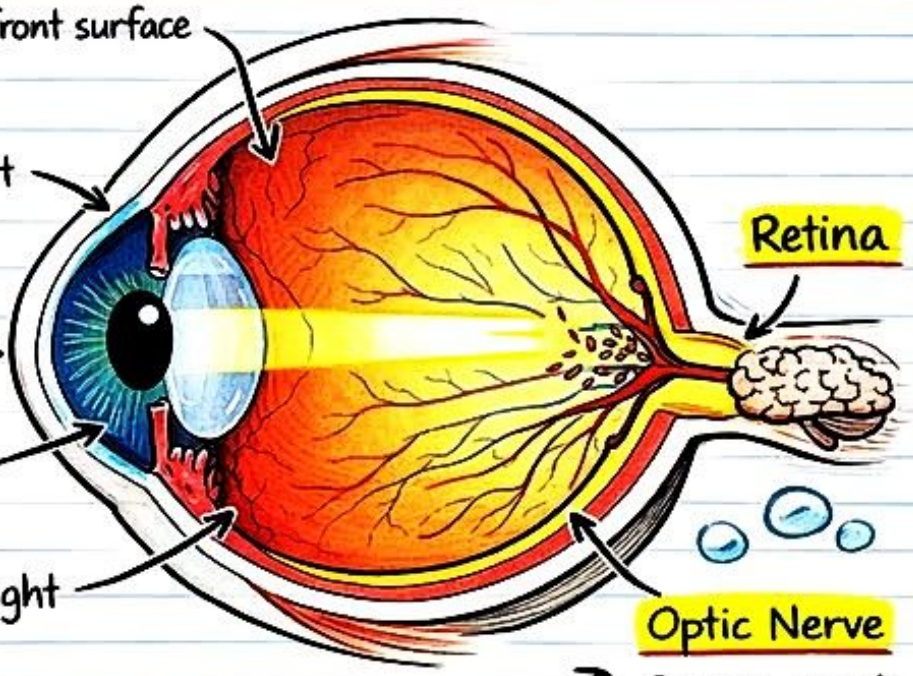
The Human Eye



- **Cornea** – Clear, front surface
- **Iris** – Colored part of the eye
- **Pupil**
- Dark opening that lets light in
- **Lens** – Focuses light onto retina
- **Retina** – Light-sensitive cells
  - Rods (dim light)
  - Cones (color)
- **Optic Nerve** – Carries signals to the brain



Discovered by:
Antoine Pierre Demours
1784

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- **Vitreous Humor** – Clear, gel-like fluid

THE HUMAN EYE

WINDOW TO THE WORLD

INTRODUCTION

The eye is a sense organ that helps us to see and perceive the world around us. It works like a camera.



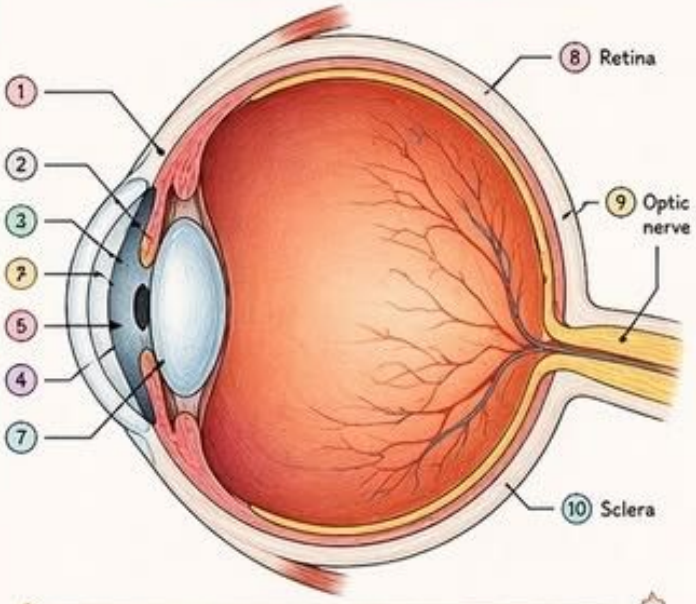
AMAZING FACTS

- The human eye can distinguish about 10 million colors!
- It can blink around 15–20 times per minute.
- The eye is 80% water.

PARTS OF THE EYE

1. **CORNEA**
   Transparent front layer. Protects the eye and helps in focusing light.
2. **AQUEOUS HUMOR**
   Clear liquid between cornea and lens. Nourishes the eye and maintains pressure.
3. **IRIS**
   Colored part of the eye. Controls the size of the pupil and the amount of light entering.
4. **PUPIL**
   Black opening in the center of the iris. It allows light to enter the eye.
5. **LENS**
   Transparent and flexible. Changes shape to focus on near or far objects.
6. **CILIARY MUSCLES**
   Hold and control the lens. Help in changing the shape of the lens.
7. **VITREOUS HUMOR**
   Jelly-like substance behind the lens. Maintains the shape of the eye.
8. **RETINA**
   Light-sensitive layer at the back. Forms the image.
9. **OPTIC NERVE**
   Carries electrical signals from the retina to the brain.
10. **SCLERA**
    White outer layer. Protects the eye and maintains its shape.

STRUCTURE OF THE EYE



Light enters the eye → Cornea → Pupil → Lens
The image is formed on the retina → Signals are sent to the brain through the optic nerve.

FUNCTIONS OF THE EYE

- Helps in seeing and forming images of objects.
- Detects light, color, shape and movement.
- Adjusts focus for near and far objects.
- Works with the brain to interpret what we see.
- Helps in judging distance and depth.



PROTECTIVE PARTS

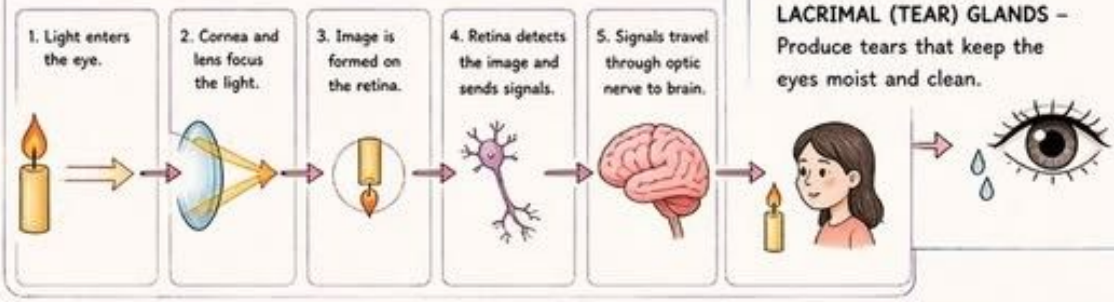
EYELIDS – Protect from dust and injury.

EYELASHES – Prevent dust and sweat from entering the eye.

EYEBROWS – Prevent sweat from flowing into the eyes.

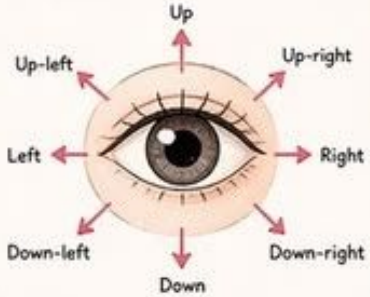
LACRIMAL (TEAR) GLANDS – Produce tears that keep the eyes moist and clean.

HOW THE EYE WORKS



MOVEMENTS OF THE EYE

Six muscles are attached to each eye. They help in moving the eye in all directions.



COMMON EYE PROBLEMS

PROBLEM	CAUSE	SOLUTION
Myopia (Short-sightedness)	Cannot see distant objects clearly.	Concave lens (spectacles)
Hypermetropia (Long-sightedness)	Cannot see nearby objects clearly.	Convex lens (spectacles)
Cataract	Lens becomes cloudy, vision becomes blurry.	Surgery
Color Blindness	Cannot distinguish certain colors.	No permanent cure
Night Blindness	Cannot see well in dim light.	Vitamin A rich diet

HOW TO CARE FOR EYES

- Read in proper light.
- Do not read too close to the screen or book.
- Take regular breaks while using screens.
- Eat a balanced diet rich in Vitamin A.
- Keep eyes clean. Do not rub eyes.
- Have regular eye check-ups.

KEY POINT

The eyes are precious. Take care of them and they will take care of you.

DAV PUBLIC SCHOOL, PTPS, PATRATU

CHAPTER: THE HUMAN EYE

ASSIGNMENT PHYSICS CLASS-VIII

1. Which part of the eye controls the amount of light entering the eye?

Answer: The iris controls the amount of light entering the eye.

2. What is the transparent front part of the eye called?

Answer: Cornea.

3. Name the light-sensitive layer present at the back of the eye.

Answer: Retina.

4. What is the colored part of the eye called?

Answer: Iris.

5. Which part of the eye forms the image of an object?

Answer: Retina.

6. What is the function of the pupil?

Answer: It allows light to enter the eye.

7. Name the cells responsible for vision in dim light.

Answer: Rod cells.

8. Name the cells responsible for color vision.

Answer: Cone cells.

9. What is the blind spot?

Answer: The point where the optic nerve leaves the eye and no image is formed.

10. What is the function of the optic nerve?

Answer: It carries visual messages to the brain.

11. Define accommodation of the eye.

Answer: The ability of the eye lens to change its focal length.

12. What is the function of the cornea?

Answer: It refracts most of the incoming light.

13. Differentiate between rods and cones.

Answer: Rods help in dim light; cones help in color vision.

14. Why do we have two eyes instead of one?

Answer: To get a wider field of view and depth perception.

15. What is binocular vision?

Answer: Vision using both eyes together.

16. What is the function of the ciliary muscles?

Answer: They change the shape of the eye lens.

17. What is meant by persistence of vision?

Answer: The image remains on the retina for about 1/16 second.

18. Explain the role of the retina in vision.

Answer: It receives light and converts it into nerve impulses.

19. Why do pupils become smaller in bright light?

Answer: To reduce the amount of light entering the eye.

20. What is the aqueous humor?

Answer: A transparent fluid between the cornea and lens.

21. Draw and label the human eye.

Answer: Students should draw a labeled diagram.

22. State two functions of the iris.

Answer: Controls pupil size and regulates light entry.

23. What is the function of the eye lens?

Answer: It focuses light on the retina.

24. What is the vitreous humor?

Answer: A jelly-like substance behind the lens.

25. Why is the retina called the screen of the eye?

Answer: Because images are formed on it.

26. What happens if the optic nerve is damaged?

Answer: Vision may be partially or completely lost.

27. Name the sequence of structures through which light passes inside the eye.

Answer: Cornea □ Pupil □ Lens □ Retina.

28. What is the role of the sclera?

Answer: It protects and gives shape to the eye.

29. What is the yellow spot (fovea)?

Answer: The region of sharpest vision on the retina.

30. Why is the cornea transparent?

Answer: To allow light to pass through easily.

31. What is myopia (short-sightedness)?

Answer: A defect in which distant objects appear blurred.

32. Name the lens used to correct myopia.

Answer: Concave lens.

33. What is hypermetropia (long-sightedness)?

Answer: A defect in which nearby objects appear blurred.

34. Name the lens used to correct hypermetropia.

Answer: Convex lens.

35. What is presbyopia?

Answer: An age-related defect reducing near vision.

36. Why does presbyopia occur?

Answer: Due to weakening of ciliary muscles and loss of lens flexibility.

37. Which lens is used to correct presbyopia?

Answer: Bifocal or progressive lenses.

38. Differentiate between myopia and hypermetropia.

Answer: Myopia affects distant vision; hypermetropia affects near vision.

39. What problems does a person with myopia face?

Answer: Difficulty seeing distant objects clearly.

40. What problems does a person with hypermetropia face?

Answer: Difficulty seeing nearby objects clearly.

41. Where are rods and cones located?

Answer: In the retina.

42. Why can we see in dim light?

Answer: Because rod cells are sensitive to low light.

43. Which cells help us distinguish colors?

Answer: Cone cells.

44. Why do colors appear dull at night?

Answer: Cone cells do not function well in dim light.

45. Which cells are more numerous in the retina—rods or cones?

Answer: Rods.

46. Who developed the Braille system?

Answer: Louis Braille.

47. For whom was the Braille system developed?

Answer: For visually impaired people.

48. How many dots are used in a Braille cell?

Answer: Six dots.

49. How do visually impaired people read Braille?

Answer: By touching raised dots with their fingers.

50. State two advantages of the Braille system.

Answer: It enables reading and writing independently.