

After the Fire

Track how a wildfire shifts competition for resources.

LS.9.b "disruptions in ecosystems can change species competition; and"

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline each condition changed by the wildfire, circle each resource that species need, and number three cause-and-effect statements that show how competition changes.

A Forest Changes After Fire

- ① Before a wildfire, a pine forest in the western United States has a shady floor. Young pine seedlings, shrubs, and grasses all need sunlight, water, mineral nutrients, and space. Tall adult pines capture much of the sunlight, so shade-tolerant shrubs may grow better than grasses. These species compete because their needs overlap. Competition does not mean fighting. It can occur when one species uses a limited resource, leaving less of that resource for another species.
- ② After a dry-season fire, many adult pines are killed and the canopy opens. More sunlight reaches the soil, while ash briefly adds mineral nutrients. Fast-growing grasses and wildflowers can quickly use the new light and nutrients. Their roots also take up water near the surface. Pine seedlings still germinate, but they may grow slowly when dense grasses use much of the available water and occupy open ground. The fire has changed which species compete most strongly and which resources are scarce.
- ③ Over the next few years, some grasses are shaded out as shrubs and young pines get taller. In places where grasses remain thick, they can delay pine recovery by competing for water and space. In places with less grass cover, more pine seedlings may survive. Rainfall also matters. During a drought, water becomes even more limited, so competition between grasses, shrubs, and pine seedlings can intensify. A disruption can therefore change competition immediately and continue affecting the ecosystem as conditions change.

2 ANSWER WITH EVIDENCE Use the passage

1 Which two resources became more available soon after the fire?

2 Which species can use much of the available surface water and open ground, making it harder for pine seedlings to grow?

3 Why can a drought make competition among grasses, shrubs, and pine seedlings stronger?

4 How does thick grass cover affect pine seedlings differently from an area with less grass cover?

3 YOUR TURN Your own words

Invent a different ecosystem disruption. In exactly two sentences, name two species that would compete, identify one resource that could become limited or newly available, and explain how the disruption could change the competition.

PART 1 • READ AND MARK

Underline each condition changed by the wildfire, circle each resource that species need, and number three cause-and-effect statements that show how competition changes. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	Which two resources became more available soon after the fire?	Sunlight and mineral nutrients became more available.
2	Which species can use much of the available surface water and open ground, making it harder for pine seedlings to grow?	Dense grasses can use much of the available water and occupy open ground.
3	Why can a drought make competition among grasses, shrubs, and pine seedlings stronger?	A drought makes water even more limited, so the species compete more strongly for it.
4	How does thick grass cover affect pine seedlings differently from an area with less grass cover?	Thick grass can delay pine recovery by competing for water and space. Where there is less grass cover, more pine seedlings may survive.

PART 3 • YOUR TURN (SAMPLE ANSWER)

A flood covers a meadow and kills many tall plants, so more sunlight reaches clover and grass. Clover grows quickly and competes with grass for space and nutrients, which may leave less for grass.

Accept equivalent cause-and-effect explanations that use evidence from the passage. For Part 3, accept any scientifically plausible disruption, two species, resource, and explanation of a changed competitive relationship.