

# Homo Sapiens

## By Jesse Kohn

It was about four months after I graduated from college that I finally got a job working at the zoo. The pay wasn't bad: all the chicken nuggets I could stomach and my own room in the cage where they kept the human beings.

I've always been a little nervous starting anything new, but I remember that first day being particularly unnerving, waiting for the zoo to open. I asked Joseph, who had been there for years, if there was anything I could help set up. He told me just to relax, maybe go down the slide a few times.

"Nothing like the slide to clear your mind," he said.

Emily and Cindy were waiting in line to go down the slide.

"You look a little green," Emily said.

"First day," I replied.

"First day, huh?" said Cindy. "I remember my first day. I spent the whole day hiding in the laundry closet."

"Listen," said Emily. "There's nothing to be nervous about. We just do our thing and the people come and watch and sometimes ask us to do a trick."

When I got to the top of the ladder, a blow horn resounded through the park announcing that the gates were opening. My heart did a somersault, and I slid down the slide.

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Sure, the job had little to do with what I had studied in college, but after having spent four months looking for work, I was desperate. It wasn't so bad at the zoo, either. I liked our habitat. It reminded me a lot of home. The part of our habitat that faced the visitors was kind of like a backyard. Behind the backyard was the fake house where we each had our own little room; we could always go nap there when we got tired. There was a pond-sized bathtub we were encouraged to swim in, and there was always music playing in case we felt like dancing.

Rainy days were best because there weren't many visitors. The zookeepers had hired a wonderful bunch of human beings, and it was a pleasure getting to know them all. It turned out every single one of them had something special they could do—Joseph composed music, Emily wrote poetry, Cindy read Tarot cards—but even more impressive than what they could do, was who they all were. Sometimes I wondered if the zookeepers—or even the wide-eyed and fascinated visitors—had any idea just how special we all were.

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On sunny days, the visitors crammed around our cage and hollered and cooed at us. Our trainers entered every hour and had us perform tricks in exchange for chunks of cookie dough, which, of course, none of us could refuse. My tricks usually had to do with dancing. One of our trainers spotted me dancing one evening and realized quickly that I had formidable moves. Of course the visitors ate it up. Many nights I'd go to sleep with my toes painfully calloused from fancy footwork and my limbs aching from my shaking legs. Joseph did mostly magic tricks, and Emily rode her bicycle in circles.

Once I recited a poem I'd memorized in French, but by the time I'd reached the third stanza no one was listening.

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On the third Sunday of every month, our trainers would leash us up and take us for a leisurely walk about the park. Without the glass between us and them, the visitors were much more respectful. They even seemed a little frightened.

One time a little girl dropped her doll, and Cindy picked it up and handed it to her. Her father suddenly pulled her away from Cindy.

"Don't touch it, Amanda!" he shouted. "That's a wild animal!"

Cindy was so angry the trainer had to wrestle the girl's doll away from her.

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But working in the zoo had its perks, too. And eventually I'd been there so long that many of visitors started to remember me.

“It’s Jesse!” the children would shout. “Do the dance! Dance for us!” And they’d dance with me on the other side of the glass.

There was even an old woman who came now and then and asked me to recite French poetry to her.

One time I slipped out of the cage late at night and snuck into the “Oceans of the World” exhibit. The lights were out, but glowing jellyfish illuminated the walkways. I followed those drifting pillows of light through tunnels of artificial coral, past walls of water flashing with silver schools of tuna, and the circular tank with the circling sharks. Finally, I found what I was looking for: an immense cylindrical tank in the very center of the exhibit. In the dark, I could just barely read the plaque: *ARCHITEUTHIS, Giant Squid*. It was murky in the tank, and I stared at that black abyss for a long time, seeing only my own reflection trying to peer in through the glass. And I started thinking about who I was and about the other human beings, and I thought about what we were all doing in that zoo. And then, all at once, I realized that I had been looking into the eye of the squid. And in a flash of twisting tentacles and a cloud of ink even darker than the water, it disappeared into the shadows.

“And who are you really?” I whispered, staring into the tank.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

**1.** Where does the narrator of the passage work?

- A** at a library
- B** at a zoo
- C** at a movie theater
- D** at an amusement park

**2.** From which point of view is this story told?

- A** first-person point of view ("I")
- B** second-person point of view ("you")
- C** limited third-person point of view ("he" or "she")
- D** omniscient, or unlimited, third-person point of view ("he/she/they")

**3.** Read the following sentences from the story: "It wasn't so bad at the zoo, either. I liked our habitat. It reminded me a lot of home. The part of our habitat that faced the visitors was kind of like a backyard. Behind the backyard was the fake house where we each had our own little room; we could always go nap there when we got tired."

What can be concluded from this information?

- A** The narrator does not like working at the zoo very much.
- B** The zookeepers are not taking good care of the narrator.
- C** The narrator is a human being on display at a zoo.
- D** The narrator has spent his or her whole life working at the zoo.

**4.** How does the narrator's attitude about being at the zoo change throughout the story?

- A** laid-back at first, then thoughtful, and finally nervous
- B** laid-back at first, then nervous, and finally thoughtful
- C** nervous at first, then laid-back, and finally thoughtful
- D** thoughtful at first, then laid-back, and finally nervous

**5.** What is a theme of this story?

- A** true love
- B** religious belief
- C** the horrors of war
- D** human nature

6. Read the following sentences from the story: “‘You look a little **green**,’ Emily said. ‘First day,’ I replied.”

What might the word “**green**” mean in the sentence above?

- A inexperienced or sick
- B healthy or confident
- C friendly or very happy
- D old or exhausted

7. Select the word that best completes the sentence.

The human beings at the zoo have special talents, \_\_\_\_\_ composing music, writing poetry, and dancing.

- A consequently
- B otherwise
- C earlier
- D such as

8. What does the narrator sneak off to see at the end of the story?

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**9.** What question does the narrator ask at the very end of the story?

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**10.** Why does the narrator ask the question at the very end of the story? Support your answer with evidence from the passage.

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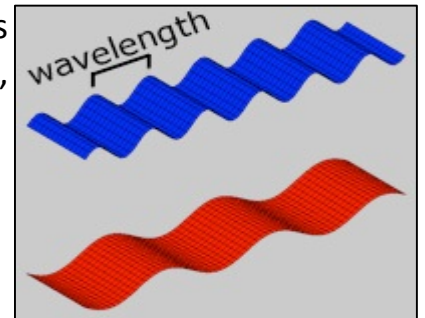
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# How Are Rainbows Formed?

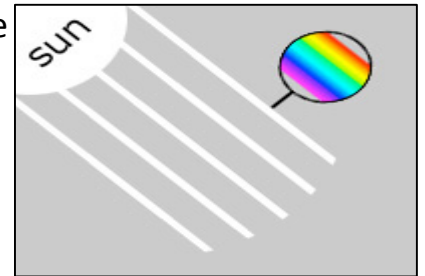
By Dr. Hany Farid, Dartmouth College

Sunlight is composed of light of varying wavelengths. Short wavelength light appears blue, violet and indigo, and long wavelength light appears red, orange and yellow. When sunlight enters a raindrop in the air, the light splits into a multitude of colors. This light then reflects off the back of the raindrop and re-emerges in the direction in which the light first entered. The light emerging from many raindrops creates a rainbow. Read on for a more detailed explanation.

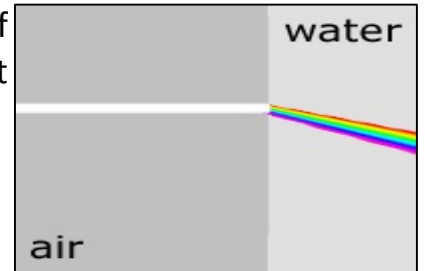
**Fact 1.** Light travels in waves. The light's wavelength determines its perceived color. Short wavelength light, for example, appears blue, and long wavelength light appears red.



**Fact 2.** Sunlight is composed of light of many wavelengths. In the range that we can see, this includes the colors of the rainbow.

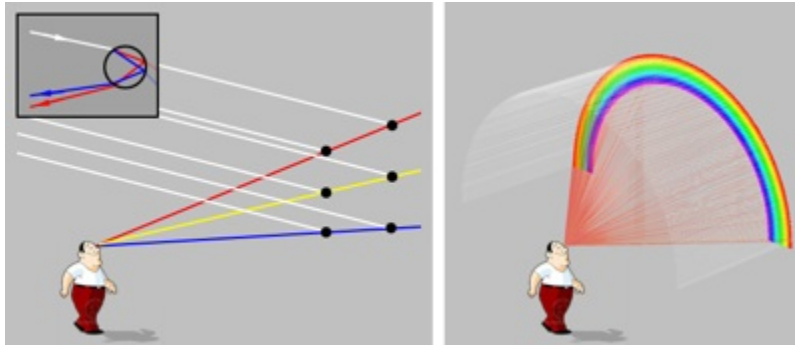


**Fact 3.** When light enters water, it bends (refracts). The amount of bending depends on the wavelength of light. As a result, the light splits into its component colors.



When a ray of sunlight enters a raindrop, it bends (refracts). The light then strikes the back of the raindrop, where some of the light passes through and some is reflected. As the light exits the raindrop, it is refracted again. The angle at which the light emerges depends on the wavelength of light. This path is illustrated in the small box below, where only the bending of two wavelengths (blue and red) are shown.

Consider now the diagram on the left. The sun is behind you (white rays) and there is rain in front of you (black dots). As the sunlight enters each raindrop, the light is refracted and reflected as described above. Because the sun is so far away, the rays of sunlight are nearly parallel to one another. As a result, the angle between the red line and each ray of sunlight striking a raindrop on that line will be the same. So, the light that reaches your eye along this ray will be of the same wavelength (color). The same is true for the yellow, blue, and intermediate lines corresponding to each color of the rainbow.



Consider now the diagram on the right which explains why the colors of a rainbow form an arc. The angle between the incoming rays of sunlight (white) and all of the red lines, forming a circular cone, have the same angle. As a result, the light that reaches your eye along these lines have the same wavelength (color). The same is true for each band of the rainbow.

The reason that rainbows are somewhat rare is that you will only see them when there is rain in front of you and somewhat in the distance, and the sun is behind you and fairly low on the horizon.



Name: \_\_\_\_\_ Date: \_\_\_\_\_

1. What is sunlight composed of?

- A** light of a single color
- B** light traveling at different speeds
- C** light of varying intensity
- D** light of varying wavelengths

2. What does the author explain in the first paragraph of the text?

- A** how light travels
- B** how a rainbow is formed
- C** why rainbows are shaped like an arc
- D** why rain causes light to split into separate colors

3. Read these sentences from the text.

"Sunlight is composed of light of varying wavelengths. [...] When light enters water, it bends (refracts). The amount of bending depends on the wavelength of light. As a result, the light splits into its component colors."

What can you conclude based on this evidence?

- A** Each wavelength of light bends the same amount when it enters water.
- B** When light enters water, its wavelength is altered.
- C** Each component color of light has a different wavelength.
- D** The component colors of light all have the same wavelength.

4. When would you be most likely to see a rainbow?

- A** in the evening on a partly rainy, partly sunny day
- B** in the morning on a bright, sunny day
- C** in the evening on a cloudy, rainy day
- D** at noon on a partly cloudy day

5. What is the main idea of this text?

- A** Sunlight is composed of light of varying wavelengths. Short wavelength light appears blue, and long wavelength light appears red.
- B** Rainbows form when sunlight enters raindrops, splits into different color components, and then re-emerges from the raindrops.
- C** The colors of a rainbow form an arc because of the angles at which light of different wavelengths reaches your eye.
- D** You will only see rainbows when there is rain in front of you and somewhat in the distance, and the sun is behind you and fairly low on the horizon.

6. Why might the author have chosen to list Facts 1, 2, and 3 separately instead of describing them in one paragraph?

- A to emphasize the importance of these facts to the way rainbows form
- B to show that these facts are not related to each other in any way
- C to indicate that these facts do not affect the way rainbows form
- D to make the explanation of how rainbows form seem more complicated

7. Choose the answer that best completes the sentence.

Light's wavelength determines its perceived color; \_\_\_\_\_, short wavelength light appears blue.

- A initially
- B for instance
- C however
- D similarly

8. When light enters water, it bends. What does the amount of bending depend on?

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**9.** For a rainbow to form, sunlight needs to enter and then re-emerge from raindrops. Describe what happens to the light between when it first enters a raindrop and when it comes out of the raindrop. Support your answer with evidence from the text.

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**10.** Why might you only see a rainbow when rain is in front of you? Support your answer with evidence from the text and images.

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# The Girl from Uganda

by Lionel Beasley

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Image by Nachrichten\_muc from Pixabay

The day the girl from Uganda met Garry Kasparov, the world's greatest living chess player, she was the one being honored. The girl from Uganda, a country in Africa, was a chess player herself. She had been invited to tell her story by a committee that had organized a conference in New York. That story was one of triumph. She would tell a packed audience of her childhood in Katwe, Uganda. Katwe is the worst slum in her country, and a place from which its residents seldom escape. She would describe how the skills nourished by the principles of the game of chess had allowed her to do just that.

There is no word for chess in the girl's native language. However, the game had taken her far from home, first to the Sudan, then Siberia and Turkey, and finally to the United States. Chess had allowed her to take her first ride on a silver bird above the clouds and to sleep in her very own bed for the first time. She had been thrilled at seeing ice and the view from a hotel room high in the sky. These were things other children from Katwe seldom, if ever, would have the chance to experience. Over the years, she had become the best female chess player in Uganda. Though only 17 years old, she had long competed at the highest level of the game. She had recently attained the rank of Woman Candidate Master, marking her arrival as one of the most promising young players in the world.

This girl was not nearly as famous as Kasparov, but her story had been the subject of a book, documentaries, and magazine articles. The meeting with Kasparov had been set up after she told the committee how much she had idolized the great champion in her youth. He had inspired her to push herself so that one day she might achieve the rank of Grand Master, the highest honor in the game.

Now she would be realizing her dream of playing the man many consider the greatest chess champion of all time.

The name of that girl from Uganda is Phiona Mutesi. That she had discovered the game of chess at all was a twist of fate. Life in Katwe is harsh and unforgiving. In the rainy season, the slum is often flooded. Sewage from Kampala, a city nearby, flows through the streets. Early death due to disease is a common fate. An epidemic claimed the life of her father when she was only three years old. Her older sister Juliet died the same year of unknown causes. Phiona herself survived a near-fatal bout with malaria at the age of eight.

Phiona, her mother Harriet, her brothers Brian and Richard, and her niece Winnie faced a daily struggle to survive. The family seldom had enough to eat. Harriet had to leave the house before sunrise for a long journey to purchase vegetables, which she would resell. Her meager earnings barely covered the rice and tea on which the family lived. Hunger was a fact of life for Phiona and her family. "We didn't have food," she said of her childhood in Katwe. "We were sleeping on the streets because we didn't have money to rent a house. It was a hard time."

Then, through her brother Brian, she discovered the Sports Outreach Institute. The Institute offered free bowls of porridge, and Brian had taken to spending his afternoons there. It was run by Robert Katende, a Katwe native, whose skills on the soccer pitch helped him escape from life in the slum.

For the children who came to the Institute, Katende offered more than bowls of porridge. At first, he offered soccer instruction, but after realizing that children who were not good athletes would be left out, he began to teach chess. In time, he came to believe that the demands placed on mental sharpness and reasoning skills by the principles of chess would be of greater educational benefit to the children of Katwe. Under his guidance, the Institute had developed into a refuge from the ravages of slum life, especially for its youngest victims.

The day that Phiona trailed her brother to the Institute, she did so only for the promise of a meal. Even then, she was too shy to follow her brother inside. Instead, she lingered by the doorway and watched her brother and another boy play chess on a rickety board with mismatched pieces. To Phiona, who was nine years old at the time, chess was a mystery. Still, she was intrigued by a game that had the power to reduce a room full of children to silence.

"The pieces looked attractive to me," she said. Despite her curiosity, she had little interest in learning to play. "I just wanted to get a cup of porridge." When Katende spotted her, he was quick to invite her inside. "Don't be afraid," he told her. That simple act of kindness would change the course of her life.

There were difficulties at first. When the other children at the center saw Phiona, barefoot in a torn and dirty skirt, they demanded that she leave. "It didn't bother me," she said. "That's life in Katwe. If you don't fight you can't get it." Katende made it clear that Phiona was indeed welcome. As he did with the other children who had shown up on his doorstep, he instructed Phiona on the principles of chess. He taught her the special properties of each game piece and the moves each can make on the board. As Phiona listened in silence, the appeal of the game took hold of her.

Her growing interest in chess sprang from the connection she sensed between the tactics of the game and the skills necessary for survival in Katwe. "I like chess because it involves planning," Phiona said. As Katende had foreseen, chess was more than just a game for the children of the slum. The tactics can have a practical and educational value for children who are struggling to survive.

Skillful planning had long been a necessity for Phiona. "When you're living in a slum you also have to plan ahead. How am I going to get food tomorrow?"

Under Katende's teachings, the girl who had come only in search of a meal began to display a skill beyond her years. The reckless play of her initial games gave way to an attacking style that pressed and then smothered her opponents. Phiona proved such a quick learner that she was soon winning matches against children far older. Within a year she was good enough to beat Katende!

One day, while playing against a younger boy, an article in a magazine he had brought with him caught her eye. The article was about Garry Kasparov. Often called the "Michael Jordan of Chess," he is considered by many as the best player of all time. His high profile matches against fellow great Anatoly Karpov had caught the world's attention. Like Michael Jordan, he had achieved international fame. At that moment, Phiona vowed to reach the rank of Grand Master; she was determined to take him on.

Katende realized that he might have discovered a chess prodigy. He began to organize matches between the children of the Institute and local boarding schools. Though Phiona and the other children wore their finest outfits, the boarding school children made fun of them for being dirty. Until the games started, that is. In beating them with ease, Phiona silenced their catcalls. When she took on university students, she defeated them as well.

In 2007, while still only 11, she entered the Uganda Women's Junior Championships. She seldom lost and took the title. She would win two more titles. She was prevented from winning a fourth title when the tournament in 2010 was not held due to lack of funding. In 2009, Phiona competed in the International Children's Chess Tournament in Sudan. After traveling by plane for the first time, Phiona said, "I thought, we are near heaven." She won all four games she played. She and her teammates, all from Katwe, won the tournament.

The victory qualified Phiona for competition in the 2010 Chess Olympiad in Siberia. Chess has long been considered a sport by the International Olympic Committee, and the Olympiad, held every two years, pits the world's best players against one another. As with the Olympic Games, players participate as teams representing their home countries.

At 14, Phiona was by far the youngest member of the Ugandan team. She was the only one under 20! For the first time since the early days at the Institute, Phiona would fail to dominate her competition. Facing older, highly skilled, and more experienced players, she won one match, tied another, and lost five. However, losing can be more educational than winning if you are able to learn from your mistakes. Phiona picked up new tactics and was able to hone her attacking style. The improvement in her game showed at the following Olympiad, held in Istanbul, Turkey, in 2012, where she won three games, lost three, and had three draws. The result earned her the rank of Woman Candidate Master.

While her rank is the lowest of the grading system for chess players, she has firmly established herself as the best female chess player in Uganda. As she emerged on the world stage, the story of the girl from Uganda, whose determination to master the game had helped her escape the fate of so many of Katwe's youth, spread across the globe. In being invited to speak by the Women of the World organizing committee, she was able to reach at least one of her goals: taking on her idol.

Garry Kasparov was late to their meeting, but he greeted Phiona warmly. She wore a broad smile. He

handed her a copy of his book, "Kasparov vs. Karpov." He had signed it and added an inscription: "For all dreams to come true." Like Robert Katende, Kasparov had often spoken of the educational benefits in mastering the principles of chess. When she told him how much she idolized him, he reminded her of the inspiration she had provided to millions around the world. Then, in silence, they began to play.

Phiona kept the game close for 20 rounds before Kasparov gained an advantage, forcing her to concede. "He won the game, but I learned many things from losing." With the strength that Phiona has already shown in escaping the terrible pitfalls of Katwe, there is little doubt that she will continue to win matches and rise in the rankings. Although she has yet to reach her goal of being named Grand Master, Phiona Mutesi is truly a champion.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

1. What country is Phiona Mutesi from?

- A. Uganda
- B. Siberia
- C. Sudan
- D. Turkey

2. Which answer choice best describes the sequence of events after Phiona first visited the Sports Outreach Institute?

- A. At first, she was really excited to play chess, but after she learned the rules, she got discouraged and left.
- B. At first, she thought she should play soccer, but eventually she realized that she didn't like soccer.
- C. At first, she only wanted a meal, but Robert Katende's kindness convinced her to give chess a try.
- D. At first, Robert Katende was rude to her, but after a while he was kind to her and taught her chess.

3. Read the following sentences from the text.

"Her growing interest in chess sprang from the connection she sensed between the tactics of the game and the skills necessary for survival in Katwe. 'I like chess because it involves planning,' Phiona said. As Katende had foreseen, chess was more than just a game for the children of the slum. The tactics can have a practical and educational value for children who are struggling to survive."

What can you conclude about Phiona's interest in chess, based on this information?

- A. Chess was important to Phiona from the beginning because of the money she imagined she could win.
- B. Chess felt exciting to Phiona because she had a serious competitive spirit and loved to beat people.
- C. Chess was mostly interesting to Phiona's mother, but Phiona eventually came to see it as interesting.
- D. Chess was more than just a game for Phiona, as it was also a way of improving important life skills.



4. How could you describe Phiona's attitude towards losing chess matches?

- A. She does not care at all if she loses, so she usually forgets about losses quickly.
- B. She takes losses as lessons, so she can continue improving her chess skills.
- C. She gets furious if she loses, and opponents are often afraid to play her.
- D. She is happy to lose because she sees it as a good way to get sympathy from players.

5. What is the main idea of this text?

- A. Woman Candidate Master is a rank that exists in the world of chess, which means that someone is a good chess player.
- B. Phiona Mutesi grew up in poverty in Uganda, and her life changed when she discovered chess and eventually became a world-class champion.
- C. The Sports Outreach Institute is an organization run by Robert Katende, a Katwe native who became a soccer player.
- D. Some people like playing chess, but most people prefer playing checkers, another board game, because it's hard to

# Railroad Bridge, Argenteuil

This text and image are provided courtesy of the Philadelphia Museum of Art.



Philadelphia Museum of Art: John G. Johnson Collection, 1917, cat. 1050

1874 Oil on canvas 21 x 28 inches (54.3 x 73.3 inches) CLAUDE MONET French, 1840-1926

A small sailboat drifts along the water in this tranquil scene. Warm, golden light brightens the bridge's white pillars and the boat's sail. Their reflections in the water add pink, yellow, and orange **hues** to the blue of the river. Along the top of the bridge, a train chugs along, letting out puffs of smoke that drift across the sky. A gentle wind pushes the boat across the calm river below.

Claude Monet (clahd MOE-nay), the French artist who created this work of art, enjoyed painting the outdoors directly from observation. He appreciated the variety of colors in the sky, water, plants, and trees, especially those seen at sunrise and sunset. Notice the deep greens, blues, and purples in the grassy riverbank, and the blues and yellows in the train's smoke. Monet had to work quickly to capture the color and light as he saw it, since both frequently change as time passes. Look closely and you'll see the many short, quick **brushstrokes** that make up the grass, trees, water, and clouds. This style of painting is known as **Impressionism**.

This painting shows the Seine River in the town of Argenteuil (ar-jen-TOY), located just outside Paris. Monet lived there when he painted this picture, so he didn't have to travel far to observe this scenic spot. At that time, the railroad service was expanding, and it became easier for city dwellers to take weekend trips to the nearby countryside. Perhaps the tiny figures in the boat are enjoying time away from the faster pace of urban life.

**Name:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**1.** Which artist painted The Bridge at Argenteuil?

- A. Mary Cassatt
- B. Winslow Homer
- C. Edouard Manet
- D. Claude Monet

**2.** Which three topics does the text address?

- A. The painting's use of color, Impressionist brushstroke style, and the expansion of the railroad service
- B. The history of the Seine River, the founding of Argenteuil, and city life in France
- C. The founding of Impressionism, the popularity of sailing, and the personal life of Claude Monet
- D. Famous Impressionist painters, techniques for painting nature images, and the Paris art scene

**3.** Read this sentence from the text.

"A gentle wind pushes the boat across the calm river below."

What evidence from the painting supports the author's suggestion that there is a gentle wind?

- A. The brushstrokes are short and quick.
- B. The right side of the painting is full of shadows and varying shades of green.
- C. The boat's sail is full while the water remains calm.
- D. The figures in the boat are far-off and tiny.

**4.** Based on the information in the text and the painting, how could the mood of the painting best be described?

- A. Scary and threatening
- B. Calm and peaceful
- C. Wild and disturbing
- D. Exciting and fun

**5. What is the main idea of the text?**

- A. Claude Monet's appreciation of natural light and color is reflected in his painting of a calm outdoor scene near a river in Argenteuil.
- B. Impressionist painters such as Claude Monet preferred depicting natural scenes over scenes of urban life.
- C. The railroad bridge over the Seine River at Argenteuil inspired many Impressionist painters.
- D. The Seine River was typically calm and tranquil, making it a popular location for sailing among the people who lived in Argenteuil.

**6. Read these sentences from the text.**

"...the railroad service was expanding, and it became easier for city dwellers to take weekend trips to the nearby countryside. Perhaps the tiny figures in the boat are enjoying time away from the faster pace of urban life."

Why might the author have included this suggestion that the figures in the boat are taking relaxing time away from the city?

- A. To highlight the importance of the Seine River to French industry
- B. To highlight the sense of calm in the painting
- C. To suggest that the growing railroad service negatively affected quality of life in France
- D. To suggest that Monet preferred painting images of nature

**7. Choose the answer that best completes the sentence.**

Light and color change frequently throughout the day. \_\_\_\_\_, Monet had to work quickly to capture the color and light as he saw it.

- A. Still
- B. Because
- C. Therefore
- D. However

8. According to the text, what did Claude Monet appreciate about the outdoors?

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9. Read this sentence from the text.

"A gentle wind pushes the boat across the calm river below."

What characteristics of the painting suggest that the wind is gentle?

Support your answer with evidence from the text and images.

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10. What characteristics of the painting create a feeling of calm in the scene?

Support your answer with evidence from the text and images.

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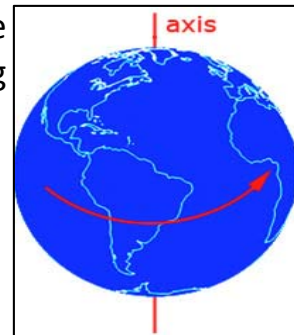
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# Why Is It Colder in the Winter Than in the Summer?

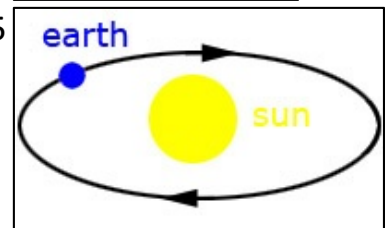
By Dr. Hany Farid, Dartmouth College

The earth's axis of rotation is tilted relative to the earth's path around the sun. As a result we are tilted towards the sun in the summer and away from the sun in the winter. Read on for a more detailed explanation.

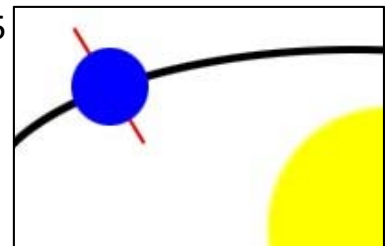
**Fact 1.** The earth rotates about its axis once every 24 hours. In the morning we are facing towards the sun, and at night we are facing away from the sun.



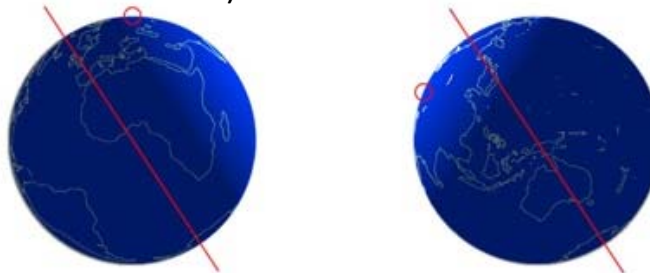
**Fact 2.** The earth rotates around the sun (approximately) every 365 days or 1 year.



**Fact 3.** The axis about which the earth rotates is tilted (by 23.5 degrees) relative to the earth's path around the sun.



Shown below are two diagrams of the earth at the same time of day. On the left it is winter and on the right it is summer (in the northern hemisphere). Notice that the same spot (red circle) in the winter receives much less light than in the summer. As a result, it is colder in the winter than in the summer. (Note: in this diagram, the earth's axis is 33 degrees, instead of 23.5, so as to better illustrate the effect.)



Name: \_\_\_\_\_ Date: \_\_\_\_\_

1. What is tilted relative to the earth's path around the sun, according to the article?

- A the sun's position in space
- B the sun's axis of rotation
- C the earth's axis of rotation
- D Mars's axis of rotation

2. How does the earth's tilt in the summer contrast with its tilt in the winter?

- A The earth is tilted towards the sun in the summer but away from the sun in the winter.
- B The earth is tilted away from the sun in the summer but towards the sun in the winter.
- C The earth is tilted slightly towards the sun in the summer and much farther towards the sun in the winter.
- D The earth is tilted slightly away from the sun in the summer and much farther away from the sun in the winter.

3. Read Fact 1 and look at the image next to it.

"The earth rotates about its axis once every 24 hours. In the morning we are facing towards the sun, and at night we are facing away from the sun."

Based on this information, what can you conclude about the curved arrow in the diagram?

- A The arrow represents the earth's axis.
- B The arrow represents the earth's rotation.
- C The arrow represents the earth's equator.
- D The arrow represents the earth's tilt.

4. Look at the two diagrams of the earth at the end of the article. What might the red line in each diagram represent?

- A a place on the earth that receives less light in winter than in summer
- B the earth's axis
- C the earth's rotation
- D the earth's path around the sun

5. What is the main idea of this text?

- A The earth rotates around its axis once every 24 hours.
- B The earth rotates around the sun approximately every 365 days.
- C The axis around which the earth rotates is tilted by 23.5 degrees relative to the earth's path around the sun.
- D Winter is colder than summer because earth's axis of rotation is tilted.

6. Read these sentences from the text.

"The earth rotates about its axis once every 24 hours. In the morning we are facing towards the sun, and at night we are facing away from the sun."

What is the meaning of "rotates" as it is used here?

- A rises
- B falls
- C shrinks
- D turns

7. Read these sentences from the text.

"The earth's axis of rotation is tilted relative to the earth's path around the sun. As a result we are tilted towards the sun in the summer and away from the sun in the winter."

Which word or phrase could replace "as a result" without changing the meaning of these sentences?

- A for example
- B consequently
- C however
- D primarily

8. Look at the two diagrams of the earth at the end of the article. They show the same spot (red circle) in the winter and in the summer. What is the difference between the amount of light the same spot receives in the winter and in the summer?

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**9.** What is an effect of the difference between the amount of light the same spot (red circle) receives in the winter and in the summer?

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**10.** Imagine that the earth's axis of rotation changed so that the same spot (red circle) received the same amount of light in the winter and in the summer. What effect might that change have on the temperature in that spot? Support your answer with evidence from the text.

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# The Inside Scoop

By Michael Stahl



In New York City, one of the most popular brands of ice cream comes from a company called Mister Softee. Mister Softee sells ice cream to children and adults alike right out of a large blue-and-white truck. One particular Mister Softee truck driver is named Gus Elefantis. He has not only made Mister Softee ice cream his career, but the tasty, smooth ice cream has helped him make a few friends, too, since he first bought a truck in the mid-1980s.

Gus Elefantis's summer days begin at about 8 a.m. when he and his wife Lola wake up to make breakfast for their two daughters. Once breakfast is finished, Gus and Lola leave their daughters at home (the oldest daughter is 18 years old and capable of babysitting) and drive 20 minutes to a very special parking lot. It is there where Gus parks his very own Mister Softee ice cream truck every night alongside about a dozen others.

As soon as they arrive, Lola begins cleaning and stocking his truck, inserting all of the local favorite types of ice cream pops and flavored frozen ices into specific freezer compartments to be sold once Gus drives along his route. "Everything's in the same place every day," says the short, blonde lady. "This way, my husband doesn't even have to think!"

Gus agrees, saying he won't even need to glance inside the freezer as he fills orders for the long lines of customers waiting on the sidewalks.

Watching his wife wipe down the sink, the refrigerator and the slushy machine, Gus explains that Lola has cleaned the truck for over 20 years, ever since they were first married. "She's the best at it," he says with a heavy Greek accent. "I've tried to clean the truck plenty of times before, but I'm no good at it. When Lola cleans, it is spotless."

Gus's morning duty is to "go shopping" and purchase any new stock the truck needs for the day. He buys these items from his old friend Dimitri Tsirkos, who got Gus into the business and now runs the Mister Softee station. The station consists of a few parking lots for the trucks and a store where drivers buy supplies. Into a shopping cart Gus loads a few cartons of chocolate and vanilla ice cream mix, which will later freeze up inside the truck's dispenser machine. He adds a can of whipped cream, some blue paper cups and a gallon of strawberry syrup.

Lola has finished cleaning Gus's truck. Tupperware containers of sprinkles are filled. Gallons of milk are placed just behind a steel refrigerator door at Gus's feet. Chocolate sauce that hardens when chilled is poured into a bowl for Dip Cones. The truck is finally ready.

After unplugging the back of the truck from a wall outlet that is used to keep the refrigerators and freezers inside running overnight, then starting up and revving the engine for a while to warm it up (the truck itself is over 30 years old), Gus drives out of the garage to sell ice cream in the neighborhood he's called home for over 40 years: Astoria, New York. Gus will spend between nine and ten hours driving around, jumping from the driver's seat to the serving window countless times. This takes a toll on a big man's body. "You're walking on steel all day," he says. "Talk to any Mister Softee driver and they'll tell you that their legs from the knees down are a problem."

Though there is an air conditioner in the truck that isn't completely useless, its work is made more difficult by the heat coming from the refrigerators, not to mention the sweltering humidity in New York City's summer air. The back of the truck is searing on days when temperatures climb above 95 degrees, which are also some of the least profitable days because customers stay inside their air-conditioned homes. Naturally, rainy days hurt business as well. How much money the drivers make changes from year to year, depending on the weather. Gus remembers one year, though, when the weather was so cooperative, he started driving in February and didn't stop until Thanksgiving! "I made a lot of money that year," he says with a nod of his head.

Usually, Gus doesn't drive the Mister Softee truck for more than six months a year. He works every day it doesn't rain between April and October, unless there is an important family event or holiday like Greek Easter. A day spent inside his home is a day he's not making money, so he'll put in 12-hour days as often as he possibly can. On those days he misses his daughters, Joann, the older one, and Nora, who is eight.

After a long summer season and parking his truck for winter, Gus searches for a new winter job to provide for his family. “Once I drove a cab, but that was too much driving in one year for me,” he laughs. “Usually, I work part-time in construction or at a restaurant just like when I was young.” In some ways, he would love a stable, everyday job, he says. But with Mister Softee, he’s his own boss, which has its perks.

“I eat ice cream every day,” Gus says, admitting that he dips into his own supply, usually after accidentally making something a customer didn’t ask for, like a cone with chocolate sprinkles instead of rainbow. “I feel like I have to eat the mistakes. I don’t want them to go to waste!”

When he’s had enough ice cream for the day, he gives his errors away, no charge. Gus loves giving away free ice cream, which has gotten him a lot of fans. However, the people of Astoria don’t go to his truck just for ice cream—whether it’s free or not—they also go to see their friend.

“My husband loves everyone,” says Lola. “Adults, kids, pets. It doesn’t matter.”

The side windows of the truck have few stickers, making it easy to see into the back where Gus works. This was done on purpose. He feels it makes parents much more comfortable dealing with him because it shows he has nothing to hide. Gus doesn’t drive his route late at night because he knows the truck’s song will get kids to jump out of bed. During the daytime, he plays the song only once per block to limit the disturbance.

“My mother always told me that if you live in a glass house, don’t throw stones at your neighbors. And I live in a glass house,” he says, referring to his windowed truck. He calls the job “easy,” despite the long hours away from his daughters while they’re on summer vacation, the heat, the hurt in his legs, and the requirement of a new job every winter. But Gus Elefantis isn’t going anywhere, to the delight of the many Astorians with which he comes into daily summer contact. “Unless I hit the lotto,” he says, “which I don’t play, I’m not going to stop.”

Name: \_\_\_\_\_ Date: \_\_\_\_\_

1. What does Gus Elefantis do during the summer?

- A** Gus Elefantis teaches Greek to tourists.
- B** Gus Elefantis drives an ice cream truck.
- C** Gus Elefantis works on a construction site.
- D** Gus Elefantis waits tables at a restaurant.

2. What is the sequence of events in a summer day for Gus?

- A** Gus gives away ice cream for free; Gus goes shopping for supplies; Gus drives around to sell ice cream.
- B** Gus gives away ice cream for free; Gus drives around to sell ice cream; Gus goes shopping for supplies.
- C** Gus goes shopping for supplies; Gus drives around to sell ice cream; Gus gives away ice cream for free.
- D** Gus goes shopping for supplies; Gus gives away ice cream for free; Gus drives around to sell ice cream.

3. Many people in Astoria like Gus.

What evidence from the passage supports this statement?

- A** "However, the people of Astoria don't go to his truck just for ice cream—whether it's free or not—they also go to see their friend."
- B** "Gus's morning duty is to 'go shopping' and purchase any new stock the truck needs for the day."
- C** "Gus Elefantis's summer days begin at about 8 a.m. when he and his wife Lola wake up to make breakfast for their two daughters."
- D** "The side windows of the truck have few stickers, making it easy to see into the back where Gus works."

4. What is one problem with Gus's job?

- A** Gus buys the items he needs for his truck from a friend.
- B** Gus works in Astoria, New York.
- C** Gus's job causes pain in his legs.
- D** Gus's job allows him to interact with people.

5. What is this passage mostly about?

- A an ice cream company called Mister Softee
- B the neighborhood of Astoria, New York
- C different flavors of ice cream
- D the work of an ice cream truck driver

6. Read the following sentence: "Gus agrees, saying he won't even need to glance inside the freezer as he fills orders for the long lines of **customers** waiting on the sidewalks."

What does the word **customers** mean?

- A people who get into trouble
- B people who work hard
- C people who are mean to others
- D people who buy things

7. Choose the answer that best completes the sentence below.

Gus likes some things about his job \_\_\_\_\_ not others.

- A in summary
- B above all
- C but
- D after

8. Name two things Gus likes about his job.

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**9.** Name two things Gus does not like about his job.

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**10.** Gus says that, in some ways, he would love a stable, everyday job. Why does he choose to be an ice cream truck driver instead? Support your answer with evidence from the passage.

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# Lightning and Fire



Florida receives the most lightning strikes in North America. Scientists have recorded over 20 million lightning strikes in the continental United States, and Florida gets more than any other state. Florida is mostly surrounded by water, with the Gulf of Mexico to the west, the Straits of Florida to the south, and the Atlantic Ocean to the east. This water is warm, which means it can be very humid in Florida throughout the year. During the hot summer season, this mix of heat and humidity creates many thunderstorms. This pattern of storms and the lightning they often bring is predictable. It is so common that Florida has been called the Lightning Capital of the World!

## FIRE IS NATURAL

Over billions of years, lightning and the fires lit by lightning on the ground have shaped our planet. Many plants and animals in Florida depend on fire, and they have adapted to the constant presence of fire. A plant called wiregrass is so used to fire that it germinates, or grows out of its seeds, after a fire. The bare soil that remains after a fire is a soft and fertile soil bed. The wiregrass plant uses this soil bed to put down its roots. Without regular fires, wiregrasses might be taken over by trees and other plants that grow faster and taller.

An animal in Florida that likes to eat wiregrass is the gopher tortoise. Wiregrass is a big part of a gopher tortoise's diet, so regular fires mean gopher tortoises have a regular food supply. The gopher tortoise has adapted to fire by living and digging their homes, or burrows, in the ground. They don't have to dig very deep to escape a fire's heat, but their burrows can be almost 10 feet deep. These burrows provide great protection from fire, and other animals understand this, too. Mice, frogs, and snakes have been found in burrows with a gopher tortoise, during fires. Skunks, coyotes, and owls have often been found using burrows that gopher tortoises abandon.



**FIGHT FIRE WITH FIRE**

Before people built roads and cities, a fire could just burn and extinguish naturally. Today, when lightning hits the ground in and around people's homes, fires can cause a lot of damage to the houses or buildings, so firefighters work very hard to stop them. When they aren't fighting fires, some firefighters switch jobs and light fires on purpose! Don't worry, they are burning forests and grasslands, not where people live and work. To do this, they join something called a Prescribed Fire Crew.

Prescribed Fire Crews light fires for several reasons. One reason is to protect people from wildfires, and another is to maintain the ecosystems where species have adapted to the presence of fire. Although forest fires and grassfires can cause damage when they reach where people live and work, fire is necessary for many plants and animals around the world, not just for some of Florida's plants and animals.

The fires Prescribed Fire Crews set are carefully planned with clear start-and-end points. By regularly burning parts of a forest, they prevent larger wildfires. In some ways, they are fighting fire *with* fire because regular burning keeps the amount of fuel low. This fuel can be anything found in forests, like trees, leaves, and bushes. These fires are helpful for the people that live close-by and for the plants and animals that depend on fire.

**Name:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**1.** Which state in the United States receives more lightning strikes than any other?

- A) Texas
- B) Florida
- C) New York
- D) California

**2.** Fires are an effect. What is one cause?

- A) lightning
- B) wiregrass
- C) gopher tortoises
- D) the Gulf of Mexico

**3.** Many plants and animals in Florida depend on fire.

What evidence from the passage supports this statement?

- A) Forest fires and grassfires can cause a lot of damage when they reach where people live and work.
- B) Prescribed Fire Crews set carefully planned fires with clear start-and-end points.
- C) Florida is mostly surrounded by water, with the Gulf of Mexico to the west, the Straits of Florida to the south, and the Atlantic Ocean to the east.
- D) A plant called wiregrass uses the bare soil that remains after a fire to put down its roots.

**4.** How do Prescribed Fire Crews fight fire with fire?

- A) They find homes for mice, frogs, and snakes during wildfires.
- B) They find homes for skunks, coyotes, and owls during wildfires.
- C) They live in a state with lots of lightning strikes.
- D) They light carefully planned fires to prevent larger wildfires.

**5.** What is this passage mostly about?

- A) differences between the Gulf of Mexico and the Atlantic Ocean
- B) how thunderstorms are created from a mix of heat and humidity
- C) fires in Florida and how they affect life there
- D) why Florida is known as the Lightning Capital of the World

6. Read the following sentence: "Many plants and animals in Florida depend on fire, and they have **adapted** to the constant presence of fire."

What does the word **adapted** mean in the sentence above?

- A) burned to the ground
- B) changed in order to live with
- C) set carefully planned fires
- D) surrounded by water on all sides

7. Choose the answer that best completes the sentence below.

Lightning often strikes Florida; \_\_\_\_\_, fires are sometimes started.

- A) consequently
- B) otherwise
- C) such as
- D) previously

8. What do gopher tortoises eat?

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9. Why are regular fires important to gopher tortoises?

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10. Are fires in Florida helpful or harmful? Explain your answer with evidence from the passage.

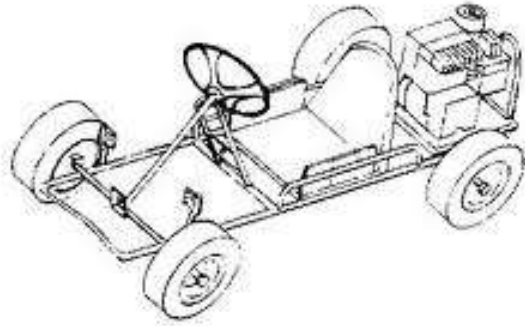
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## The Go-Kart



Michael and Sam had been neighbors for as long as they could remember, but they only just started loving go-karts a few months before. Sam's dad took the boys to the go-kart track for the first time as soon as school let out for the summer, and since then, they had been obsessed with getting their own go-kart. It would be a few years before Michael and Sam got their driver's licenses, and this seemed like the next-best thing. They would fantasize about go-karting down their block and into the main street, competing with taxis, speeding bikes, and other cars for room on the road. In these dreams they would wear old-fashioned brown helmets and vintage airplane goggles, like in old video footage of the people who got to drive the first-ever cars.

One evening, Sam was talking about it—again—over dinner. “Wouldn’t it be great? We’d be low to the ground so we could even drive under big trucks! We’d go so fast, we’d be like a blur in all of the traffic. Can I get a go-kart for Christmas?”

Sam’s mom rolled her eyes and set down a helping of spaghetti and meatballs on his plate. “I don’t think so,” she said. “Why don’t you and Michael just build one?”

After dinner, Sam went over to Michael’s house. “My mom had the best idea,” Sam said. “We should build our own go-kart!”

Michael was also excited by the idea. His uncle John worked at an auto repair shop, and the boys called him right away to ask if he had any spare parts he would give them, and if he could help them: they had no idea how to build a car. John was thrilled that Michael and Sam were interested, and promised to talk the boys through it later in the week.

That weekend, John came by Michael's apartment with a bunch of different auto parts that they could use for a go-kart, like a steering wheel, brakes, and an ignition pedal, as well as a large poster board.

"The first thing we need to do is draw how you want the go-kart to look," John said. He laid the poster board flat on Michael's kitchen table and looked at the boys expectantly.

Michael and Sam both agreed that they wanted the go-kart to be extremely fast, but other than that, they had no idea how it should look. John showed them a few drawings. They decided that a four-wheeler would be the best, with a long nose and an open top.

John wrote a list of materials that they would need. "You can get this stuff at a hardware store," he said. "Let me know when you have everything, and you can come out to the shop to build it."

A few weeks later, the boys showed up at John's auto shop with a cart full of materials to build the go-kart. They had bought most of the hardware with chore money, but had found some of it at a scrap yard by their school. They had tubing, plywood planks, bearings, bolts, and chains. John told them he would provide the frame, petrol tank, driving shaft, engine, and seat—all the objects they could get from an auto body shop. Michael, Sam, and John took over a corner of the shop and began to build.

Soon they had a prototype go-kart. "Let me try it first," Sam begged, grinning at Michael. He jumped into the shiny new go-kart and revved the engine. He pressed his foot down on the pedal, expecting the go-kart to shoot forward out of the garage and into the parking lot. Instead, it crept like a snail towards the open garage door.

"Woah!" Sam said. "This is way too slow." Sam stopped the kart and got out.

Michael nodded and said, "Yeah, I agree. Uncle John, how do we make it go faster?"

There were a few problems that the boys could fix, Uncle John said. First, the engine that Michael and Sam had chosen—the biggest one—took up a lot of space and was very heavy, so

it probably dragged the go-kart down. Second, the design they had chosen was not ideal for fast vehicles. Lastly, John said with a smile, it looked like Sam had forgotten to turn off the emergency brake.

So the three guys got back to work. They scoured the auto repair shop for a smaller engine, and found one in a small lawnmower that had been taken for disposal into the garage. They had fun taking the lawnmower apart to get to the small, powerful engine inside. The second problem was much more difficult to fix. Would they have to redesign the entire go-kart?

Together, they drew some other sample sketches that might make the go-kart less bottom-heavy, and even considered taking away one of the wheels so that it would be a three-wheel go-kart. Michael thought it would be a good idea to get lighter materials all around and keep their original design, but John didn't think that would work. Michael, Sam, and John needed to think about ways to maximize the go-kart for its speed: what aspects of their original design were unnecessary? The three of them came to the conclusion that it was probably the long nose. It looked cool, but ultimately, what was more important to Michael and Sam?

They had welded the nose to the frame, and used a grinder to break the metal away from the go-kart. When they were finally done, Michael stepped into the go-kart and put on the helmet he and Sam had found at a used-clothing store. He snapped on a pair of swimming goggles, revved the engine, and made sure to take the emergency brake off. All of a sudden, he sped out into the parking lot, and Sam ran after him with a big smile.

**Name:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**1.** What do Michael and Sam build?

- A) a fast car
- B) a big truck
- C) a go-kart
- D) an engine

**2.** What problem do Michael and Sam face with their first go-kart prototype?

- A) It is too slow.
- B) It is too fast.
- C) It is too small.
- D) It breaks apart easily.

**3.** The second time Michael and Sam test their go-kart, they are satisfied with its speed.

Which sentence supports this idea?

- A) "Sam pressed his foot down on the pedal, expecting the go-kart to shoot forward out of the garage and into the parking lot."
- B) "Michael, Sam, and John needed to think about ways to maximize the go-kart for its speed: what aspects of their original design were unnecessary?"
- C) "Michael snapped on a pair of swimming goggles, revved the engine, and made sure to take the emergency break off."
- D) "All of a sudden, Michael sped out into the parking lot, and Sam ran after him with a big smile."

**4.** Why might using a small engine instead of a large engine have increased the go-kart's speed?

- A) The small engine was built for a go-kart, but the large engine was built for a lawnmower.
- B) The small engine was easier for Sam and Michael to carry and work with than the large engine.
- C) The small engine used more fuel than the large engine did.
- D) The small engine did not weigh the go-kart down as much as the large engine did.

5. This passage is mainly about

- A) how visiting a go-kart track can change someone's life
- B) a mother who gives her son a piece of great advice
- C) building a go-kart and then rebuilding it to make it faster
- D) an uncle who lets his nephew and his nephew's friend play in his auto repair shop

6. Read the following sentence: "That weekend, John came by Michael's apartment with a bunch of different **auto** parts that they could use for a go-kart, like a steering wheel, brakes, and an ignition pedal, as well as a large poster board."

What does the word "**auto**" mean in the sentence above?

- A) car
- B) metal
- C) cheap
- D) simple

7. Choose the answer that best completes the sentence below.

The go-kart moves slowly \_\_\_\_\_ Michael and Sam rebuild it.

- A) after
- B) before
- C) when
- D) since

8. What does John say is the first thing that he, Michael, and Sam need to do in order to make the go-kart?

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9. Why did Michael and Sam ultimately decide to shorten the nose of the go-kart?

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**10.** If Michael and Sam were to make another go-kart, what might they do differently than what they did the first time? Support your answer with details from the story.

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# Water from the Air: Cloud Forests

Alden Wicker



In the Americas, Asia, and Africa, there's a special kind of forest. It's rare, beautiful, and incredibly important to the animals and plants living there, and the humans who live nearby.

It's called the cloud forest. Cloud forests, like the name implies, can be found in the clouds on the slopes of mountains. Because they are often shrouded in warm mist, cloud forests are very humid and wet places. But that's what makes these forests so valuable.

Like rainforests, cloud forests experience rainfall, but they also capture water straight from the air. Water condenses on the leaves of the plants (sort of like dew on the grass in the morning) and drips through the canopy to the floor. If you stand in a cloud forest, you'll hear the constant drip of water, even if it's not raining. The water captured is pure and unpolluted, and flows through the ground into streams and then rivers.

Some people call cloud forests "water towers," because they are so important for providing water to nearby villages and cities. In the capital of Honduras, Tegucigalpa, four out of 10 people get their water from La Tigre National Park. That's about 340,000 people drinking cloud forest water! And there are a lot of other big cities that get some of their water from cloud forests, like Quito, Ecuador; Mexico City, Mexico; and Dar es Salaam, Tanzania.

In Guatemala, most of the water comes from the Sierra de las Minas Biosphere Reserve. More than 60 permanent streams flow from the reserve downhill to settlements, villages, and cities. People drink the water, use it for cooking, and irrigate their farm fields with it. In Kenya, people rely on the water from cloud forests to provide electricity by harnessing the energy of rivers that flow from Mount Kenya.

But it's not just humans who rely on cloud forests. While they only make up 2.5 percent of the world's forests, they are home to a stunning array of animals and plants. There are more species of hummingbirds in cloud forests than anywhere else in the world. Colorful birds, lizards, moss, and ferns live here; plus plants that grow on trees, called bromeliads. There's even a bear called the spectacled bear, named for the markings on its face. It's the only bear that lives in South America, and there are only a few thousand remaining because of habitat destruction and hunting.

We don't even know all of the plants, animals, and insects that live in cloud forests, yet we keep discovering new ones. In the 1990s, scientists discovered two bird species that only live in cloud forests. One is the Jocotoco Antpitta, or *Grallaria ridgelyi*, which lives in Ecuador in a small patch of cloud forest. Another is the Scarlet-banded Barbet, or *Capito wallacei*, which was discovered in Peru living on just one mountain. Scientists also discovered a new type of cow and barking deer in the cloud forests of Laos and Vietnam.

As you can see, cloud forests are extremely special places. But they are also very fragile and face a wide array of threats. Local poor people clear the forest so that they can grow subsistence crops. They also hunt endangered and threatened animals for meat, and cut down trees to heat their homes and cook. Commercial farmers convert the land so that they can grow fruits, vegetables, and coffee beans. Cloud forests are cleared and turned into pasture for cattle. Building roads and gem mines also severely damages the cloud forests.

Once cloud forests are cleared, the damage can be irreversible. The cloud cover, which is so essential to the growth of these forests, disperses. The soil degrades and erodes, washing down the mountain slopes. Many species vital to the ecosystem die off. What is left behind is a barren, dusty slope unsuitable for farming and unable to support animals, plants, or even people.

You can think of cloud forests sort of like little habitat islands, bounded by other types of forests and habitats on all sides. Many species are unable to leave one patch to travel to another. Once one patch is completely cleared, many species of plants and animals can go extinct, without ever being seen or studied by people like us. Some of the plant species lost could have been a new medicine or edible crop.

Scientists estimate that each year, 1.1 percent of the world's total cloud forest land is cleared for logging and timber falling. But even more worrying is the threat of climate change. Cloud forests form at very specific altitudes and rely on certain temperatures to thrive. If world temperatures rise, cloud forests would have to move up to a higher altitude where the temperatures are cooler in order to adjust. Some cloud forests are on mountain peaks with

nowhere to climb and would die out. Climate change could also lessen cloud cover, which cloud forests rely on to grow. Because of this, the rate of loss could double.

As you can see, cloud forests are essential, providing water, food, and medicine to the people living in, around, and near them. So why would local people destroy them? To understand why, you have to put yourself in the shoes of a poor local farmer.

Imagine that you have no electricity or gas to heat your home or cook your meals. You do not have an oven or stove, so you get wood from the forest to build a fire. You also need food, and you cannot find a job that pays enough to buy any. There might not be a grocery store anywhere nearby, either. Therefore, you clear some forest next to your home so that you can plant fruits, vegetables, and grains. You also hunt local animals to eat. You would probably be excited to have a road built through the forest to your village, so you can easily go to a nearby city, or reach a hospital if you or someone in your family has an emergency.

If only a few people did these things, it might not be a problem. But the population is growing fast, and when thousands of people clear the forest and hunt animals, it becomes a crisis. Scientists fear we might lose cloud forests altogether, along with the water and other services they provide.

To combat the problem, some governments have designated certain stretches of cloud forest as protected, and it's illegal to clear or log them. This can help preserve cloud forests against mining companies and large commercial farmers. But it can be hard to enforce these rules against local populations. To work with local populations of people is more effective, providing them with other ways to get food and energy so that they can leave the cloud forests intact.

It is also effective to educate the local population on how cloud forests provide fresh water and what happens when they are cleared. For example, in the indigenous community of Loma Alta in Ecuador, once the people understood that the cloud forest is necessary to provide water for farms at lower altitudes, they worked together successfully to protect it.

Cloud forests are too valuable of a natural resource to lose. With laws to protect them, education, and economic support for local people, we might be able to save them—plus the animals and plants they support—before it's too late.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

1. What are cloud forests?

- A** forests that are made out of clouds and float through the earth's atmosphere
- B** forests of oak and maple trees found in the northeastern United States
- C** pine forests that are found in cold climates without much animal life
- D** humid forests that are found among clouds on mountain slopes

2. What does this article try to persuade the reader of?

- A** Governments should not interfere with businesses.
- B** It is too late to save cloud forests.
- C** Protecting cloud forests is important.
- D** Commercial farming is more important than cloud forests.

3. The loss of cloud forests is harmful to the surrounding ecosystem.

What evidence from the passage supports this statement?

- A** When cloud forests are cleared away, the soil degrades and erodes. What is left behind is a dusty slope that is unable to support animals, plants, and people.
- B** Cloud forests can be found among the clouds on the slopes of mountains. They are often surrounded by warm mist, which makes them very humid and wet places.
- C** The Jocotoco Antpitta, or *Grallaria ridgelyi*, lives in Ecuador. The Scarlet-banded Barbet, or *Capito wallacei*, lives in Peru. Barking deer live in Laos and Vietnam.
- D** Commercial farmers sometimes clear cloud forests so that the land can be used as pasture for cattle. Other times, cloud forests are cleared to build roads.

4. Why might providing economic support to people living near cloud forests help save the forests?

- A** People living near cloud forests would be less likely to care about protecting animals like the Jocotoco Antpitta and the Scarlet-banded Barbet.
- B** People living near cloud forests would be less likely to clear away parts of the forest to try to support themselves.
- C** People living near cloud forests would be more likely to buy cars and build roads through the forest to drive on.
- D** People living near cloud forests would be more likely to buy gems dug from the ground by mining companies.

5. What is this passage mainly about?

- A how people in Tegucigalpa, Quito, Mexico City, and Dar es Salaam get their water
- B the history of the Sierra de las Minas Biosphere Reserve in Guatemala
- C the mining companies and commercial farms that threaten cloud forests around the world
- D cloud forests, the threats they face, and what can be done to save them

6. Read the following sentences: "It is also effective to educate the **local** population on how cloud forests provide fresh water and what happens when they are cleared. For example, in the indigenous community of Loma Alta in Ecuador, once the people understood that the cloud forest is necessary to provide water for farms at lower altitudes, they worked together successfully to protect it."

What does the word "**local**" mean?

- A shrinking slowly over a long period of time
- B turning out differently from what was expected
- C having to do with a particular place or area
- D causing people to feel extremely happy

7. Choose the answer that best completes the sentence below.

Cloud forests are home to unusual animals, \_\_\_\_\_ spectacled bears and barking deer.

- A previously
- B such as
- C as a result
- D third

8. Name an animal that is found only in cloud forests.

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**9.** How are cloud forests valuable to human beings? Support your answer with evidence from the passage.

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**10.** Are cloud forests too valuable of a natural resource to lose, as the author claims? Explain why or why not, using evidence from the passage.

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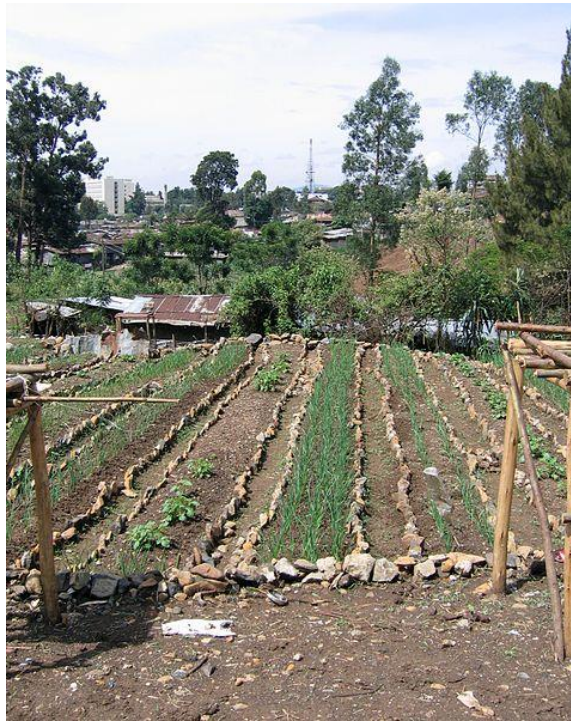
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# Urban Farms

## Susannah Edelbaum



Many people wrongly think that cities don't have farms and that fruits and vegetables are only grown in the country. Believe it or not, there are more and more urban farms popping up in cities all over the world.

Alexandra Sullivan, a food systems researcher in New York City, studies urban agriculture. Urban agriculture is another name for farming and gardening in a city environment. Ms. Sullivan studies everything from tiny gardens in empty lots between buildings to bigger fields that have been planted and cultivated. According to Ms. Sullivan, "Urban agriculture has existed since cities have, across the world."

The number of humans living in urban areas, or cities, is increasing. The amount of people who want to garden in urban areas is also rising. Ms. Sullivan says, "In small gardens, on rooftops and indoors, city residents grow fruits, vegetables, grains, and herbs, and raise animals to produce dairy, eggs, honey, and meat. City residents use these foods as supplements [additions] to food produced by rural agriculture." Even though some people who live in urban areas grow crops, urban residents still need to rely on food grown in rural areas. This is because a city doesn't have enough space to grow enough food for everyone living in it.



In New York City, urban farmers have come up with many different ways to grow their own produce, even though there isn't a lot of room. For example, Brooklyn Grange is a farming operation that has two rooftop vegetable farms in New York City. All together, the farms are made up of 2.5 acres of rooftop space. This makes Brooklyn Grange one of the largest rooftop farming operations in the world.

Brooklyn Grange grows tomatoes, lettuce, peppers, kale, chard, herbs, carrots, radishes, and beans. The farming company sells its vegetables to local residents and restaurants. And because the farms are on rooftops, they are specially adapted to their urban location. They use available space that is not needed for anything else. As more urban farmers find ways to grow food in cities, urban residents will be better able to get fresher ingredients for their meals.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

1. What is urban agriculture?

- A farming and gardening in the country
- B a term for cities that have farms
- C farming and gardening in a city environment
- D a method of growing food indoors

2. What does the passage describe?

- A how to grow potatoes and beans on a roof
- B agriculture in urban environments
- C the history of urban agriculture
- D technology used in urban agriculture

3. Urban agriculture cannot serve as the only food source for a large city. What evidence from the passage supports this statement?

- A "This is because a city doesn't have enough space to grow enough food for everyone living in it."
- B "In New York City, urban farmers have come up with many different ways to grow their own produce, even though there isn't a lot of room."
- C "In small gardens, on rooftops and indoors, city residents grow fruits, vegetables, grains and herbs, and raise animals to produce dairy, eggs, honey and meat."
- D "Brooklyn Grange grows tomatoes, lettuce, peppers, kale, chard, herbs, carrots, radishes, and beans."

4. Based on the text, what is a common challenge urban farmers face?

- A Growing produce during water shortages.
- B Keeping urban farms safe from city residents.
- C Fighting against cities' laws that ban urban agriculture.
- D Finding the right space to grow their produce.

5. What is this passage mostly about?

- A farming in city environments
- B the advantages of urban agriculture
- C how people can begin their own urban farm
- D the rooftop gardens of Brooklyn Grange

6. Read the following sentence: "In New York City, urban farmers have come up with many different ways to grow their own **produce**, even though there isn't a lot of room."

What does "**produce**" most nearly mean as used in this sentence?

- A foods grown in the country
- B foods made with sugar
- C fruits and vegetables
- D desserts and drinks

7. Choose the answer that best completes the sentence below.

The number of people living in urban environments is increasing. \_\_\_\_\_, the number of people in cities who want to start urban farms and gardens is increasing.

- A As a result
- B In addition
- C Initially
- D However

8. How long has urban agriculture existed?

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**9.** Give an example of a place where urban farmers can grow their own produce.

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**10.** Explain how and why urban farms adapt to their city environment. Support your answer using information from the passage.

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