



جامعة المستقبل  
كلية التقنيات الصحية والطبية  
قسم تقنيات البصريات



Second Stage 2024-2025

**REFRACTIVE ERRORS**

Lecture Title  
**Visual Acuity of Testing Chart**

Lecture Number: 6 / course 1

Prepared by  
*Hassan A. Aljaberi*  
OPTOMETRIST

## Visual Acuity of Testing Chart

Scientists have agreed to measure visual acuity by means of certain signs, drawn in a scientific way based on visual and physiological facts and arranged within plates graded in size from largest to smallest, and the most famous of these charts used are:

- 1- Number chart
- 2- Letter chart
- 3- Symbol chart
- 4- Snellen chart
- 5- Hand chart
- 6- Landolt chart

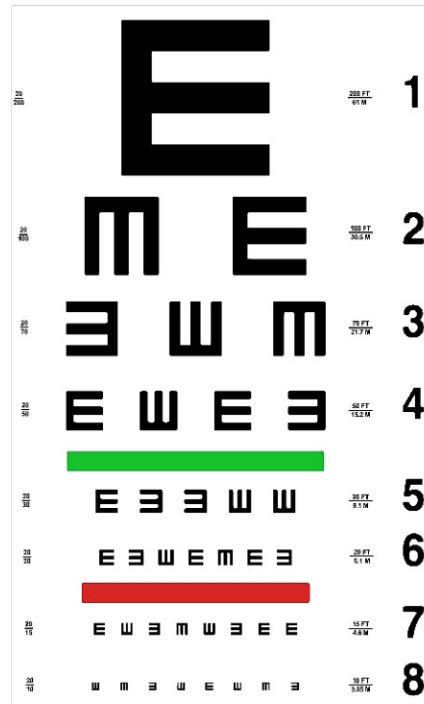
**The most important charts used to check visual acuity are:**

**1. Snellen chart:** An eye test chart used by an optometrist to measure visual acuity. The scheme is named after the Dutch ophthalmologist Hermann Snellen who created the chart in 1862. The chart consists of two types: -

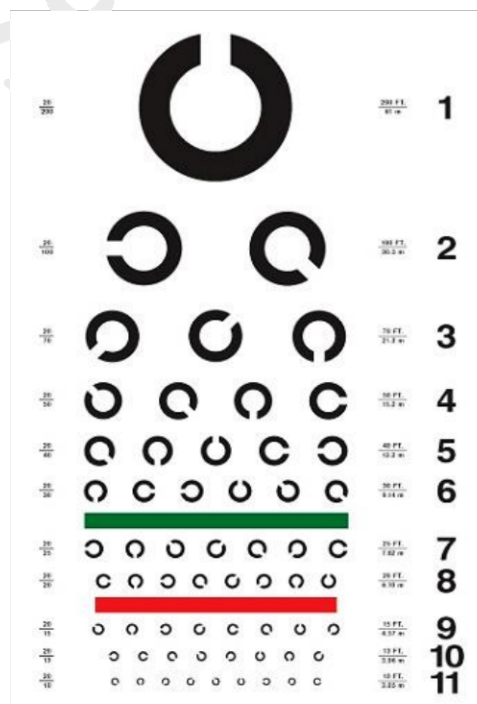
**a) Snellen-alphabet chart:** It consists of a list of rows of English letters, scaled from top to bottom, as shown in the figure below.

20/200	E	1
20/100	F P	2
20/70	T O Z	3
20/50	L P E D	4
20/40	P E C F D	5
20/30	E D F C Z P	6
20/25	F E L O P Z D	7
20/20	D E F P O T E C	8
20/15	L E F O D P C T	9
20/13	F D P L T C E O	10
20/10	F E Z O L C F D T	11

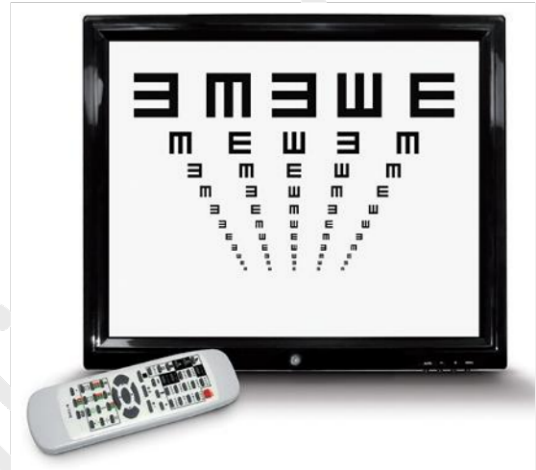
**b) Snellen-tumbling E chart:** It is a chart of rows of English letter E that gradually decrease in size from top to bottom. This chart is useful for patients who are unable to read English letters. As in the figure below.



**2. Landolt Chart:** It is a chart named after the Swiss doctor Landolt in 1899. It is known as the Landolt ring. It is a chart that includes rows of incomplete circles with different direction of opening, which gradually decreases in diameter from top to bottom, as in the figure below.



- These charts are used to examine the distance vision test, where they are placed at a distance of 6 meters from the person whose vision is to be tested (so that the light rays that enter the eye are parallel enough to cancel the accommodation), and they can be placed at a distance of 3 meters with the help of a mirror that reflects the image of the chart (double distance).
- A device called the LCD Acuity Chart panel screen has also been designed that contains different types of charts, used for various tests whose display is controlled through a remote control, and its features include flexibility in choosing the working distance, diversity of panels and tests, as shown in the figure below.



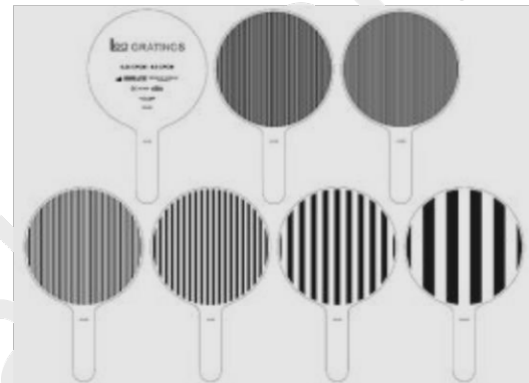
Normal visual developments	
Age	VA
At birth	6/120
4 months	6/60
6 months	6/36
1 year	6/18
2 years	6/6



## Visual Acuity Assessment for Various Age Groups

Infants**1. Preferential looking test**

- Below 6 months
- The infant is presented with featureless board and then to cards are inserted one with the same color as the background and the other in black and white stripes of varying sizes to see where the infant attention will go.

**2. Optokinetic nystagmus**

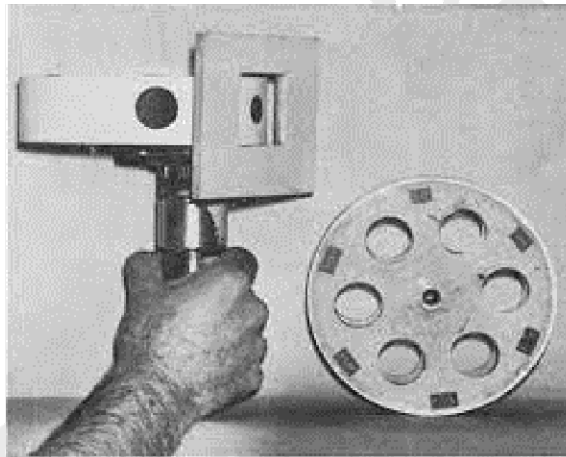
using any regularly striped object. This can be as simple as lines drawn on a paper.

If the child (newborn) seems hesitated with one kind of chart, try another



**3. Catford Drum test**

- It is an objective method to evaluate the objective visual acuity.
- The motor driven drum consist of separated black dots of various sizes on a white background. These dots can be rotated from left to right and then back from right to left in a rotating method.
- The test is carried at a distance of 60 cm, and the child is instructed to watch the dot.
- The visual acuity is assessed by reducing the size of the dot until the smallest dot is found that can no longer induce nystagmus. The end point is recorded and converted to given Snellen's equivalent.
- This method is useful in uncooperative or malingering patients.

**1-2 Years****1. Worth Ivory Ball Test**

- There is a set of 5 balls ranging from 0.5 inch to 2.5 inch. One eye is then covered and the balls are thrown on the floor at a distance of 6 meters, beginning from the largest and the child is asked to retrieve each of the balls.





## 2. Boeck candy bead test:

- Child picks up only those candy beads which he can see easily
- Beads of different sizes are shown at 40 cm to child and pick them up



## 2-3 Years

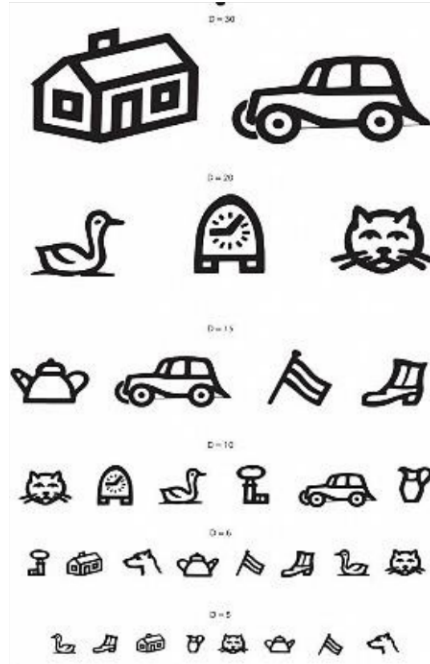
### 1. Cardiff Acuity Test

- is a set of six cards with six easily shapes (house, fish, dog, duck, train) positioned either at the top or bottom half of a card. The cards are calibrated to give visual acuity of equivalent of 6/6 to 6/60 at 1 meter viewing distance.



**3-5 Years****1- Pictures on Snellen chart**

- used for children who do not know their letters. They are examined familiar figures of varying sizes such as house car dog. On the same principles of Snellen chart

**2- Sheridan Gardiner test**

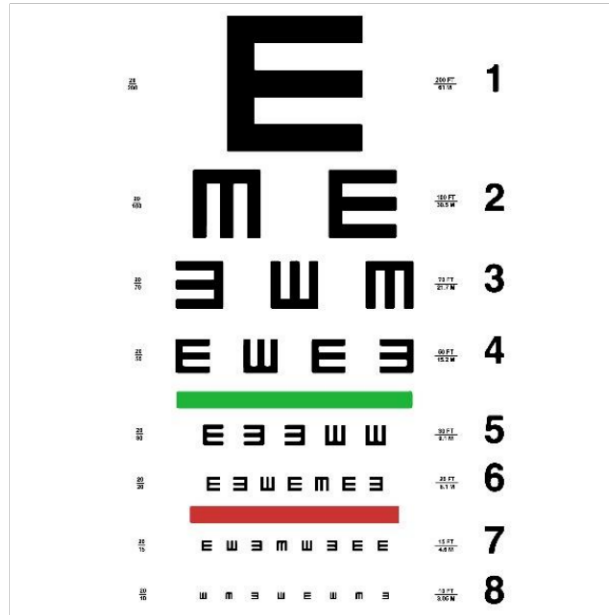
- the child holds a card which has on it a small size of letters. Holds at 6 meters various Snellen graded sizes of these. The child's points at the one on the card which is the same to the one the examiner shows.





6 years and above**1. Tumbling E-test**

- very effective test, wherein the examiner holds in various position, cards where on is printed the letter E in various sizes, or plastic cube on its all faces.
- The child standing 6 meters away, the exam test by asking for the direction of the letter with his hand or by holding a similar card in the same position as he sees.

**2. Hand test**

- using cards wherein, a hand is held up with the fingers open. It is a good method where we can examine children & they cooperate with us if it is used as a game.

