Key Content/Modeling

Introduction: The drone revolution is over 100 years in the making. [https://builtin.com/drones](https://builtin.com/drones) What is a drone? What are uses for drones?

Prepare to Read: Read the Words to Know skills sheet. Do you know any of the words? Read each definition and example sentence. Try and think of another example sentence for three of the tougher words-assimilate, exacerbate, and nefarious.

You Try

Read the Article: To guide you in reading critically and help you gain a deeper understanding of the text, use the Close Reading Checklist as a guide. In what ways are drones able to complete certain tasks better than humans? (Analyzing details)

What role should the government play in regulating drones? (drawing conclusions)

Show me what you know (Proof of learning) Exit Ticket

Write a 6-8 sentence summary paragraph for the Drones article. Make the first sentence the central/main idea. Include at least 3 supporting details from the text in your paragraph.

Self-Assessment

Fill out the Drones vs. Privacy graphic organizer. Explain each benefit and drawback (disadvantage) you list. Do the benefits of drones outweigh the drawbacks? If so, how might the drawbacks be reduced?

Priority Standard(s):

RH 7.1 Cite specific textual evidence to support analysis of primary and secondary sources.

RI7.4 Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of a specific word choice on meaning.

What am I learning?

Drones are doing great things, but are they also threatening every American’s right to privacy? Do we have to give up privacy and individual rights/freedoms for public safety and security?

How do I know I learned?

Learning Evidence in 1-3 Descriptors

Students will be able to describe the benefits and drawbacks of drones.

Extra Learning Opportunities [https://www.cbinsights.com/research/drone-impact-society-uav/](https://www.cbinsights.com/research/drone-impact-society-uav/) Research the impact of drones in society. Which dangerous and high-paying jobs are ripe for displacement by drone technology?

Design your own drone. What would it do? What would it look like? Draw your drone and label the parts. Then write a paragraph explaining how it would help people.
Drones Lesson Plan

ESSENTIAL QUESTIONS: Drones are doing great things, but are they also threatening every American’s right to privacy? Do we have to give up privacy and individual rights/freedoms for public safety and security?

FEATURED SKILL: Close Reading

LEARNING TARGET: Students will be able to describe the benefits and drawbacks of drones.

SUCCESS CRITERIA:

- Introduction: The drone revolution is over 100 years in the making. [https://builtin.com/drones](https://builtin.com/drones) What is a drone? What are uses for drones?
- Prepare to Read: Read the Words to Know skills sheet. Do you know any of the words? Read each definition and example sentence. Try and think of another example sentence for three of the tougher words-assimilate, exacerbate, and nefarious.
- Read the Article: To guide you in reading critically and help you gain a deeper understanding of the text, use the Close Reading Checklist as a guide. In what ways are drones able to complete certain tasks better than humans? (Analyzing details) What role should the government play in regulating drones? (drawing conclusions)
- Check Your Understanding: Take the Know the News: Invasion of the Drones ten question multiple choice quiz.
- Show Your Understanding: Fill out the Drones vs. Privacy graphic organizer. Explain each benefit and drawback (disadvantage) you list. Do the benefits of drones outweigh the drawbacks? If so, how might the drawbacks be reduced?
- Current Events: [https://youtu.be/1Tabv-Ovmj0](https://youtu.be/1Tabv-Ovmj0) In what ways are drones being used during the COVID-19 outbreak? Is the invasion of privacy necessary for public safety? Why or why not?

EXTENDED LEARNING: [https://www.cbinsights.com/research/drone-impact-society-uav/](https://www.cbinsights.com/research/drone-impact-society-uav/) Research the impact of drones in society. Which dangerous and high-paying jobs are ripe for displacement by drone technology?

Design your own drone. What would it do? What would it look like? Draw your drone and label the parts. Then write a paragraph explaining how it would help people.

EXIT TICKET: Write a 6-8 sentence summary paragraph for the Drones article. Make the first sentence the central/main idea. Include at least 3 supporting details from the text in your paragraph.
Read the following definitions and example sentences of vocabulary words from this issue. Then, on a separate sheet of paper, write a definition and an example sentence for two other words from the issue.

1. **aeronautics (n):** the science or practice of building or operating aircraft
   - **example:** Fascinated by the design and construction of the space shuttle, Trisha signed up for an engineering course on aeronautics.

2. **Al Qaeda (n):** an international Islamist terrorist organization founded by Osama bin Laden in 1989
   - **example:** Several Al Qaeda members took flying lessons to prepare for the September 11, 2001, attacks.

3. **assimilate (v):** to become fully part of a different culture or society
   - **example:** After moving from the U.S. to Japan, Sam assimilated to his new home by watching local TV news to learn more of the language and culture.

4. **civil liberties (n):** basic rights and freedoms that are guaranteed by law or by the U.S. Constitution
   - **example:** Americans take such civil liberties as the right to free speech and to privacy for granted, but in many parts of the world, those basic freedoms are rare.

5. **climate change (n):** the shift in Earth’s average temperature and precipitation over a long period of time
   - **example:** Most scientists agree that higher levels of greenhouse gases contribute to climate change.

6. **exacerbate (v):** to make a problem, a bad situation, or a negative feeling worse
   - **example:** Scratching a mosquito bite will exacerbate the itch and can lead to infection.

7. **executive order (n):** a directive issued by a president that carries the force of law
   - **example:** In 1948, President Harry S. Truman issued Executive Order 9981, which put an end to racial segregation in the U.S. military.

8. **fossil fuel (n):** a source of energy derived from the remains of plants or animals in the earth
   - **example:** Coal, oil, and other fossil fuels are burned to produce electricity, fuel vehicles, and heat buildings.

9. **Industrial Revolution (n):** a period of rapid manufacturing growth that began in England in the mid-1700s and spread to the U.S.
   - **example:** Until the invention of the steam engine, which helped launch the Industrial Revolution, most manufacturing was done by hand in people’s homes.

10. **nefarious (adj):** evil or immoral; of a wicked or criminal nature
    - **example:** Thor’s archenemy Loki hatches nefarious plans for destruction and mayhem.

11. **partisan (adj):** referring to strong support of a political party or cause
    - **example:** Today’s Congress is so sharply divided along partisan lines that Republicans and Democrats find it difficult to work together to pass legislation.

12. **persecution (n):** harsh treatment aimed at someone because of his or her origin, principles, or beliefs
    - **example:** Many Jews fled Europe to escape Nazi persecution in the 1930s and 1940s.

13. **refugee (n):** a person forced to flee his or her country because of danger or persecution
    - **example:** According to the United Nations, some 28,300 people worldwide become refugees each day, as dire conditions drive them from their homes.

14. **regulation (n):** an official rule or law that specifies how something should be done
    - **example:** After a fatal bridge collapse, the governor called on engineers to help revise regulations for the construction and repair of infrastructure.

15. **warrant (n):** a legal document obtained by the police from a judge to conduct a search of a person or his or her property
    - **example:** The secretary refused to give the police access to his boss’s files until detectives arrived with a warrant signed by a federal judge.
Close Reading Checklist

Reading an article closely involves thinking critically about the text—plus any photos, maps, graphics, and other elements—and considering how the author presents information. Use this guide to read any Junior Scholastic article closely.

☐ **STEP 1:** Number each paragraph of the article. This will help you cite evidence from the text when answering questions or participating in a class discussion.

☐ **STEP 2:** Annotate the text. Jot down any comments or questions in the margins. Use these symbols to mark up the article as you read.

★ Place a star next to anything that seems important.

? Write a question mark next to any words, phrases, or ideas that you don’t understand.

! Put an exclamation point next to anything you find surprising or interesting.

☐ **STEP 3:** Write a brief summary of each chunk or section of the article.
(Ask yourself: What is being said?)

☐ **STEP 4:** Write a brief analysis of each chunk or subsection of the article.
(Ask yourself: What does this section add to the article? What might have been the author’s purpose for including it? Why does the author use particular words and phrases? What inferences can I make?)

☐ **STEP 5:** Examine text features. Write a brief explanation of what any photos, maps, graphics, and other visuals show. (Ask yourself: Why might the author have included them? What do they add to the information provided in the text?)

☐ **STEP 6:** Dig a little deeper. Reread the article and revise your analysis as necessary. Sometimes a text is like a puzzle, and you need to read it multiple times before you can see how all the pieces fit together.
Invasion of the Drones

Drones are doing great things, but are they also threatening every American’s right to privacy?

APRIL 23, 2018 | By Bryan Brown

This past January, two teenage surfers were saved from drowning—thanks to a drone. Lifeguards on a beach near Brisbane, Australia, were testing a new rescue drone when they were alerted to the plight of a pair of young surfers who’d gotten caught in rough water with 10-foot waves. The lifeguards steered the drone above the swimmers, which just over a minute later released a flotation device. The teens grabbed on and swam safely to shore.

About six months earlier, a major operation to combat a wildfire near Prescott, Arizona, came grinding to a halt—also because of a drone. Last July, firefighters were battling a fast-spreading blaze in the Prescott National Forest. Planes and helicopters were taking to the air to drop fire retardant and assist the crews when they were abruptly ordered to land. Why? A civilian was trying to get pictures of the fire with his drone and was endangering the whole operation. A drone “could easily get into the blades of a helicopter and take it down,” says Tyler Clare, a firefighter who was at the scene.
By the time firefighters were able to locate the drone’s operator and get their aircraft back into the air, an hour had passed. “That’s a long time as far as a wildfire goes,” Clare says.

As these two incidents make clear, the presence of drones in our skies is a complicated issue. Also known as an unmanned aerial vehicle (UAV), a drone is a remote-controlled aircraft without passengers. Today, drone use in the U.S. is skyrocketing. According to the Consumer Technology Association, drone sales are expected to reach as high as $1.2 billion this year.

Drones have proved themselves invaluable in many ways, from studying hurricanes to delivering food and medicine in remote areas. But as ownership increases, drones threaten to clog the nation’s airways. They also can be used for questionable and even illegal purposes, including spying by police or civilians.

How do we keep this helpful technology from also becoming a big headache—and violating our right to privacy? That is a question our government and society at large are only just beginning to wrestle with.

**Invasion of Privacy**

One of the top selling points of drones is their cameras, which can transmit stunning images from the sky. But the potential for their invading our privacy has a lot of people worried. For instance, there have been many reports of drones spying on sunbathing women. One Kentucky father is reported to have spotted a drone hovering over his daughters in their backyard and brought it down with his shotgun.
Drones are being used to study hurricanes and deliver medicine in remote areas.

The issue gets more serious when it comes to surveillance by authorities. The Fourth Amendment to the U.S. Constitution guarantees freedom from “unreasonable searches and seizures” of Americans and their property. But advocates for civil liberties warn that police could use drones to follow your car, or be able to gather evidence against you without a warrant.

To date, some 20 states have passed laws regulating drone use. Most of them address privacy concerns by specifying how police can use drones.
Flying Robots at Work

Still, commercial drones are revolutionizing the workplace. Farmers are increasingly using them to monitor crops and animals, or to spray pesticides over large areas. Engineers have begun using them to examine complex infrastructure—for example, checking a dam for cracks—much faster and more safely than they could with the human eye.

Meanwhile, a number of companies, including Amazon, are developing drones that may one day be able to drop purchases on your doorstep. In New Zealand, Domino’s even demonstrated that it could use a drone to successfully deliver a still-hot pizza.

Drones to the Rescue

More dramatically, drones have become crucial in saving lives. In the African nation of Rwanda, a California company called Zipline is making it possible to transport blood and medicine to remote hospitals via drone. Whereas a trip by car over mountains and washed-out roads might take an entire day, a Zipline drone can complete a delivery from a distribution center in 30 minutes or less.

The U.S. Department of the Interior, which oversees America’s national parks, has a fleet of more than 300 drones. Last year, the National Park Service began using drones for search-and-rescue operations in the Grand Canyon. These aircraft can operate in tight spots where it’s too dangerous for helicopters to go, and they can hunt for people in the dark, using thermal-sensing cameras to detect body heat.
“You can search all night long,” says Brad Koeckeritz, director of the Interior Department’s drone program. “People pop right out at you, and you can tell their precise location.”

And because drones are able to fly through smoke and detect hot spots, they’re also proving indispensable to firefighters. Last December, the Bel-Air neighborhood of Los Angeles, California, was ravaged by wildfires that forced 46,000 residents to be evacuated. The L.A. Fire Department was able to use two drones to help steer people through smoke-filled hills to safety.
Drones have become indispensable tools in emergencies, but hobbyists trying to see for themselves can keep firefighters from doing their jobs.
Accidents Waiting to Happen

Still, as the example of the troublesome drone in Prescott, Arizona, demonstrates, the machines can also be a hazard. When officials found the owner of that drone, they arrested him for endangering the lives of the firefighters who were battling the wildfire.

Recreational drones flown by hobbyists are especially problematic near airports. Each month, the Federal Aviation Administration (FAA) gets more than 100 reports of near-misses between jets and drones. Such a collision, or a drone getting sucked into a jet’s engine, would threaten people in the air and on the ground.

Civilian and military officials across the country are concerned that our airways will become progressively more crowded as drones get cheaper and more popular with the general public.

“This is an accident waiting to happen,” U.S. Representative Peter DeFazio, a Democrat from Oregon, told a House committee last November. “We are going to lose an aircraft.”
Police in the Netherlands are training eagles to catch troublesome drones.
Keeping Skies Safe

As experts see it, the government has an important question to answer: “How do we integrate the airspace and allow thousands of drones and manned aircraft to cohabitate?” says Dan Gettinger, of the Center for the Study of the Drone at Bard College in New York.

The FAA, which issues regulations to keep the nation’s skies safe, has strict rules for drone users, says Juan Alonso, a professor of aeronautics at Stanford University in California who sits on the agency’s drone advisory board. The FAA requires a drone operator to be at least 16 years old. Drones can be flown only during the day, must be kept below 400 feet, and have to stay in the operator’s line of sight. Current regulations also prohibit flying drones over people. For now, that is preventing a lot of potential drone uses, such as delivering packages to your home.

How can drones and manned aircraft cohabitate?

These regulations are constantly under review. The FAA will soon announce a next step, Alonso says: requiring all drones to have a kind of electronic license plate so that they can be instantly recognized. “That will go a long way in identifying drones that are doing something useful and those that might do something nefarious,” Alonso explains.
Dangerous Drones?

Bad guys using drones may sound like something out of a movie, but it’s a very real possibility, experts warn. In the wrong hands, drones could pose a serious risk to nuclear power plants, government buildings, and military bases. “Drones could carry explosives or surveillance equipment,” Alonso notes. “This could have an impact on national security.”

Indeed, U.S. military leaders recently testified before Congress about unauthorized drone flights over military bases. “These intrusions represent a growing threat to the safety and security of nuclear weapons and personnel,” said General John Hyten, commander of the U.S. Strategic Command.
Transforming the World

As drones become more sophisticated, their potential for positively shaping our lives is huge. Consider vertical takeoff and landing (VTOL) technology. VTOL aircraft are able to lift and descend straight up or down and don’t require a large landing strip. While some manned aircraft can already do that, Alonso says, it’s only a matter of time before autonomous VTOL air taxis are transporting people more easily (and cheaply) than planes.

Meanwhile, new technology that would allow Amazon and Domino’s to deliver packages and pizzas by drone is almost ready, experts say.

The sticking point is regulation. “In a couple of years, we could see delivery drones operating in rural areas,” says Gettinger. For urban areas, the FAA will have to find a balance between safety and encouraging innovative use of drones. But that will happen, he believes.

Still, as the use of commercial drones increases, Americans will have to grapple with the trade-offs of having them constantly hovering overhead. “Is the value of having a pizza delivered to your doorstep by drone worth the potential safety issues or the noise pollution?” Alonso asks.

For his part, Alonso can live with the potential downsides. “I am a convert,” he says of the promise of drones. “They are going to transform the world in ways we haven’t even thought of.”
Know the News:
Invasion of the Drones

Read the article on pp. 8-11, then answer the questions.

1. Which is a central idea of the article?
   A Drones can deliver lifesaving food and medicine to people in remote areas.
   B A drone recently helped lifeguards save two teens in Australia.
   C Amazon is developing drones to deliver items to people’s homes.
   D Drones can provide many benefits, but they may also threaten our right to privacy.

2. Which of these statements would Juan Alonso likely agree with?
   A Drones should be outlawed.
   B All kids should be allowed to operate drones.
   C The benefits of drones outweigh the risks.
   D Drones are too expensive.

3. Which statement is an opinion?
   A More states should regulate the use of drones.
   B The U.S. government agency that oversees national parks has more than 300 drones.
   C Farmers are using drones to monitor crops.
   D The Federal Aviation Administration (FAA) says drone operators must be at least 16 years old.

4. Which of the following does not support the claim that “drones have proved themselves invaluable”?
   A “Engineers have begun using [drones] to examine complex infrastructure.”
   B “The National Park Service began using drones for search-and-rescue operations.”
   C “A California company called Zipline is making it possible to transport blood and medicine to remote hospitals via drone.”
   D “Drones threaten to clog the nation’s airways.”

5. Which amendment to the U.S. Constitution guarantees freedom from “unreasonable searches and seizures”?
   A First Amendment
   B Second Amendment
   C Fourth Amendment
   D Eighth Amendment

6. Based on context clues, what does revolutionizing mean in the following sentence? “Commercial drones are revolutionizing the workplace.”
   A changing slightly
   B decreasing the profitability of
   C changing dramatically
   D causing to fail

7. How does the cartoon on p. 10 contribute to the article?
   A It demonstrates how drones are helping fight fires.
   B It illustrates how drone use can be dangerous.
   C It shows the benefits of drones for search-and-rescue operations.
   D It explains why many firefighters are drone hobbyists.

8. What is keeping Domino’s from delivering pizzas by drone in the U.S. today?
   A the cost of drones
   B inadequate technology
   C FAA regulations
   D lack of customers

9. Which of the following actions might be described as nefarious (see p. 11)?
   A delivering a cold pizza via drone
   B using a drone to spy on a private home
   C flying a drone above 400 feet
   D failing to have an electronic license plate for a drone

10. Which of the following statements is not supported by information in the article?
    A Drone regulations may be necessary to prevent risks to personal and national security.
    B Drones are able to complete certain tasks better than humans.
    C Many people say the benefits of drones outweigh the downsides.
    D Drones will soon be banned in urban areas.
In “Invasion of the Drones” (pp. 8-11), you read about the increasing use of drones for work and play. Using evidence from the article, fill in the graphic organizer below with four benefits and four drawbacks of drones.

### Drones vs. Privacy

**Close Reading**

**BENEFITS OF DRONES**

**DRAWBACKS OF DRONES**

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**Putting It All Together**

Do the benefits of drones outweigh the drawbacks? If so, how might the drawbacks be reduced? Explain your answers on a separate sheet of paper.