# After the Thaw

Use textual evidence to weigh the benefits and costs of road salt.

**RI.9-10.1** "Cite relevant and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text."

NAME _____ DATE _____

## 1 READ AND MARK

Read it twice

**YOUR JOB** Underline two details that show how salt helps, circle two details that show its costs, and number two details that suggest ways to use less salt; use your marks as evidence in your answers.

### What Happens to Road Salt?

1 At dawn after a snowstorm, a road crew spreads rock salt across an icy intersection. The salt dissolves in the thin layer of water on the road. Salty water freezes at a lower temperature than plain water, so some ice can melt even while the air remains below freezing. This makes it easier for tires to grip pavement and for people to cross the street. But salt is not a magic eraser: at very low temperatures, it works less effectively, and a thick layer of snow still has to be plowed away.

2 After the storm, melting snow carries dissolved salt from streets into storm drains, streams, and ponds. The water may look clear, but it can contain chloride, a part of common road salt. Unlike a pile of snow, chloride does not disappear when spring arrives. High chloride levels can harm freshwater organisms and make it harder for some plants to take up water. Salt can also corrode vehicles and bridges. These effects do not mean every salted road causes the same damage; the amount used, the weather, and the path runoff takes all matter.

3 Road crews can reduce waste without asking drivers to face untreated ice. Before a forecast storm, some crews spray brine, a saltwater mixture, onto pavement. Applied at the right time, it can help keep ice from bonding tightly to the road, so crews may need less salt later. Crews can also plow first and focus salt on dangerous spots, such as intersections, rather than spread it equally everywhere. Sand adds traction but does not melt ice and must eventually be cleaned up. Each option involves a choice between immediate safety, cost, and what washes away.

## 2 ANSWER WITH EVIDENCE

Use the passage

1. How does salt make the icy intersection safer? Use two details from paragraph 1 to explain.

2. Why might winter road salt affect a stream after the snow has melted? Support your inference with two details from paragraph 2.

3. Why might spraying brine before a storm reduce the need for salt later? Use one detail from paragraph 1 and one from paragraph 3.

4. A resident says sand can replace salt on every icy road. What conclusion can you draw about that claim? Support it with two details from the passage.

## 3 YOUR TURN

Your own words

Your school keeps a bucket of road salt beside a storm drain for icy sidewalks. Write a short recommendation for how the school should use or store the salt. Support your reasoning with evidence from at least two different paragraphs, and acknowledge one safety concern.

ANSWER KEY

# After the Thaw

HIGH SCHOOL · RI.9-10.1

## PART 1 · READ AND MARK

Underline two details that show how salt helps, circle two details that show its costs, and number two details that suggest ways to use less salt; use your marks as evidence in your answers. Accept any marking that follows this job and points at the right text.

## PART 2 · ANSWERS

| # | QUESTION | ANSWER |
|---|---|---|
| 1 | How does salt make the icy intersection safer? Use two details from paragraph 1 to explain. | **Salt lowers the freezing temperature of water, so some ice melts. The passage says this makes it easier for tires to grip the pavement and for people to cross.** |
| 2 | Why might winter road salt affect a stream after the snow has melted? Support your inference with two details from paragraph 2. | **Melting snow carries dissolved salt into streams, and its chloride does not disappear when spring arrives. High chloride levels can harm freshwater organisms.** |
| 3 | Why might spraying brine before a storm reduce the need for salt later? Use one detail from paragraph 1 and one from paragraph 3. | **Paragraph 1 explains that salt can melt ice by lowering water's freezing temperature. Paragraph 3 says brine applied before a storm can keep ice from bonding tightly to pavement, making later treatment easier.** |
| 4 | A resident says sand can replace salt on every icy road. What conclusion can you draw about that claim? Support it with two details from the passage. | **Sand cannot fully replace salt where melting ice is necessary. Paragraph 3 says sand adds traction but does not melt ice, while paragraph 1 explains that salt can melt some ice and help tires grip pavement.** |

## PART 3 · YOUR TURN (SAMPLE ANSWER)

The school should shovel first and use a small amount of salt only on icy stretches away from the drain. Melting snow carries dissolved salt into storm drains and streams, where high chloride levels can harm freshwater organisms (paragraph 2). Salt can melt some ice and make walking safer (paragraph 1), so skipping it altogether might leave a dangerous patch. Plowing first and treating only dangerous spots follows the approach in paragraph 3.

Accept accurate quotations or paraphrases that support the stated analysis. For Your Turn, accept different practical recommendations if the student cites relevant details from at least two paragraphs and addresses sidewalk safety.