

Teacher's Guide for ODYSSEY's: *Colorworks*

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Extended Response: Comprehension & Critical Thinking

The questions below can be used as written, simply answered in complete sentences, or easily transformed into longer essay (ELA) style questions, or even research topics. In any case, have the students support their answers with details from the text or use critical thinking skills to create a thorough and interesting answer. Consider the level of your students when deciding how to use the questions. The questions for each lesson can be found under the article's title below.

"The Mysterious Mr. BIV"

1. Explain the significance of Newton's crystal prism.
2. Explain Fraunhofer's 'mystery of the missing colors'.
3. Why did Bunsen and Gustav use a flame test?
4. What did Bunsen learn through his use of the Bunsen burner combined with Newton's theory?
5. What is spectroscopy?
6. What did Kirchhoff discover and what was the significance?
7. Using information from the article, explain the lasting consequences of Mr. Biv's mystery.

"Blue Skies, Nothing but Blue Skies"

1. What was Aristotle's theory on why the sky is blue?
2. Leonardo Da Vinci used information from Muslim thinkers to establish his own theory on why the sky is blue. Explain his theory.
3. Using details from the article, explain how a rainbow forms.
4. Explain Tyndall's explanation of why the sky is blue. Choose one of the other theories from the article and compare/contrast the theories.
5. Technically, we should see a 'purple sky'. Why don't we?

"Color By Number"

1. Explain Munsell's model of color. How does Munsell's work affect a specific aspect of your life?

"Color by Computer"

Mark each statement true or false.

_____ 1. The images you see on your computer screen are RGB; Real, Generated, Byte

_____ 2. On your screen, a pixel is probably about 1/100 of an inch.

_____ 3. RGB parts of the pixels in your computer screen might not be exactly the same as those in someone else's screen.

_____ 4. RGB colors as seen on your computer screen are created with pigments.

_____ 5. RGB colors seen in print are created with light.

"What Color is a Fire Engine?"

1. What is color vision deficient?
2. What are cone cells and when do they function?
3. Explain trichromatic vision.
4. What is dichromatic vision?
5. What does the level of trouble distinguishing reds and greens depend on?

"The Monet Effect"

Project: Use Monet's technique as described in this article to create your own painting. Can you create the feeling of motion with the colors as Monet did? Use the tips on page 32 to experiment.

"Do You Really See Red?"

Project: Do you believe in the psychology of color? Conduct some experiments of your own using clothes, paints, and/or products. Record your results and draw a conclusion.

"Coloring our World with Words"

Read over the color references in this article. Do some research and find 4 more. Create one of your own! Share this work with the class.

"The Case of the Baffling Black Bloom"

After reading the article, use creative writing skills to create a theory of how black flowers get pollinated.