

Honors Physiology
Once Blind and Now They See
Article Questions

Name: _____

1. Describe **India's population** of blind children (including #s, demographics, how they're treated, etc.).

2. Pawan Sinha, (the author and neuroscientist) says, "Distressing as these numbers are, they became even more disturbing to me as I read that much of the suffering was needless; blindness in nearly 40 percent of the children was treatable or preventable." **Explain his plan to help these suffering children.**

3. He continues, "And as a scientist, I realized that doing so presented a valuable opportunity to answer one of the most challenging questions in neuroscience: How does the brain learn to see?" **Sinha starts his journey studying infants. What were some of the challenges he faced?**

4. "The great American psychologist William James described an infant's perceptual world as "a blooming, buzzing confusion" that precedes the maturation of the visual system. The question for Project Prakash was whether this period—a complex bombardment of color, shape and movement that is perhaps an early stage of normal visual development—mirrors the experiences of newly sighted Prakash children, some of whom are in their 20s when they first gain sight. Does their visual system ever undergo the anarchic but necessary first steps to organize the incoming images in any meaningful fashion?" **What are the two meanings of 'organization' stated here? Explain.**

5. After testing his patient's ability to 'organize' images (or lack thereof) the question arose: "What cues allow us, as individuals with normal vision, to parse complex images correctly?" **Answer this question in your own words.**

6. "The brain, of course, does more than pick out the elements of a visual scene. It also connects to the realms of sound, touch, smell and taste—creating a sensory panorama via intermodal organization. How sight is linked to sound and other senses has preoccupied philosophers and neuroscientists for centuries." **How do you link different senses into a unified perception of reality? Give examples in your daily life!**

7. In the last section of the article, *The New Landscape*, it states: "These findings are beginning to give us a sense of the landscape of what can and cannot be achieved when a child gains vision at a late age." **What does the author state in terms of development of vision during early childhood, and complications that arise when children miss that critical period?**