

PSY 4036

Week 4: Visual-Field

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Loss

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- Structure and measurement of the visual field.
- Patterns of visual-field loss.
- Glaucoma, retinitis pigmentosa and hemianopia.
- Cortical visual impairment (CVI)

Three Dimensions of Vision Measurement and Loss

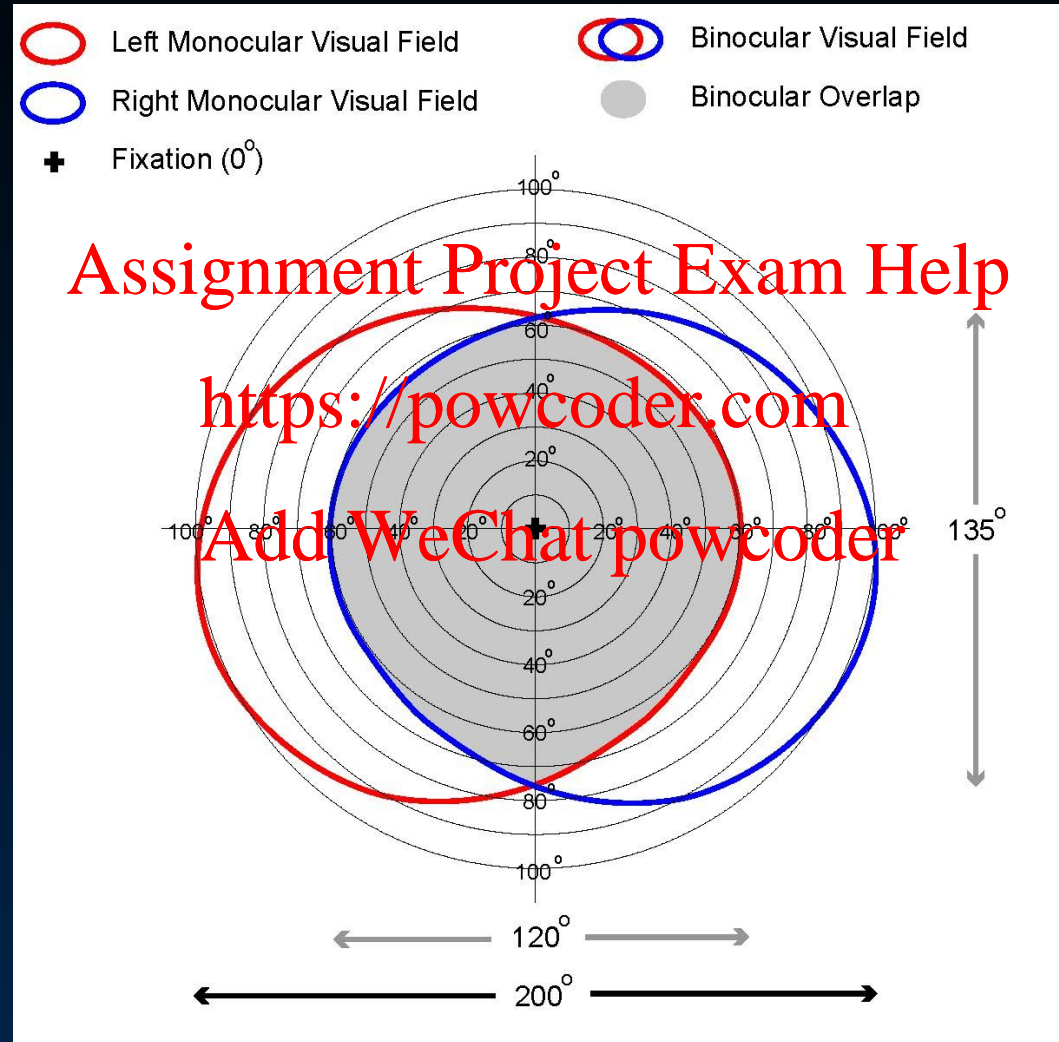
- Low vision is usually discussed in terms of:
 - Reduced acuity
 - Reduced contrast sensitivity
 - Visual-field loss.

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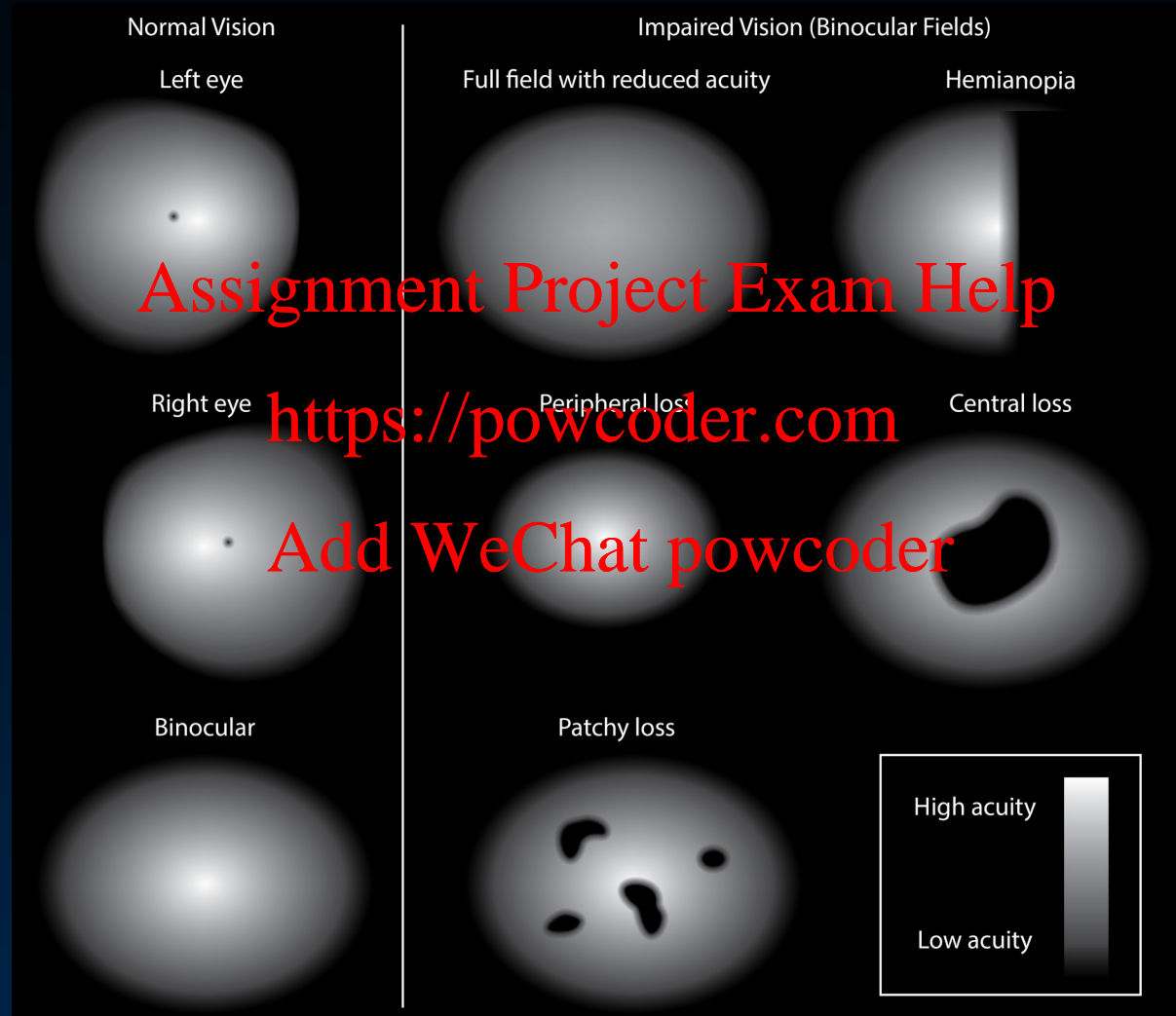
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The Normal Visual Field



Common Patterns of Field Loss

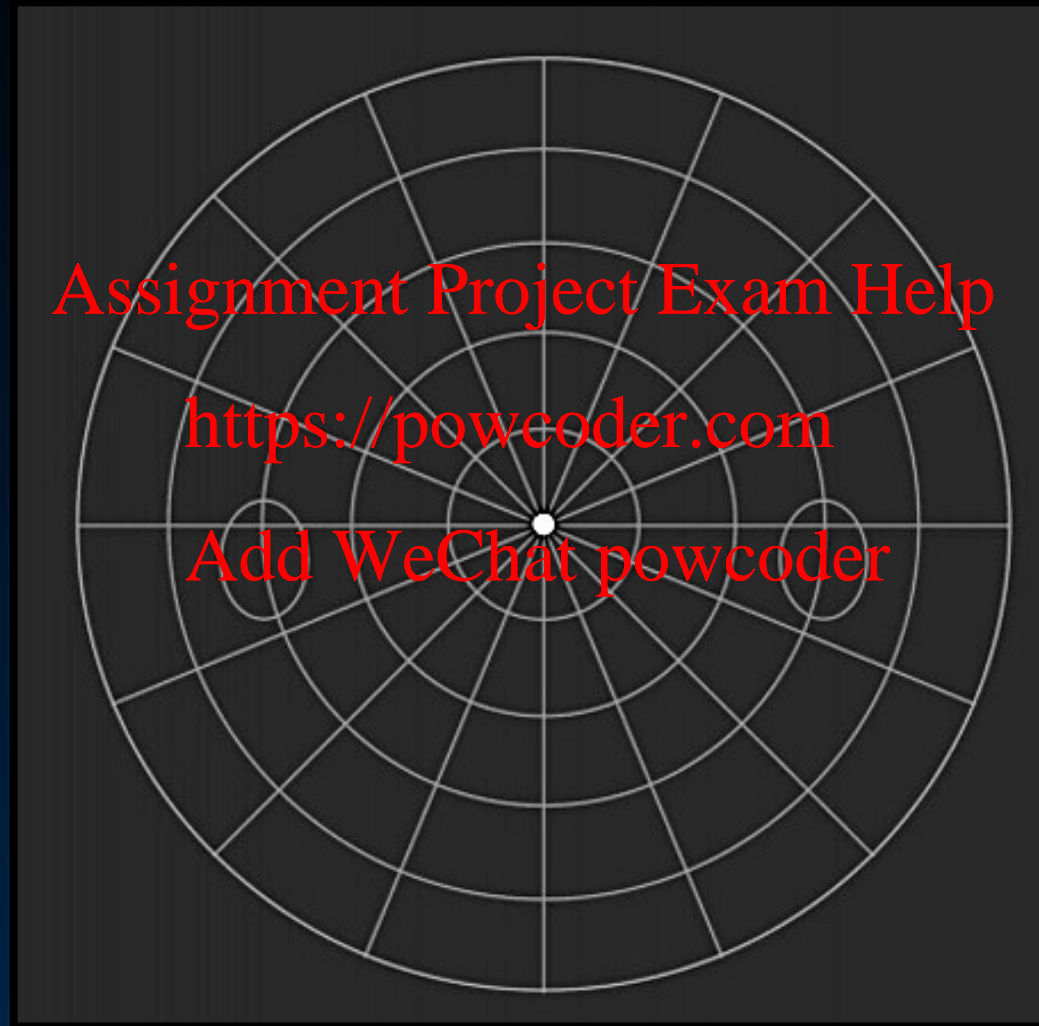


Tangent Screen

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Humphrey Field Analyzer

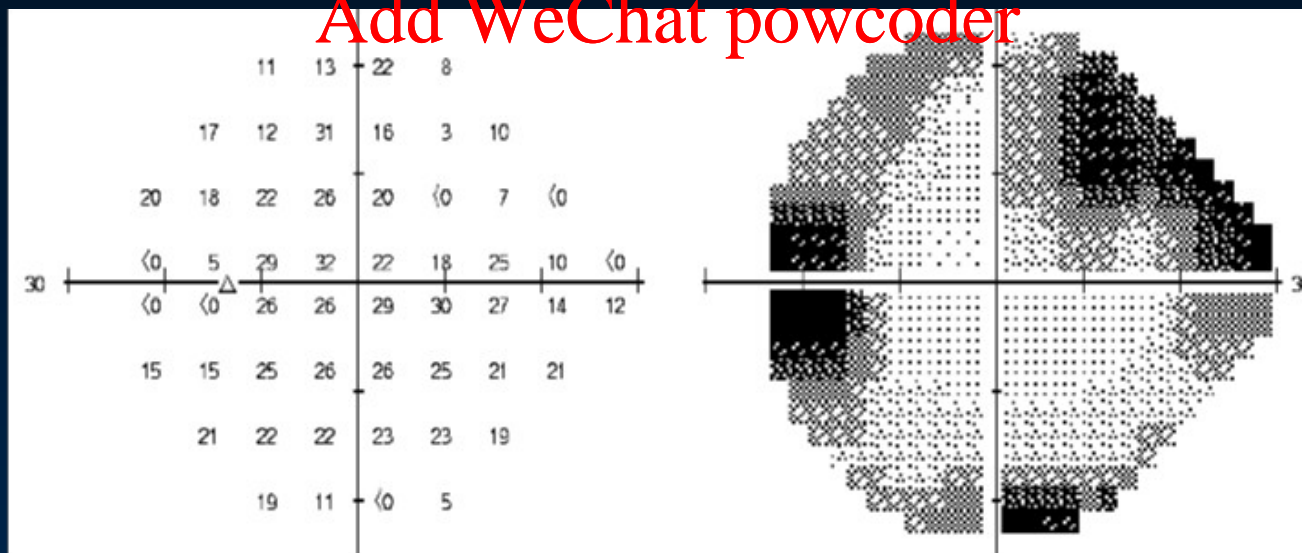
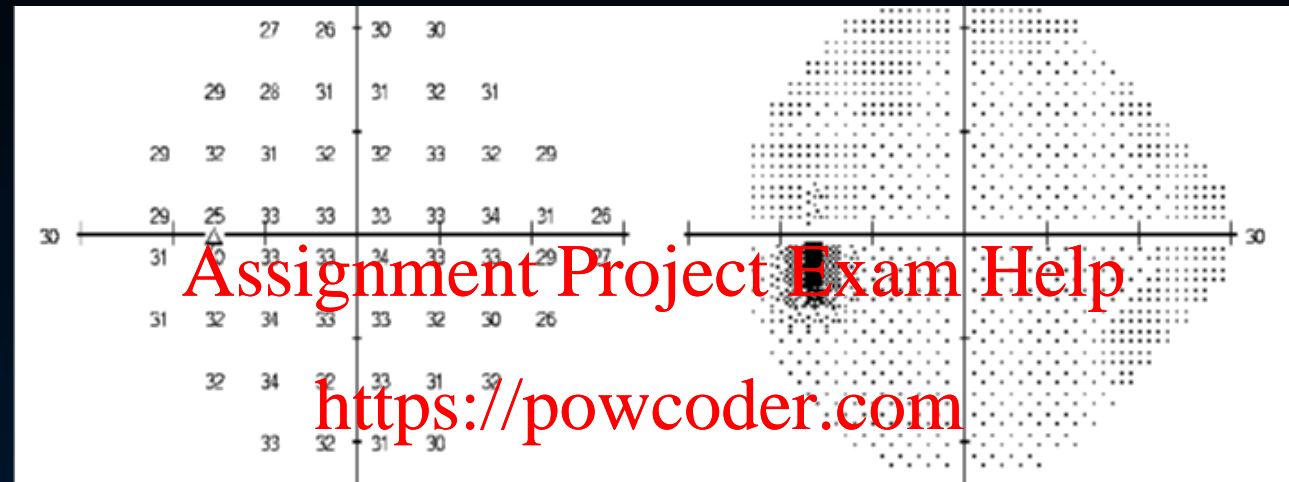


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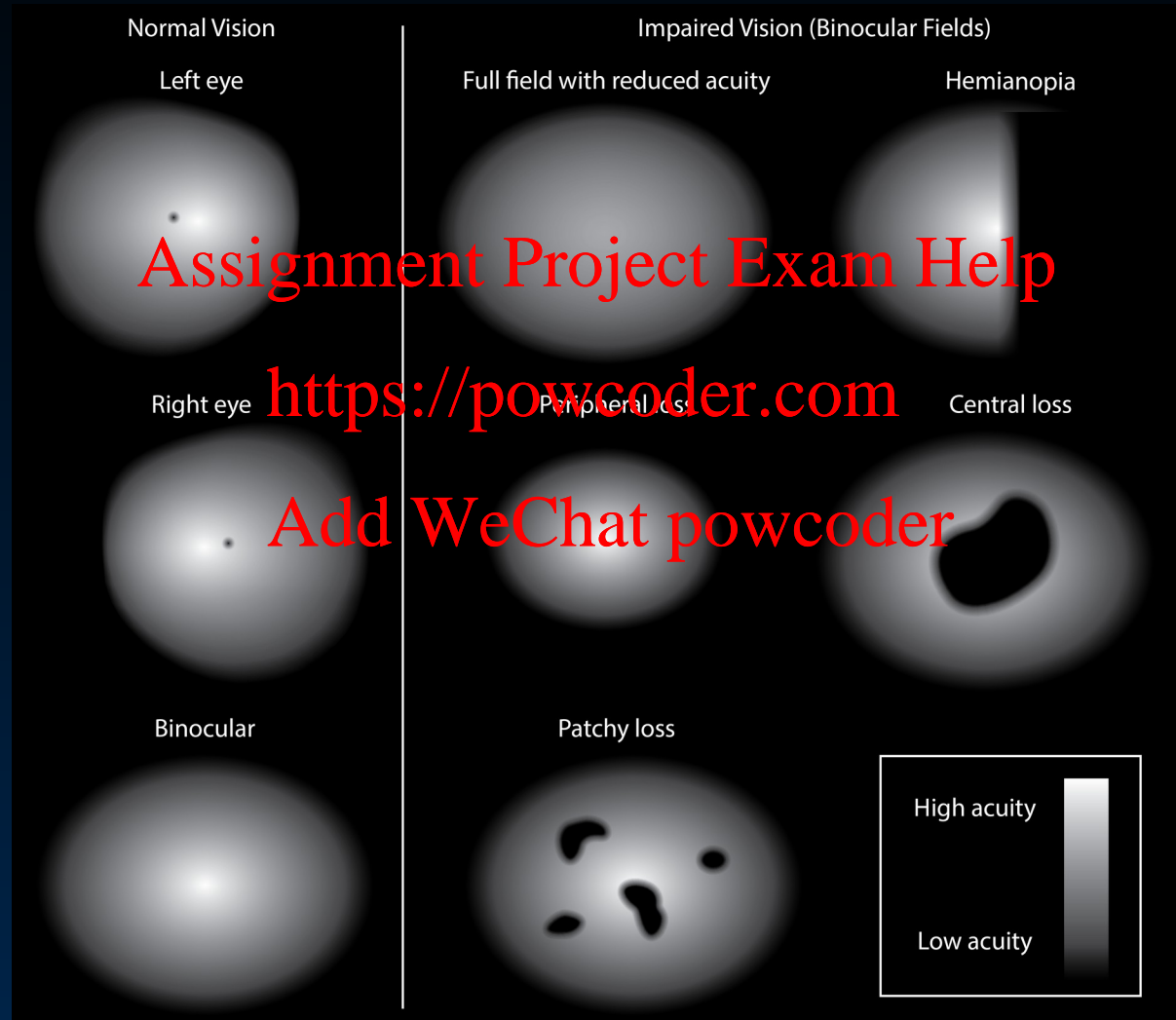
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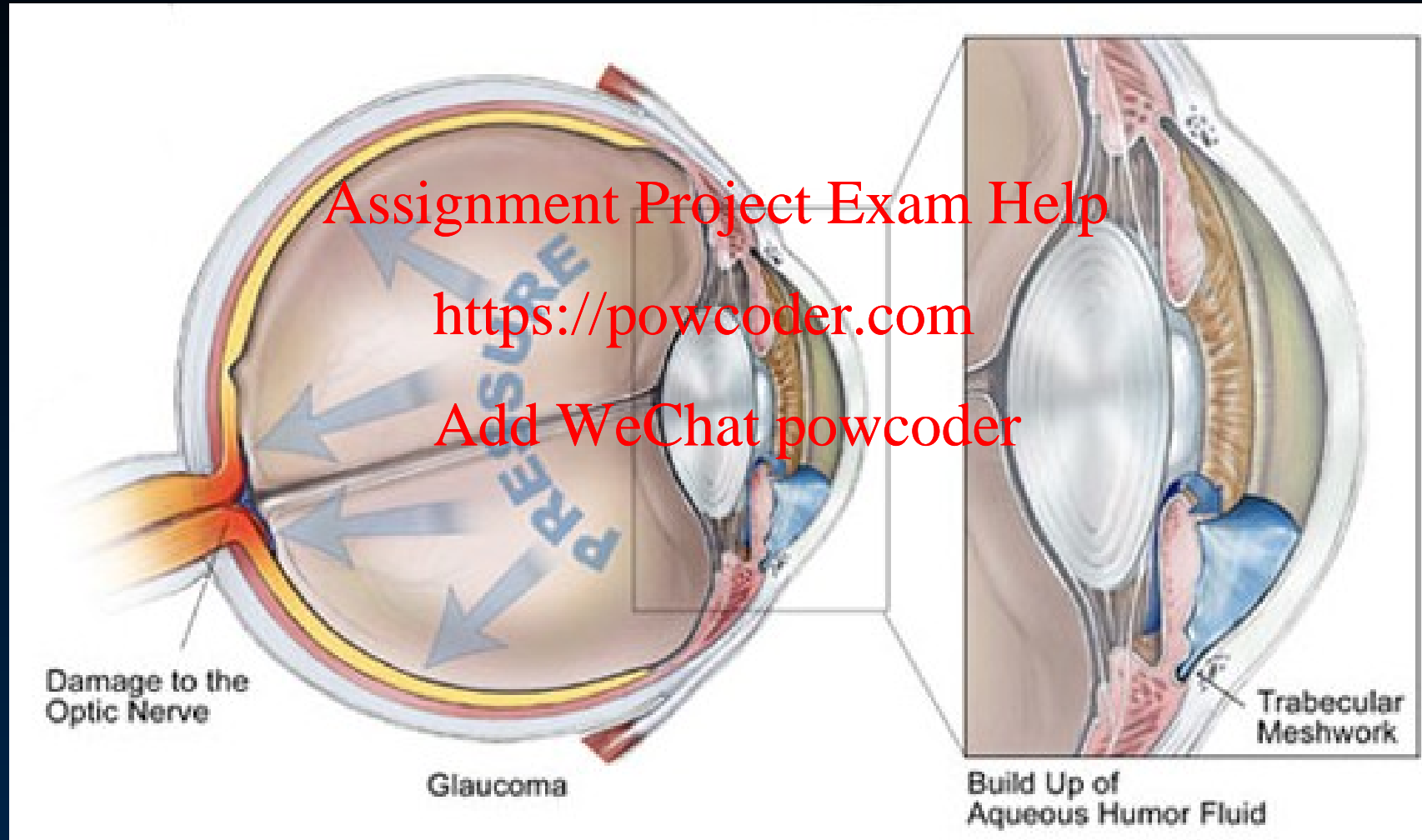
Humphrey Visual Field Maps



Common Patterns of Field Loss



Glaucoma



Vision with Field Loss from Glaucoma



Normal vision



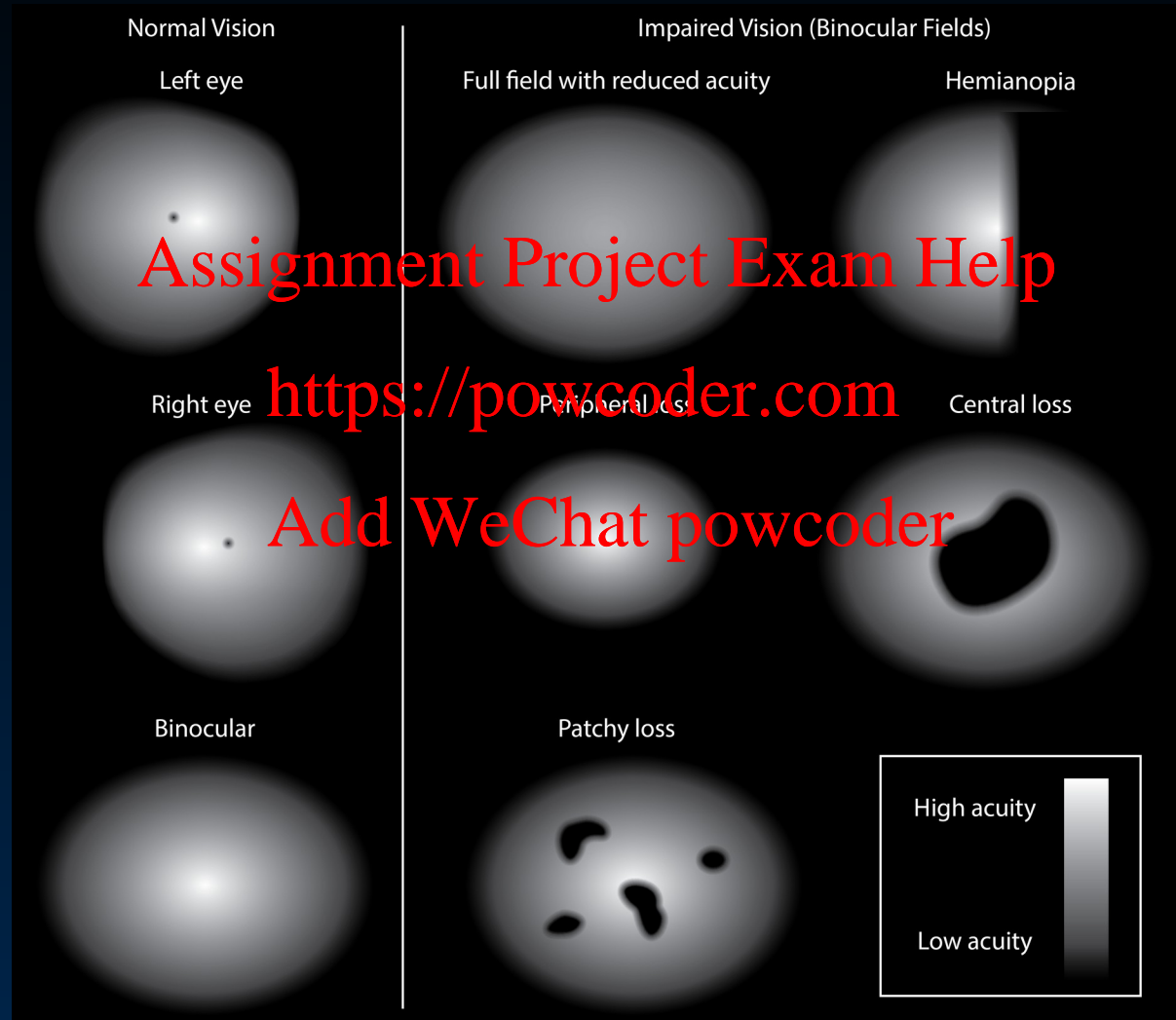
Vision with advanced
glaucoma

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Common Patterns of Field Loss



US Causes of Childhood VI

Diagnosis	Causes of vision loss in students from the schools for blind in the US in 2012 (% of total)
Cortical visual impairment (CVI)	18
Optic nerve hypoplasia	15
Retinopathy of Prematurity (ROP)	14
Optic Atrophy	7
Albinism	4
Coloboma	3
Glaucoma	3
Retinal detachment, non ROP	2
Leber congenital amaurosis	2
Retinitis pigmentosa	2
Microphthalmia/Anophthalmia	2
Cataract	2
Nystagmus	2
Other or unknown	24

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Some Terminology Related to CVI

- Ocular vision impairment and cortical visual impairment
- Cerebral visual impairment.
- Cortical blindness

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Causes of CVI

- Periventricular Leukomalacia (PVL) white matter disorder common in extremely premature infants.
- Hypoxic ischemic encephalopathy (HIE). Associated with asphyxia during difficult birth.
- Infections, such as encephalitis.
- Traumatic brain injury from abuse or accidental injury.
- Others including hemorrhage or stroke.

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Ten Visual & Behavioral Characteristics of CVI

- *Color preference.* Strong preference for a particular bright color such as red or yellow.
- *Attraction to movement.* Captivated by moving objects such as a ceiling fan, TV action, or staring out of the window of a moving car.
- *Visual latency.* Slow visual response to the appearance of a new object in the scene.
- *Visual field preferences.* Often a preference for non-central vision. May turn the head to use a particular portion of the peripheral visual field to look at things. Lower visual field is often impaired, impacting mobility.
- *Difficulty with visual complexity.* Simple patterns, such as objects with a single color, are recognized better than multi-colored surfaces or objects in cluttered scenes. Difficulty integrating multi-sensory input such as combined audiovisual stimuli. Difficulty recognizing faces and making eye contact.
- *Need for light.* Gazing at bright lights is common as well as attraction to shiny surfaces.

Ten Visual & Behavioral Characteristics of CVI Continued...

- *Difficulty with distance viewing.* Distant objects are harder to attend to and recognize, possibly because of confusion with background clutter. A single object held close to the face may be easier to attend to.
- *Atypical visual reflexes.* Delayed or absent blink response when touched on the bridge of the nose. Absent or delayed blink response to an object rapidly approaching the face along the midline.
- *Difficulty with visual novelty.* Unlike typical infants who prefer to look at novel stimuli, those with CVI prefer familiar targets.
- *Absence of visually-guided reach.* Failure to spontaneously reach for and touch nearby objects.
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- Adapted from Roman-Lantzy (2018, Chapter 3).