Date: __/08/2017. **Class:** 10°A/B

Name: _____. **List #:** __

"Coming to Our Senses"

by Neil deGrasse Tyson

TB – p. 161 to 166

Read the science essay "Coming to Our Senses" by Neil deGrasse Tyson. Then, reread the lines indicated with each question below. Answer each question, citing text evidence.

1. Lines 1–13: Summarize the main idea of this paragraph. How does the quote from Hubble support this idea?
   Sight is the most important sense because it allows us to observe the world around us.
   Hubble explains that our senses, including sight, allow us to explore and better understand the universe.

2. Lines 39–49: What central idea is Tyson highlighting with these rhetorical questions?
   Tyson is making the point that humans can learn more about their environment than simply what their senses can tell them, and that using scientific tools can help them learn more.

3. Lines 62–77: What does it mean if parapsychology claims are not held up in double-blind experiments. How does this example develop Tyson's central idea?
   It means that those claims are unlikely to be based in science, and that humans probably do not have a sixth sense.
   He is illustrating that human senses are limited. While they can help us gain some knowledge, we need scientific tools to measure and prove theories and facts.

4. Lines 90–94: What humorous phrases are in this paragraph? Explain how these phrases make a valid point.
   "lick the stuff," "'Captain, it's a blob'"
   Tyson is showing that by using only our senses (taste) we would not be able to analyze many elements of our world. In order to identify and understand our universe, we need to use scientific tools.

5. Lines 95–116: What is the central idea in these lines? What is the key point in lines 102–116? What details does Tyson use to support this idea?
   We cannot only use human senses to fully understand the world around us.
   Our perception of the world would be different if we had enhanced senses.
   If we had enhanced vision, we could see radio waves, the Milky Way, microwaves, x-rays, and gamma rays with our naked eyes. Each of these things would help us better understand and navigate the world around us.

6. Lines 131–143: What are the benefits of the enhanced tools that Tyson highlights on this page? What examples from the text support this idea?
   Enhanced tools would help to keep humans safer. Bacteria and viruses that make us sick would be visible; postoperative infections would have been identified and solved; we could watch radon gas seep into our homes.

7. Lines 146–149: Summarize the central idea of these lines in your own words.
   During the last 100 years, scientific discoveries have relied on math and technology to make new discoveries.

8. Lines 162–168: Summarize Planck's quotation in your own words. Explain how this relates to Tyson's main idea.
   In modern physics, we can see that reality exists beyond what we can perceive through our senses.
   Planck's quote supports Tyson's idea because it reinforces the concept that our senses are inadequate on their own; he too is saying we need to use tools and modern science to gain an in depth understanding of the universe around us.

"*from* The Math Instinct" by Keith Devlin

TB – page 183 to 186

Guiding Questions

Read the math essay from *The Math Instinct* by Keith Devlin. Then, reread the lines indicated with each question below. Answer each question, citing text evidence.

1. Lines 1–13: What does the author find "remarkable" about Ahmed?
   Ahmed finds his food by going in "one direction, then another." However, he is able to return to his home not by "retracing his steps," but by setting "off in a straight line."

2. Lines 17–29: What is the original term for "dead reckoning"? Look up the meaning of the individual words in the original term, and then explain the concept in your own words.
   The original term was "deductive reckoning" [line 18]. "Deductive" means "based on reasoning or using available facts."
   "Reckoning" is the process of calculating. "Dead reckoning" is a method of calculating your position by moving in straight lines and keeping track of speed and time of travel in order to determine the exact distance traveled and position of the starting point [lines 21–29].

3. Lines 42–51: What word does the author use to describe Ahmed? How does the author develop the idea that Ahmed is remarkable in this paragraph?
   Remarkable. The author reveals that Ahmed is a "Tunisian desert ant," with "none of the aids that mariners and lunar astronauts" have.

4. Lines 52–67: What subjects does the author compare and contrast in these lines? What word signals the comparison?
   The navigational strategies of other kinds of ants are compared and contrasted with Tunisian desert ants. The signal word is Not.

5. Lines 52–67: How does Devlin support the idea that desert ants use dead reckoning?
   He uses an anecdote [lines 58–67] about an ant that finds food and is then moved to another location by researchers. The ant becomes confused only after it has traveled the distance it thought it should to return home.

6. Lines 73–91: Compare the way humans and Tunisian ants learn to carry out mathematical navigation. Support your response with text evidence. How does this contrast help you understand the idea of a math instinct?
   Humans go to school to learn how to operate relevant equipment and perform necessary computations. Tunisian ants follow their instincts, which are based on "hundreds of thousands of years of evolution" [lines 79–81].

7. Lines 92–103: Where in the text does Devlin give clues to the meaning of *trivial*. Explain what kind of clue it is. Define *trivial,* using a dictionary as needed.
   In lines 91–96, Devlin uses contrast. He contrasts "trivial" with the complexities of walking."
   Trivial is having little value or importance; insignificant.

8. Lines 103–111: Why is the desert ant's navigational instinct not trivial?
   The desert ant's ability to use dead reckoning "ensures the desert ant's survival."