Student Name: _____ Date: _____ / _____ / _2022__ Score:_____
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# QUIZ 3

## Reading Explorer 5 Unit 3 Lesson A

**DIRECTIONS: Choose the best answer for each question.**

### The Age of Disbelief

*We are surrounded by science and technology like never before, yet increasing numbers of people doubt the claims of scientists. Writer Joel Achenbach investigates the reasons for a rising tide of skepticism.*[1]

[A] We live in an age when all manner of scientific knowledge - from the safety of vaccines[2] to the reality of climate change - faces organized and often angry opposition. Doubters have declared war on the consensus of experts. There are so many of these controversies[3] these days, you'd think an evil villain had put something in the water to make people argumentative.

[B] In a sense all this is not surprising; our lives are affected by science and technology as never before. For many of us this new world is comfortable and rich in rewards - but also more complicated and sometimes unnerving. We now face risks we can't easily analyze.

[C] We're asked to accept, for example, that it's safe to eat food containing genetically modified organisms. Experts say there's no evidence that it isn't safe, and no reason to believe that altering genes in a lab is more dangerous than altering them through traditional breeding. But to some people the very idea of transferring genes between species brings up images of mad scientists running wild.

[D] The world seems full of real and imaginary hazards, and distinguishing the former from the latter isn't easy. Should we be afraid that the Ebola virus, which is spread only by direct contact with bodily fluids, will mutate into an airborne super-plague? The scientific consensus says that's extremely unlikely: No virus has ever been observed to completely change its mode of transmission in humans. But if you type "airborne Ebola" into an Internet search engine, you'll find that some people believe that this virus has almost supernatural powers.

[E] In this often confusing world we have to decide what to believe and how to act accordingly. In principle, that is what science is for. "Science is not a body of facts," says geophysicist Marcia McNutt, who once headed the U.S. Geological Survey and is now editor of the journal *Science*. "Science is a method for deciding whether what we choose to believe has a basis in the laws of nature or not." But that method doesn't come naturally to most of us.

### Making Sense of the World

[F] The trouble goes way back, of course. The scientific method has led us to truths that are less than self-evident, often mind-blowing, and sometimes hard to accept. For example, both the sun and moon appear to cross the sky above the Earth, but while the moon does indeed circle our world, the Earth circles the sun. Although the roundness of the Earth has been known for thousands of years, alternative geographies persisted even after trips around the world had become common. Nineteenth-

century flat-Earthers, for example, believed that the planet was centered on the North Pole and bounded by a wall of ice, with the sun and moon traveling only a few hundred kilometers about the Earth.

[G] Even when we intellectually accept the precepts[4] of science, we cling to our intuitions - what researchers call our naive beliefs. As we become scientifically literate, we repress our naive beliefs, but never eliminate them entirely. They remain hidden in our brains as we try to make sense of the world.

[H] Most of us do that by relying on personal experience, anecdotes, or stories rather than statistics. If we hear about a cluster of cancer cases in a town with a hazardous waste dump, we assume pollution caused the cancers. Yet just because two things happened together doesn't mean one caused the other, and just because events are clustered doesn't mean they're not still random.

[I] We have trouble comprehending randomness; our brains crave pattern and meaning. Science warns us, however, that we can deceive ourselves. To be confident there's a causal connection between the dump and the cancers, you need statistical analysis showing that there are many more cancers than would be expected randomly, evidence that the victims were exposed to chemicals from the dump, and evidence that the chemicals really can cause cancer.

[J] Even for scientists, the scientific method is a hard discipline. Like the rest of us, they're vulnerable to confirmation bias - the tendency to look for and see only evidence that confirms what they already believe. But unlike the rest of us, they submit their ideas to formal peer review[5] before publishing them. Once their results are published, other scientists will try to reproduce them - and, being skeptical and competitive, will be very happy to announce that they don't hold up.

**Struggling for Truth**

[K] Sometimes scientists fall short of the ideals of the scientific method. Especially in biomedical research, there's a disturbing trend toward results that can't be reproduced outside the lab that found them. Francis Collins, the director of the National Institutes of Health, worries about the "secret sauce" - specialized procedures and customized software - that researchers don't share with their colleagues. But he still has faith in science.

[L] "Science will find the truth," Collins says. "It may get it wrong the first time and maybe the second time, but ultimately it will find the truth." That aspect of science is another thing a lot of people have trouble with. To some climate change skeptics, for example, the fact that a few scientists in the 1970s were worried (quite reasonably, it seemed at the time) about the possibility of a coming ice age is enough to discredit the concern about global warming now.

[M] In 2014, the United Nations' Intergovernmental Panel on Climate Change, which consists of hundreds of scientists, released its fifth report in the past 25 years. This one repeated louder and clearer than ever the consensus of the world's scientists: The planet's surface temperature has risen by about 1.5 degrees Fahrenheit in the past 130 years. Moreover, human actions - including the burning of fossil fuels - are extremely likely to have been the dominant cause of the warming since the mid-20th century. Many people, however, retain doubts about that consensus.

[N] Americans, for example, fall into two basic camps, says Dan Kahan of Yale University. Those who are more egalitarian[6] and community-minded are generally suspicious of industry. They tend to think it's up to something dangerous that calls for government regulation; they're likely to see the risks

of climate change. In contrast, people with a hierarchical[7] and individualistic mindset respect leaders of industry and don't like government interfering in their affairs. They tend to reject warnings about climate change because they know that accepting them could lead to some kind of tax or regulation to limit emissions.

[O] In the United States, an individual's view on climate change tends to identify them as belonging to one or the other of these two opposing tribes. When we argue about it, Kahan says, we're actually arguing about who we are, what our crowd is. We're thinking: People like us believe this. People like that do not believe this. For a hierarchical individualist, Kahan says, it's not irrational to reject established climate science. This is because accepting it wouldn't change the world, but it might get them thrown out of their tribe. Science appeals to our rational brain, but our beliefs are motivated largely by emotion - and the biggest motivation is remaining tight with our peers.

**The Implications of Doubt**

[P] Doubting science has consequences. The anti-vaccine movement, for example, has been going strong since the respected British medical journal the *Lancet* published a study in 1998 linking a vaccine to autism. Although the article was discredited, the notion of a vaccine-autism connection has been endorsed by celebrities and reinforced through Internet sources. This has implications for the "herd immunity" of populations. When a significant portion of a population is vaccinated, it provides a measure of protection for individuals who have not developed immunity. Increasing vaccine skepticism threatens to undermine the herd immunity of communities against diseases such as whooping cough and measles.

[Q] Investigations into the "science communication problem" have given us insights into how people decide what to believe - and why they so often don't accept the scientific consensus. It's not that they can't grasp it, says Kahan; it's because of confirmation bias - the tendency of people to use scientific knowledge to reinforce beliefs that have already been shaped by their worldview. Meanwhile the Internet has made it easier than ever for climate skeptics and doubters of all kinds to find their own information and experts. Gone are the days when a small number of powerful institutions - elite universities, encyclopedias, major news organizations - served as gatekeepers of scientific information. The Internet has democratized information, which is a good thing, but along with cable TV, it has made it possible to live in a "filter bubble" that lets in only the information you agree with.

[R] How to penetrate this bubble? How can scientists convince skeptics? Throwing more facts at people may not be enough. Liz Neeley, who helps train scientists to be better communicators, says that people need to hear from believers they can trust, who share their fundamental values. She has personal experience with this: Her father is a climate change skeptic and gets most of his information on the issue from conservative media. One day she confronted him: "Do you believe them or me?" She told him she believes the scientists who research climate change, and knows many of them personally. "If you think I'm wrong," she said, "then you're telling me that you don't trust me." Her father's position on the issue softened - but it wasn't the facts that did it.

[1] **Skepticism** refers to having doubts or not believing in something.
[2] A **vaccine** is a medication taken to prevent a disease, such as the measles.
[3] A **controversy** is an argument about an issue that is important to many people.
[4] A **precept** is a rule for action.
[5] A research paper that is **peer reviewed** is checked by another scientist before it is published.
[6] If someone is described as **egalitarian**, they believe in equal opportunities and rights for all.
[7] If someone is described as having a **hierarchical** mindset, they believe that certain people in society are more important than others.

1. The reading passage is mostly about ____.
    a. why vaccines should be optional
    b. how scientists communicate
    c. different types of governments
    d. why some people don't believe scientists

2. In the second sentence of paragraph M, *one* refers to ____.
    a. report
    b. panel
    c. year
    d. scientist

3. The following sentence would be best placed at the end of which paragraph?

    *They believe global warming is a hoax, used as a threat by climate activists to attack industry and the free market.*

    a. Paragraph K
    b. Paragraph M
    c. Paragraph O
    d. Paragraph R

4. According to the passage, what is *confirmation bias*?
    a. an attitude of only listening to evidence that supports your worldview
    b. a movement about autism that was started in 1998
    c. the belief that scientific consensus is faked
    d. a movement to democratize information

5. Which of the following opinions is Liz Neeley most likely to agree with?
    a. The best way to convince skeptics is to get someone they trust speak to them.
    b. Skeptics don't believe in climate change because they don't understand the science.
    c. There are skeptics because scientists have done a poor job of explaining themselves.
    d. Skeptics can be convinced if they are presented with more facts and evidence.

6. What is NOT mentioned in the passage as a claim that skeptics doubt?
    a. The earth is round.
    b. Man has landed on the moon.
    c. Vaccines are safe.
    d. Climate change is real.

7. According to paragraph P, the anti-vaccine movement was started by ____.
   a. a celebrity being diagnosed with autism after getting vaccinated
   b. individuals who did not develop immunity after getting vaccinated
   c. a study linking autism to vaccination published in a medical journal
   d. skeptics undermining herd immunity of preventable diseases

8. What type of figurative language is used in the following sentence from the passage?

   *But to some people the very idea of transferring genes between species brings up images of mad scientists running wild.*

   a. personification
   b. imagery
   c. anecdote
   d. alliteration

9. What type of figurative language is used in the following sentence from the passage?

   *If we hear about a cluster of cancer cases in a town with a hazardous waste dump, we assume pollution caused the cancers.*

   a. personification
   b. hyperbole
   c. anecdote
   d. alliteration

10. What type of figurative language is used in paragraph R?
    a. personification
    b. hyperbole
    c. anecdote
    d. alliteration

**DIRECTIONS: Choose the correct word or phrase from the box to complete each sentence.**

| | | | | |
|---|---|---|---|---|
| bias | consensus | discipline | distinguish | exposed to |
| fundamental | implications | institution | rational | retain |

11. Martial arts train not just physical strength but also teach the value of self _____.

12. The jury reached a(n) _____ that the accused was guilty as charged.

13. Police officers and firefighters are _____ life-threatening risks on a daily basis.

14. Hiring managers should not let their own _____ get in the way of selecting the best candidate for the job.

15. I find it difficult to _____ between the two identical twins. They look exactly the same to me!

16. That university is a well-established _____ of higher learning.

17. If we want to become a profitable business, we have to make some _____ changes in the way the company is run.

18. He realized that refusing to accept the offer would have long-term _____ on his career.

19. He has been acting strangely all week. There must be a(n) _____ explanation for his unusual behavior.

20. If kept in a vacuum flask, hot beverages should _____ their heat for at least