

Grade 8 English Language Arts

DIRECTIONS

This session contains two reading selections with fifteen multiple-choice questions and two open-response questions.

Read this article about brain research and math performance ability. Then answer the questions that follow.

GUT MATH

- 1 **S**ight, smell, hearing, taste, touch . . . math?
- 2 You might love math or hate it. Regardless, scientists say, we are all born with a knack for mathematics.
- 3 This is not to say that we're all secret computational geniuses. A baby chewing on her toes is not demonstrating in sign language that 12 squared is 144. What does come naturally, though, is the ability to approximate. If our ancestors hadn't been able to judge at a glance whether they were outnumbered by mastodons, or which bush held the most berries, we might not be around today. Every time you leave your algebra class and scan the cafeteria for a table that will fit all of your friends, you're exercising the ancient estimation center in your brain.
- 4 Stanislas Dehaene was the first researcher to show that this part of the brain exists. In 1989, he met a man called Mr. N who had suffered a serious brain injury. In addition to other problems, Mr. N had acalculia, or an inability to do math. He couldn't recognize the number 5, or add 2 and 2. But Mr. N still knew a few things. For example, he knew that 8 is bigger than 7, and that there are "about 350 days" in a year and "about 50 minutes" in an hour.
- 5 Dehaene dubbed Mr. N "the Approximate Man" and drew an important conclusion from his case: there must be two separate mathematical areas in our brains. One of these areas is responsible for the math we learn in school; this is what Mr. N damaged. The other area doesn't worry too much about specific numbers, but judges approximate amounts. Since this area was undamaged, Mr. N became the Approximate Man.
- 6 So what does the brain's estimation center do for the rest of us? In the hopes of answering this question, Harvard University researcher Elizabeth Spelke has spent a lot of time posing math problems to preschoolers. Like the Approximate Man, preschoolers are bad at formal math. When Spelke asks 5-year-olds to solve a problem like $21 + 30$, they can't do it—no surprise there. But Spelke has also asked 5-year-olds questions such as, "Sarah has 21 candles and gets 30 more. John has 34 candles. Who has more candles?" It turns out preschoolers are great at solving questions like that. Before they've learned how to do math with numerals and symbols, their brains' approximation centers are already hard at work, making them pros at estimation.

- 7 After we learn symbolic math, do we still have any use for our inborn math sense? Does it matter? Justin Halberda and his colleagues at Johns Hopkins University think it does. They challenged a group of 14-year-olds with an approximation test: The kids stared at a computer screen and saw groups of yellow and blue dots flash by, too quickly to count. Then they had to say whether there had been more blue dots or yellow dots. The researchers found that kids' math sense varied widely. Most were able to answer correctly when there were, say, 25 yellow dots and 10 blue ones. When the groups were closer in size, say 11 yellow dots and 10 blue ones, fewer kids answered correctly. . . .
- 8 The big surprise in this study came when the researchers compared the kids' approximation test scores to their scores on standardized math tests throughout their school years. They found that kids who did better on the flashing dot test had better standardized test scores, and vice versa. It seems that, far from being irrelevant, your math sense might predict your ability at formal math.

ANIMAL ARITHMETIC

- 9 For animals, knowing numbers may be the difference between being full or being hungry, being alive or being, well, not alive. If you can count or estimate quantities, you can figure out which tree has the most fruits, which watering hole has the fewest predators, and even how to find your hideout among all the tunnels in your burrow. Many scientists now think that lots of different animals, from pigeons and monkeys to rats and salamanders, have an innate number sense that helps them tell less from more and maybe even perform some more impressive feats.
- 10 Rats, for example, can learn to press a lever a certain number of times to get a treat—though they sometimes overshoot, maybe just to play it safe. Birds have been trained to pick up just the fifth seed in a series. Many animals, including pigeons, can tell a smaller pile from a bigger one. Even the humble salamander looked longer (and longingly?) at the test tube that contained more fruit flies.
- 11 In one of the few number studies with wild animals, rhesus monkeys were shown a pile of lemons. The researchers put the lemons behind a screen, then showed the monkeys another pile of lemons and put that pile behind the screen as well. When they lifted the screen to show the expected number of lemons, the monkeys barely looked, but when the pile had fewer or more lemons than there should have been, the monkeys were seemingly surprised and stared at the lemons for longer.

1 Paragraphs 1 and 2 **mainly** suggest that math is

- A. an easy skill.
- B. a useful skill.
- C. a natural skill.
- D. an essential skill.

2 What does paragraph 3 **mainly** suggest about our ancestors?

- A. that they used estimation skills to survive
- B. that they developed a system of math symbols
- C. that they taught their children estimation skills
- D. that they solved math problems for amusement

3 Based on paragraphs 7 and 8, what discovery **most** surprised researchers in the study of 14-year-old students?

- A. the variety of math abilities in different students
- B. the link between technology skills and estimation skills
- C. the difficulty of the task as the number of dots increased
- D. the connection between estimation skills and formal math ability

4 Which sentence uses the word *gut* in the same way it is used in the title of the article?

- A. Tom's gut hurt after eating too much.
- B. Tom had to gut out the last mile of the race.
- C. Tom had to gut the fish before he could cook it.
- D. Tom's gut reaction was to turn right instead of left.

5 Read the sentence from paragraph 5 in the box below.

The other area doesn't worry too much about specific numbers, but judges approximate amounts.

In the sentence, the word *judges* is used as which part of speech?

- A. verb
- B. noun
- C. adverb
- D. adjective

Question 6 is an open-response question.

- Read the question carefully.
- Explain your answer.
- Add supporting details.
- Double-check your work.

6 Based on the article, explain the differences between “gut math” and “formal math.” Support your answer with relevant and specific details from the article.

In "Celeste's Heart," Celeste is a young girl attending school in Argentina. In "Principals and Principles," Daniel Handler recalls a time when he was a young boy. Read the passages about experiences each had in school, and answer the questions that follow.

CELESTE'S HEART

by Aida Bortnik

- 1 Celeste went to a school that had two yards. In the front yard they held official ceremonies. In the back yard the Teacher made them stand in line, one behind the other at arm's distance, keeping the arm stretched out straight in front, the body's weight on both legs, and in silence. One whole hour. Once for two whole hours. All right, not hours. But two breaks passed, and the bell rang four times before they were allowed back into the classroom. And the girls from the other classes, who played and laughed during the first break as if nothing had happened, stopped playing during the second break. They stood with their backs to the wall and watched them. They watched the straight line, one behind the other at arm's length, in the middle of the school yard. And no one laughed. And when the Teacher clapped her hands to indicate that the punishment was over, Celeste was the only one who didn't stretch, who didn't complain, who didn't rub her arm, who didn't march smartly back into the classroom. When they sat down, she stared quietly at the Teacher. She stared at her in the same way she used to stare at the new words on the blackboard, the ones whose meaning she didn't know, whose exact purpose she ignored.
- 2 That evening, as she was putting her younger brother to bed, he asked once again: "When am I going to go to school?" But that evening she didn't laugh, and she didn't think up an answer. She sat down and hugged him for a while, as she used to do every time she realized how little he was, how little he knew. And she hugged him harder because she suddenly imagined him in the middle of the school yard, with his arm stretched out measuring the distance, the body tense, feeling cold and angry and afraid, in a line in which all the others were as small as he was.
- 3 And the next time the Teacher got mad at the class, Celeste knew what she had to do.
- 4 She didn't lift her arm.
- 5 The Teacher repeated the order, looking at her somewhat surprised. But Celeste wouldn't lift her arm. The Teacher came up to her and asked her, almost with concern, what was the matter. And Celeste told her. She told her that afterward the arm hurt. And that they were all cold and afraid. And that one didn't go to school to be hurt, cold, and afraid.
- 6 Celeste couldn't hear herself, but she could see her Teacher's face as she spoke. And it seemed like a strange face, a terribly strange face. And her friends told her afterwards that she had spoken in a very loud voice, not shouting, just a very loud voice. Like when one recited a poem full of big words, standing on a platform, in the school's front yard. Like when one knows one is taking part in a solemn ceremony and important things are spoken of, things that happened a long time ago, but things one remembers because they made the world a better place to live than it was before.

- 7 And almost every girl in the class put down her arm. And they walked back into the classroom. And the Teacher wrote a note in red ink in Celeste's exercise book. And when her father asked her what she had done, and she told him, her father stood there staring at her for a long while, but as if he couldn't see her, as if he were staring at something inside her or beyond her. And then he smiled and signed the book without saying anything. And while she blotted his signature with blotting paper, he patted her head, very gently, as if Celeste's head were something very very fragile that a heavy hand could break.
- 8 That night Celeste couldn't sleep because of an odd feeling inside her. A feeling that had started when she had refused to lift her arm, standing with the others in the line, a feeling of something growing inside her breast. It burned a bit, but it wasn't painful. And she thought that if one's arms and legs and other parts of one's body grew, the things inside had to grow too. And yet legs and arms grow without one being aware, evenly and bit by bit. But the heart probably grows like this: by jumps. And she thought it seemed like a logical thing: the heart grows when one does something one hasn't done before, when one learns something one didn't know before, when one feels something different and better for the first time. And the odd sensation felt good. And she promised herself that her heart would keep growing. And growing. And growing.

Principals and Principles **DANIEL HANDLER**

- 1 In San Francisco the weather never gets hot, and when it does it lasts only three days. On the first day, the hot weather is a surprise, and everyone wanders around carrying their sweaters. On the second day, everyone enjoys the heat. And on the third day, the cold weather returns and is just as surprising, and everyone wanders around shivering.
- 2 One of these three-day heat waves arrived when I was in seventh grade, and on the first day everyone was grumpy because we had all dressed for fog and gloom and now had to drag our sweaters all over the school. We all agreed that the next day we'd dress for warm weather, but just as the day ended, the principal made an announcement over the loudspeaker. "Students at Herbert Hoover Middle School are not allowed to wear shorts," she said, in the tone of voice she always used—a tone of voice that sounded friendly but was actually unbearably wicked.
- 3 Everyone groaned—everyone but me. "She can't do that," I said, and reached into the back of my binder. On the first day of school, we'd all received a pamphlet: "Student Rights and Responsibilities." For some reason I'd saved it, and I read one of our rights out loud: "Students have the right to free dress." I convinced everyone to wear shorts the next day in order to protest the wicked principal's unfair cancellation of one of our rights.

- 4 The next day was wonderful because we were all dressed for the heat and nobody had to drag their sweaters around, but of course, I was sent to the principal's office—someone had ratted on me. (To this day, I suspect Nancy Cutler, but I can't prove it.) She asked me if I had told everyone to wear shorts. I said yes. She said shorts were distracting to some of the teachers. I said that free dress was one of our rights. She said that shorts led students to have water fights. I said that free dress was one of our rights. She said that she was the principal and she was in charge. I said that free dress was one of our rights. She kept pointing at me. I kept pointing at the pamphlet. The principal was one of those people who yelled at you until you cried, but I forced myself not to cry, biting my lip and blinking very, very fast, until at last she gave up and I was allowed to return to my classmates, who applauded me. In celebration, we all wore shorts the next day, too, even though we knew the cold weather would return, and it did, and we were shivering and miserable.
- 5 In eighth grade we got a new version of the pamphlet. Instead of "Students have the right to free dress," it read, "Students have the responsibility to dress appropriately." I threw it away.
- 6 If you stand up for your rights, you can count on the fact that the wicked people will find sneaky ways to change the rules. But you should stand up for your rights anyway, because there aren't enough sunny days in the world, and everyone should enjoy them.

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"Principals and Principles" by Daniel Handler, from *Guys Write for Guys Read*. Copyright © 2005 by Daniel Handler. Reprinted by permission of Charlotte Sheedy Literary Agency on behalf of the author.

7 In “Celeste’s Heart,” what is the **most likely** reason paragraph 4 is a single sentence?

- A. to highlight Celeste’s thought
- B. to emphasize Celeste’s action
- C. to suggest Celeste’s immaturity
- D. to reveal Celeste’s disappointment

8 In paragraph 5 of “Celeste’s Heart,” what does the Teacher’s reaction to Celeste **mainly** reveal about the Teacher?

- A. She is annoyed that Celeste is arguing.
- B. She is worried that Celeste is feeling sick.
- C. She does not want to punish Celeste again.
- D. She does not expect Celeste to behave in this way.

9 Based on paragraphs 6 and 7 of “Celeste’s Heart,” how do Celeste’s classmates **most likely** feel after her speech?

- A. fearful
- B. amused
- C. confused
- D. appreciative

10 Read the description from paragraph 7 of “Celeste’s Heart” in the box below.

And then he smiled and signed the book without saying anything.

What do the father’s actions in the description **mainly** represent?

- A. his loyalty
- B. his strength
- C. his approval
- D. his gratitude

11 According to paragraph 8 of “Celeste’s Heart,” what causes the heart to grow?

- A. the love a person has
- B. the people a person meets
- C. the choices a person makes
- D. the guidance a person receives

- 12 In “Principals and Principles,” the events of the story are **mainly** set in motion with a change in
- A. time.
 - B. weather.
 - C. school leadership.
 - D. student government.

- 13 In paragraph 5 of “Principals and Principles,” what is the **main** reason the author is upset by the new version of the pamphlet?
- A. He must remember the new dress code.
 - B. He will be unable to dress how he wants.
 - C. He thinks the principal is being impatient.
 - D. He believes the principal used her authority unfairly.

- 14 Based on “Principals and Principles,” which of the following sentences **best** describes the author both as a student and as an adult?
- A. He treats others with care.
 - B. He avoids conflict in his life.
 - C. He takes the advice of others.
 - D. He is motivated by his values.

- 15 Read the sentence from paragraph 1 of “Celeste’s Heart” in the box below.

And when the Teacher clapped her hands to indicate that the punishment was over, Celeste was the only one who didn’t stretch, who didn’t complain, who didn’t rub her arm, who didn’t march smartly back into the classroom.

- In “Principals and Principles,” when is the author’s behavior **most** similar to Celeste’s?
- A. when he reads his rights to the other students
 - B. when he tells his classmates to wear shorts
 - C. when he refuses to cry in front of the principal
 - D. when he throws away the new pamphlet

- 16 In paragraph 4 of “Principals and Principles,” the word “ratted” is an example of
- A. sensory language.
 - B. informal language.
 - C. technical language.
 - D. academic language.

Question 17 is an open-response question.

- Read the question carefully.
- Explain your answer.
- Add supporting details.
- Double-check your work.

- 17 Explain how the themes in “Celeste’s Heart” and “Principals and Principles” are similar. Support your answer with relevant and specific details from **both** passages.

Grade 8 English Language Arts

Reporting Categories, Standards, and Correct Answers*

Item No.	Reporting Category	Correct Answer (MC)*
1	<i>Reading</i>	C
2	<i>Reading</i>	A
3	<i>Reading</i>	D
4	<i>Language</i>	D
5	<i>Language</i>	A
6	<i>Reading</i>	
7	<i>Reading</i>	B
8	<i>Reading</i>	D
9	<i>Reading</i>	D
10	<i>Reading</i>	C
11	<i>Reading</i>	C
12	<i>Reading</i>	B
13	<i>Reading</i>	D
14	<i>Reading</i>	D
15	<i>Reading</i>	C
16	<i>Language</i>	B
17	<i>Reading</i>	

* Answers are provided here for multiple-choice items only. Sample responses and scoring guidelines for open-response items, which are indicated by the shaded cells,