for steel bridges, and crews do different kinds of work to care for them.

D. Steel bridges near the ocean can rust faster, and paint can help protect them.

2. How does the passage present each of its three answers to rust?

A. It tells how the answer works and then names a limit of it.

B. It tells what the answer costs and then tells how the answer works.

C. It names a limit of the answer and then tells how the answer works.

D. It tells how the answer works and then tells what it costs.

3. Match each way to how the writer says it protects the steel and another detail the writer gives about it. Three choices will be left over.

Write the letter of the matching answer on each line.

1. _____ paint
2. _____ zinc
3. _____ weathering steel

Choices for question 3

A. It helps keep air and water away from the steel. The writer describes a problem crews face while putting the paint on.

B. This metal can wear away first where air and water get through the paint. The writer says when crews first started using it.

C. This metal can wear away first where air and water get through the paint. The writer says when the extra protection ends.

D. Its rust coat can slow rust underneath. The writer names a bridge where crews decided to paint this kind of steel.

E. Its rust coat can slow rust underneath. The writer names a bridge built with this kind of steel.

F. It helps keep air and water away from the steel. The writer says the paint can crack or peel.

4. The part about zinc comes right after the part about paint. How are the two parts linked?

A. The zinc part tells why paint was given up at the Golden Gate Bridge.

B. The zinc part tells what is in the coat of paint closest to the steel on that same bridge.

C. The zinc part tells about a bridge that uses zinc in place of paint.

D. The zinc part tells how zinc is stirred into the top coat of paint.

5. Fighting rust on the Golden Gate Bridge takes steady work. Which detail does the passage give as a sign of this?

A. Workers clear rust down to bare steel where the old paint has cracked or peeled.

B. Crews decide where to paint next by checking where rust is spreading.

C. Ironworkers keep replacing rusted rivets and pieces of steel on the bridge.

D. Crews keep coming back to paint the steel again.

6. Where a bridge stands can change how well weathering steel protects itself. What does the writer tell you in the weathering steel part that shows why?

A. Plants that grow on a bridge can keep wet steel from drying.

B. The coat works best when the steel can dry after it gets wet.

C. Steel that sits just a few feet above still water can stay damp.

D. Strong chemical fumes from some factories can drift onto the steel and harm it.

7. How does the last part build on the three ways to slow rust?

A. It explains how crews keep watch for rust after a bridge is protected.

B. It explains how crews choose a way to slow rust for a new bridge.

C. It explains how crews fix a bridge once they find rust.

D. It explains how crews test each way to slow rust before they use it.