Mission 3: The Candy list rule:

A half century later, at NASA, Anderson witnessed the realization of both. During a visit to a virtual airport

control center, Anderson viewed panoramic images of

the red planet, courtesy from a video feed provided of
the Mars Global Surveyor satellite. At the Jet Propulsion
Laboratory in Pasadena, California, she was introduced
to robots that function autonomously through controland-sensor-processing software. [D]

13

Drawing on her NASA experiences, Anderson wrote and produced a ninety-minute performance art piece titled *The End of the Moon*. The performance features Anderson on a candlelit stage, standing

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in front of an image of the moon's surface. 9

9. At this point, the writer is considering adding the following true sentence:

Neil Armstrong was the first man to be photographed walking on the moon's surface.

Should the writer make this addition?

- A. Yes, because the sentence contributes to the paragraph's discussion of how Anderson uses photography in her performance art.
- B. Yes, because the sentence contributes to the paragraph's discussion of how and why The End of the Moon is a reimagining of NASA's first moon landing.
- C. No, because the sentence is not relevant to the paragraph's description and interpretation of The End of the Moon.
- D. No, because the sentence is not relevant to the paragraph's critique of Anderson's struggle to make performance art commercially viable.

beneficial to researchers, though. Biologists trying to monitor individual zebras sometimes joke that finding one in the wild typically is easy it's finding the same one twice that's hard.

[2]

Working together, scientists at the University of

Illinois and Princeton University developed a software

program called StripeSpotter, which catalogs and identifies

zebras. StripeSpotter translates the pattern of stripes on a

zebra's side, into an identifier, similar to a bar code, that

can be compared to other zebra stripe-pattern identifiers

that have been stored in a database. 20

[3]

The process begins when a researcher uploads a still photograph of a zebra to StripeSpotter. [A] The researcher then crops a rectangular section of the photograph, making sure to capture the stripes on the zebra's side.

[B] StripeSpotter converts that section into a stark blackand-white image composed of parallel, vertical lines.

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20. At this point, the writer is considering adding the following true sentence:

Some researchers believe that the stripes on zebras help the animals identify one another in a herd.

Should the writer make this addition here?

- F. Yes, because it makes clear that zebras have always been able to do what StripeSpotter can do.
- G. Yes, because it shifts the essay back to its main topic, interpreting the stripes on zebras.
- H. No, because it isn't relevant to the explanation of what StripeSpotter is and how it works.
- J. No, because it doesn't specify why it is important that zebras are able to identify one another.

PASSAGE III

Celadon Remnants

[1] At the Broadway Station of the Long Island

Rail Road in Flushing, Queens, commuters ponder a

mural spanning over three hundred square feet on
the station's south wall. [2] But as they come closer,
commuters notice the silhouettes are also mosaics,
constructed entirely of ceramic shards. [3] From afar,
the mural appears as a series of aquamarine, vase-shaped
silhouettes against a white tile background. [32]

The mural, titled Celadon Remnants, is artist Jean Shin's homage on the Korean American community in Flushing. When she was commissioned by the Metropolitan Transportation Authority of New York City to spawn a site-specific artwork,

visually representing her dual identity was a means

sought by Shin as an American and a Korean. She

chose to use traditional celadon pottery, albeit in

a new way.

34. F. NO CHANGE G. accomplish

H. perform

J. produce

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Celadon is a ceramic ware named for its'

aquamarine glaze. Originally from China, celadon was

further developed in the tenth and eleventh centuries in

Korea, in which inlaid designs and decorative elements

were added. Over the centuries, celadon became a cultural

treasure in Korea. Today, South Korean ceramicists will

accept nothing less than perfection in creating their art. In

fact, if the ceramicist deems a piece imperfect, he or she

will often scrap it entirely.

Shin decided that these scraps, or shards, would be an ideal medium for her mural. In 2008, she contacted ceramicists in the South Korean city of Icheon for celadon shards and arranged to be shipped to Queens.

The ceramicists sent Shin over six thousand shards.

Using the shards—many of whose are adorned with

alphabetic symbols and assorted patterns—Shin

41
constructed her mural.

For Shin, the shards themselves took on significance: they represented her feeling of

being broken off or "fractured" from their birthplace

of Seoul, South Korea. In Queens, Shin's use of
44
the fragments to construct an artwork that
celebrated a Korean tradition. The result is sublime.

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- 38. Given that all the choices are true, which one most effectively leads the reader from the first two sentences of the paragraph to the rest of the paragraph?
 - F. NO CHANGE
 - G. The celadon's eolor is a result of iron oxide's transformation from ferric to ferrous iron during the firing process.
 - H. It has been theorized that the name "celadon" derives from the Sanskrit words for green and stone.
 - J. Shin Sang-ho, one of Korea's most celebrated modern ceramicists, began his career re-creating traditional celadon.

The silhouettes merge Shin's past and present, creating
45
an exquisite meditation on Korean American identity.

PASSAGE IV

-Secret Word:

Captain Charles Young's Road to the Giant Sequoias

Able to grow as tall as a twenty-six-story building and as wide as a city street, Earth has the largest living things, which are giant sequoia trees. Sequoia National Park in California's Sierra Nevada mountain range

contains 275 known caves. Yet until 1903, few visitors could gain access to the trees in the park's Giant

Forest: there was no completed road.

The US Army—which from 1891 to 1913 was responsible for improving national parks during the summer months—had managed to complete only about six miles to the road of the Giant Forest. Army Captain Charles Young, however, was not deterred. The first black superintendent of a national park and a revered leader of the army's all-black 9th and 10th Cavalries, Young had the experience needed to direct the completion of the project.

46. F. NO CHANGE

- G. it is known that the largest living things on Earth are giant sequoia trees.
- H. on Earth are the largest living things—giant sequoia trees.
- J. giant sequoia trees are the largest living things on

life stage. In a sense, they grew younger.

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T. dohrnii has no brain or heart. After fertilization,

a T. dohrnii egg develops into a free-swimming, ovoid

larva. In time, the larva settles on the ocean floor and

transforms into a mound of cells—a hydroid colony.

Buds grow on the colony and develop into young jellyfish

with the familiar bell-like shape and tentacles. These

jellyfish then detach from the colony, and drift away

reaching maturity in a few weeks.

After Sommer's discovery, studies confirmed that T. dohrnii's life cycle is not a one-way street. An adult T. dohrnii, if stressed—by injury, disease, or even just old age, has the ability to revert to a hydroid colony. That colony can then create new jellyfish, which in turn can also revert to hydroid colonies. There's no apparent limit to these perpetual cycles of metamorphic transformation.

In the 1990s, journalists nicknamed T. dohrnii the

"immortal jellyfish." It is true that scientists have replicated all stages of T. dohrnii's life cycle, but each individual T. dohrnii isn't immortal. Although the cells of the adult are essentially recycled during its transformation, all the new jellyfish grow into separate organisms—albeit genetically equivalent ones.

- 65. Given that all the choices are accurate, which one best helps the sentence introduce the main focus of the paragraph?
 - A. NO CHANGE
 - B. been found primarily in the Mediterranean Sea and in waters near Japan.
 - C. only eight tentacles as a young jellyfish but over eighty as an adult.
 - D. a multistage life cycle.

READING TEST

35 Minutes - 40 Questions

DIRECTIONS: There are several passages in this test. Each passage is accompanied by several questions. After reading a passage, choose the best answer to each question and fill in the corresponding oval on your answer document. You may refer to the passages as often as necessary.

Passage B by Dan Barry

Ink. The building smelled of ink, spilled and bled. It was a tart and chemical smell, the kind that weaves into the fabric of your clothes and then under your skin, the kind that comes home with you, sits with you at the dinner table, tells you constantly what it is you do. Car mechanics know their smell, as do fishermen and hair stylists, nurses and short-order cooks. You are a man 50 who chases halibut, a woman who perms hair. You smell of it.

I waded into that invisible veil of ink, inhaled it deeply, allowed it to wash over me. It smelled of words and phrases, rants and ideas, sports scores and felony arrests, announcements of marriage and notices of death. Maybe the chemical-like aroma was inducing hallucination, but I doubted it. In a squat concrete building, no different from all the others in a drab Connecticut industrial park, I was experiencing a moment of revelation—an epiphany, really, at the age of twenty-five.

This is what I do.

Pinned like a manifesto to a bulletin board in the center of this ink-perfumed building was a typewritten note from my new employer, announcing that on this day, October 17, 1983, I would begin working as a reporter for a daily newspaper. The note formalized my calling in life with a splash of perspective that would stay with me forever:

70 Dan is a former intern at the Daily News in New York and a graduate assistant for the journalism department at New York University. His writing has appeared in the Daily News, the New York Times and the Rocky Mountain News. Soon it will appear in trashcans throughout north-central Connecticut. Please make him feel relevant.

Reading the note, I thought, I'm home.

Questions 5-7 ask about Passage B.

- 5. What is the epiphany the narrator of Passage B experienced at the age of twenty-five?
 - A. He couldn't live in his parents' basement forever.
 - B. His dream of being a reporter had finally been realized.
 - C. He would rather write news stories than work for a lawn company.
 - D. His success as a reporter would depend on his work ethic.

Passage III

HUMANITIES: This passage is adapted from I'll Take You There: Mavis Staples, The Staples Singers, and the March Up Freedom's Highway by Greg Kot (©2014 by Greg Kot).

To fans of the Staples Singers in the '60s, the relative anonymity of Mavis Staples was puzzling. With an improbably deep voice bursting out of a diminutive five-foot frame, she projected the deepest commitment to whatever she was singing, losing herself in every word as though reliving a critical moment in her personal story.

And yet she still wasn't a marquee name like Aretha Franklin, Gladys Knight, Diana Ross, and Dusty 10 Springfield. Part of this was by design—Mavis enjoyed singing with her family and preferred to melt into the group. Even when her father brought her out front to sing lead after her brother Pervis's voice changed in the '50s, she did so reluctantly. "I loved singing those bari-15 tone harmonies, I always thought that was the best job you could have," Mavis said. She also felt a certain comfort being guided by her father, who had essentially taught her how and what to sing. Little had changed in the decades since, even as it was apparent that Mavis 20 had star power. "Mavis was and is a quartet singer," says Anthony Heilbut. "From a very early age she grew up singing harmony or singing lead in a group with four voices and her father's guitar. She was trained to sing with the guitar, whereas Aretha sang with the piano. It's 25 a very different approach."

Not only that, Pops's idiosyncratic guitar style made it difficult for Mavis to easily adapt to a different context. So, too, was the unspoken communication between Mavis and her siblings, the way they harmo30 nized with her, even the way they clapped hands together, a high-speed ripple that approximated an entire percussion section by itself. "I've been singing a long time," Mavis says, "and I could never find anyone to clap like Pervis and Cleedi."

But Al Bell never forgot the day in Arkansas when the teenage Mavis's voice bowled him over and left him in tears in what was essentially a solo performance of "On My Way to Heaven" during a Staples Singers show.

"In signing the Staples Singers, I thought of it as signing three acts in one," Bell says. "I wanted to record Pops and Mavis as solo artists. I knew it would add more to them from a personal appearance standpoint, bring them a broader, more diverse audience. I would hear Pops sitting around and just playing his guitar at Stax Records and I thought, 'I've got to get this man down on tape.' His singing, I knew there was a lot more songs that could have been done with Pops as a vocalist, because he was so distinctive. With Mavis I saw no boundaries at all—I saw her walking past all of them."

Steve Cropper had already won the Staples family's trust while recording Soul Folk in Action, so Bell had him produce what would be Mavis's self-titled debut album.

"The attitude at Stax was that she's a superstar who nobody really knows about, and we have to figure out how to get her out there," Cropper recalls. "But it wasn't easy, because she puts limits on herself. There 60 were only certain songs she would try. Her upbringing, her feeling about what songs would or wouldn't go down with Pops, gave me the impression she didn't want to go too far too fast. So I approached the whole thing with kid gloves. I didn't want to lose her trust or 65 do something damaging."

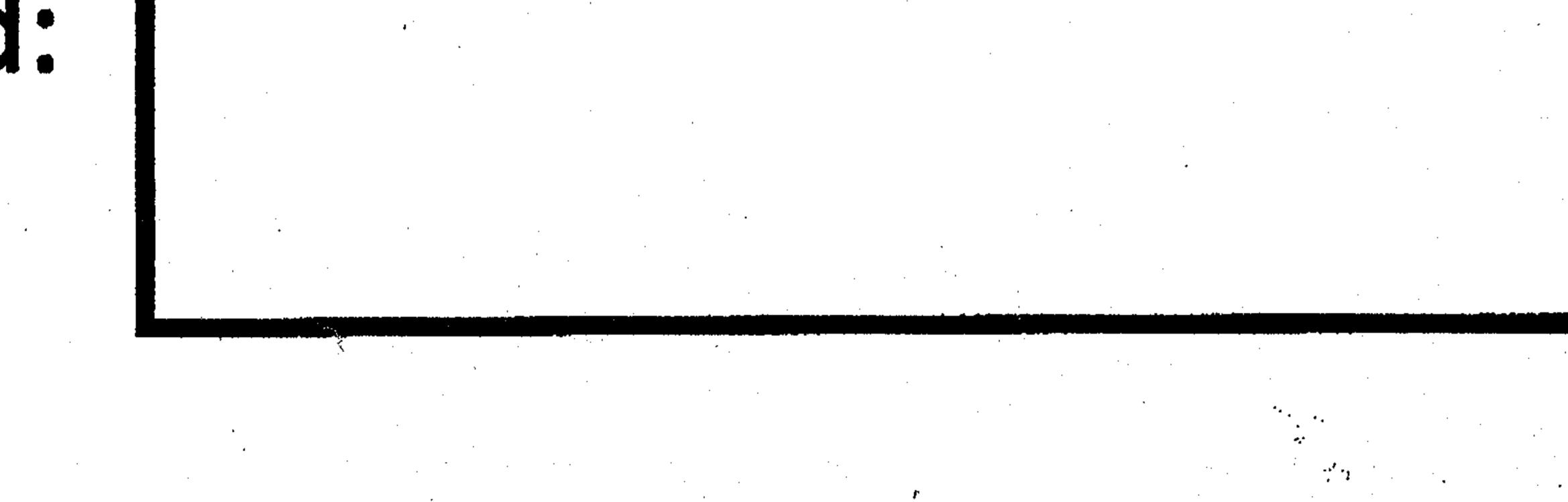
Cropper found Pops a thoughtful and willing collaborator in the studio, but there was no question his word still counted more than anyone else's in the family, even though his children were well into adult70 hood. "Every now and then, Mavis would reference Pops in terms of putting his foot down about dating." Cropper says. "There were lines he didn't want to cross when it came to his family's well-being, and that included what kind of songs they would sing, what 75 message they would put out."

The guitarist knew he was running a risk presenting Mavis with a set of secular songs that didn't have any of the gospel or message-oriented underpinnings favored by Pops and the Staples Singers. Whereas her 80 first attempt at cutting a solo single, a cover of "Crying in the Chapel" for Epic Records, had some tenuous religious imagery, the tracks chosen for the Mavis Staples solo album were the sort of pop-oriented love and relationship songs that Pops typically shunned.

But Mavis was hardly insulated from the pop world as a fan and listener. She swooned over Sam Cooke's "You Send Me" the first time she heard it, and her cover of it on her debut album sounds wistful, as if she were singing both to a newfound love and Cooke's memory.

- that Mavis Staples's relative anonymity in the '60s was puzzling to her fans mainly because she had a:
 - F. more distinct voice than her brother, who became more famous than she did.
 - G. greater vocal range than many other artists of the
 - H. voice that reminded fans of singers whose names were on the marquee.
 - J. powerful voice and a personal approach to her performances.

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- 25. The main idea of the seventh paragraph (lines 56-65)
 - A. Cropper brought the Staples Singers success by pushing them to try genres outside of their usual repertoire.
 - B. Cropper was careful about how he encouraged Mavis Staples to explore new opportunities with her music.
 - C. Stax Records was innovative because they took risks by signing unknown singers.
 - D. Mavis Staples was initially unwilling to perform without backup singers.

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A	sang a	s if the	song lyri	cs evoked	poignant	episodo	es

- from her past.
- B. clapped her hands along with a song.
 C. transitioned to a new song when she felt moved by her siblings' harmonies.
- D. danced on stage when her father or brother sang.

Passage IV

NATURAL SCIENCE: This passage is adapted from the book *Mycophilia: Revelations from the Weird World of Mushrooms* by Eugenia Bone (©2011 by Eugenia Bone).

There are a number of fungi that live in mutualist relationships in which a balance of interests occurs between two organisms. Lichen has a mutualistic relationship with photosynthesizing algae and bacteria.

5 And there are also commensal relationships, where the fungus may not be doing the host any good or any harm, either—the raison d'être of some yeasts in our body, for example, is unknown and may be commensal. But mycorrhizal fungi are the princes of mutualism.

10 "Fungi can't make their own food," said Gary Lincoff. "So they made a strategic choice to team up with plants."

Ninety percent of natural land plants are thought to have mycorrhizal fungi partners. It's a masterpiece of 15 evolution: Mycorrhizal fungi break down nutrients like phosphorus, carbon, water, and nitrogen into a readily assimilative form and deliver them to the plant in return for sugar produced by the plant via photosynthesis. The fungus needs sugar for energy and to launch its spores, 20 and the tree needs nutrients because (despite what I learned in school) tree roots don't do the job adequately. Tree roots primarily anchor the tree in the soil. While tree roots will absorb moisture if watered and nutrients if fertilized, it is the mycorrhizal fungus grow-25 ing on and in the tree roots that provides the tree with the lion's share of its nutrition and water. Mycorrhizal fungi significantly expand the reach of plant roots, and by extending the root system, increase the tree's nutrient and water uptake.

In the wild, mycorrhizal fungi are key to not just the health of single trees but to healthy forest ecosystems. A single fungal genotype or clone can colonize the roots and maintain the nutritional requirements of many trees at once. And multiple fungi can colonize the roots of all or most of the trees in a forest. The hyphae, those threadlike strings of cells that are the fungus, function as pathways for shuttling nutrients, water, and organic compounds around the forest. The mycologist Paul Stamets believes that mycorrhizal fungi function as a giant communications network between multiple trees in a forest—he calls it "nature's Internet." Others have described this linkage as the "architecture of the wood-wide web."

Weaker plants are able to tap into this network, too, like hitchhikers on a nutritional superhighway. Young seedlings struggling to grow in the shadow of established trees tap into the larger, older tree's fungal network to improve their nutritional uptake. This network exists to benefit not only established trees and seedlings of the same species but also trees from different species, and at different stages of development. So one multitasking fungus, its hyphae attached to the roots of multiple trees in the forest, can simultaneously provide a different nutritional load as needed to different trees. It's a couture service.

The old trees in a torest function as hubs for these mycelial networks. "Like spokes of a wheel," said Suzanne Simard, a professor of forestry at the University of British Columbia who studies mycorrhizae. Rhi-60 zomorphs (ropes of hyphae) connect the foundation tree with other trees—like an express stop on a subway system where lots of local trains come through—and the bigger the tree, the larger the hub. That's because the largest trees have the greatest root system, and the 65 more roots there are, the more real estate there is for the fungus to colonize. "In one forest, we found 47 trees linked by two species of fungi composed of 12 individuals," said Simard. (By individuals, she means two genetically distinct fungal entities.) "Talk about two 70 degrees of separation!" Even nonphotosynthesizing plants take advantage of "the hub." Parasites like the Indian pipe depend totally on mycorrhizal fungi for its nutritive needs. It taps into the nutrients and water provided by the mycorrhizae and connects via the mycor-75 rhizae to a photosynthesizing plant for sugar.

Despite the fact that fungi are microscopic organisms, the functions they perform are often on an ecosystem or landscape scale. If you could take an x-ray look at the soil, you'd see that underneath the forest duff there is a layer of mycorrhizal mycelium running between, on, and in the roots of plants. It's like a stratum of life between the duff and the soil that holds water and nutrients in the ground. And when that stratum is disrupted, or not present, plants suffer. In fact, ecosystems with inadequate mycorrhizal fungi can experience catastrophic losses of plant biomass.

- 33. The main idea of the fourth paragraph (lines 44-55) is that:
 - A. networks of fungi benefit different species of trees at various levels of development.
 - B. young seedlings typically tap into the roots of trees that are the same species as the seedlings.
 - C. established trees genetically alter fungal networks to benefit different species of trees.
 - D. different species of trees can be identified based on their nutritional uptake.

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