🎬 Science in the Movies: A Bug's Life (1998) — Teacher Answer Key

Grade Level: 3–6 | Topics: Biology · Ecosystems · Adaptations · Engineering in Nature
Includes sample answers and teaching notes.

🐜 A. Science Connections — Suggested Answers

1. Ecosystem Role: The ants live in a grassland ecosystem and act as decomposers and gatherers, helping recycle nutrients.
2. Collecting and Storing Food: Ants gather seeds and food to store underground to survive harsh seasons.
3. Adaptations: Strong jaws, teamwork, and pheromone trails help ants survive and communicate.
4. Teamwork Reflection: The colony works like a living system — each role (forager, soldier, queen) is essential for balance.

🍃 Teaching Notes: Discuss food chains and the interdependence of organisms. Encourage students to identify parallels between ecosystems and human teamwork.

🌾 B. Data & Analysis — Suggested Answers

1. Math Calculation: Each ant carries 50 × 0.01 oz = 0.5 oz. A colony of 1,000 ants can carry 500 oz (about 31.25 pounds).
2. Communication: Pheromones guide other ants and prevent chaos — without them, the colony would lose coordination.
3. System Breakdown: If foragers fail, food runs out; if guards fail, predators could invade. Each role is critical for success.

🍃 Teaching Notes: Use this to integrate math and science. Have students work in pairs to calculate total colony strength and discuss interdependence in systems.

🌍 C. Real-World Connection — Suggested Answers

1. Colony vs. City: Ants build tunnels, chambers, and paths similar to human road systems and infrastructure.
2. Biomimicry Example: Termite mounds inspired natural cooling systems in architecture, and ant algorithms inspire computer networking.
3. Teamwork Lesson: Collaboration allows individuals to achieve goals they couldn't accomplish alone — like in science labs or group projects.

🍃 Teaching Notes: Encourage creativity. Let students research how animals inspire engineering or technology. Possible extensions: videos on swarm robotics or ant-inspired AI.

D. Reflection — Example Responses

- A Bug's Life teaches that teamwork, courage, and creativity can overcome challenges.
- Diversity in skills helps problem-solving — each ant contributes something valuable.
- Example response: "Science helps us work together by teaching us how systems depend on each part doing its job."

Teaching Notes: Use reflection for SEL integration. Connect teamwork in nature to classroom collaboration. Encourage students to create a 'Colony Code' for how teams should communicate and cooperate.

Did You Know?

Ant pheromones act like a chemical GPS! They mark food trails, danger zones, and even identify colony members. This communication system has inspired research in swarm robotics — robots that work together like ants!