



# LEA Numbers Low Vision Introduction

---

## Introduction

*Lea Numbers Tests* were developed for international studies in occupational health and school health services. Letters like the Sloan letters are used in the Western world and in the old colonies of western empires but not in a large part of the rest of the world whereas numbers are the same world over. The four numbers 5,6,8 and 9 were chosen because they could be designed to blur equally.

The experiences that the previous manufacturer and I have had in designing the symbol optotypes helped us when the number optotypes for occupational health were created. However, numerous hours were spent refining the details of each number. Fortunately, we nowadays have the facilities to exchange information via fax, phone and computers thus reducing the time needed in this type of industrial designing. The *Lea Numbers* were designed to have equal legibility, to blur equally. This makes the threshold value much narrower than in older tests where such easy numbers as 2, 4 and 7 are used.

In clinical use of visual acuity tests letters and numbers are generally used instead of the reference optotype Landolt C or "Ring" although there are countries where Landolt C is used even in pediatric testing. Letter and number optotypes require recognition of the form.

The round numbers 5,6,8 and 9 are more difficult to recognise than it is to detect where the space is in the Landolt C. Calibration of the size of the number optotypes was done by Juvi Mustonen, O.D. and Risto Näsänen Ph.D. at the Vision Laboratory of the Department of Physiology, Helsinki University, Finland.

Assessment of visual acuity usually follows measurement of refractive error, first without, then with correcting lenses, monocularly and binocularly.

## Instructions

- Start testing binocularly. Point to the first symbol in each line in descending order.
- Move down until the child/person hesitates or misidentifies a symbol.
- Move back up one line and ask the child/person to identify all the symbols on that line.
- If the child/person identifies all symbols correctly go to the next line with smaller symbols and ask the child to identify all symbols on that line.
- If the child/person skips a symbol ask him/her to try again while briefly pointing to that symbol.
- A child/person with fixation problems may skip symbols within a line of symbols.
- Visual acuity is recorded as the last line on which at least 3 of the 5 symbols are identified correctly. The visual acuity value is found in the margin adjacent to that line.
- After obtaining good responses with binocular testing, proceed by testing each eye separately.
- When testing monocularly, use the first symbol of each line or every second line for one eye and the last symbol of each line for the other eye to determine on which line to start testing close to the threshold value.
- If the client has profound low vision, the lowest rows of the test can be used as a near vision test. The distance of 25cm is the most practical distance because calculation of the visual acuity values is simple. They are  $\frac{1}{4}$  of the value printed next to the last line read. (To calculate  $\frac{1}{4}$  of a Snellen value, you multiply the denominator by 4.)

M-unit, metric unit is the distance in meters at which the reference optotype C is seen at a visual angle of 5°.