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## Visual Acuity Testing (Snellen Chart)

The Snellen chart assesses binocular and monocular visual acuity.

### Points & Pearls

- Patients aged > 40 years may have presbyopia and often require reading glasses. Their near-vision test results may be unreliable if the test is administered without reading lenses.
- Alternate charts exist for illiterate patients or young children, but there is limited evidence evaluating use of these charts on smartphones.
- While the Snellen chart is the most widely used method of testing visual acuity in clinical practice, it is not without its pitfalls, including difficulty with standardization of the chart as well as test-retest reliability.

### Instructions for Use

- Ensure proper room lighting and set phone brightness to 100%.
- Hold the screen 4 feet (1.2 m) from the patient (approximate this by standing at the end of a standard hospital bed if the patient is sitting upright).
- Test each eye independently while the patient completely covers the opposite eye.
- If the patient is unable to read any of the letters on the chart, hold up your fingers at varying distances and assess whether or not the patient can count them; this is recorded as counting fingers (CF) vision (eg, CF at 4 feet [1.2 m]).

#### CALCULATOR REVIEW AUTHORS

##### Edmund Tsui, MD

Stein Eye Institute, University of California, Los Angeles, Los Angeles, CA

##### Priya Patel, MD

Department of Ophthalmology, New York University Langone, New York, NY

### Why to Use

The Snellen chart provides a portable and quick method to assess visual acuity.

### When to Use

Use the Snellen chart to assess binocular and monocular visual acuity in cooperative patients.

### Next Steps

- Visual acuity worse than 20/25 should be evaluated by a licensed eye professional to determine whether corrective lenses or other treatments are needed.
- Visual acuity is not a measure of a patient's prescription, which can only be measured in an office setting.
- Any patient with sudden changes in visual acuity from baseline or new obscurations in vision requires immediate referral to an ophthalmologist for dilated fundus examination and further testing.

- If the patient cannot count fingers, move your hand across the patient's field of vision to assess whether the patient can see motion; this is recorded as hand motion (HM) vision.
- Finally, if the patient is unable to see hand movements, sweep a penlight across the eye to assess whether the patient can tell when the light is pointed at the eye. If the patient is able to identify the light, this is recorded as light perception (LP) vision. If the patient is unable to identify the light, this is recorded as no light perception (NLP) vision.

## Advice

The Snellen chart provided in the MDCalc app is intended as a convenient screener for visual acuity to be used on a mobile device and should not be used as a replacement for in-office testing. Evidence supporting the use of smartphone applications (apps) for Snellen visual acuity is limited, and currently no app has been found to be accurate to within at least 1 line of formal visual acuity testing; further validation is required.

## Evidence Appraisal

There are 2 main charts used to test visual acuity: (1) Snellen charts, which use a geometric scale, and (2) logMAR charts, which use a logarithmic scale. While both have been widely studied, Snellen charts are used more often in clinical practice and logMAR charts are used more often in the context of research studies, given the ease of statistical analysis. Data from 11 different smartphone apps found that the accuracy of the apps was limited; none were within 1 line of the true Snellen visual acuity (Perera 2015). One study suggested that the visual acuity on smartphone apps may not be completely accurate, but the results are reproducible, allowing the app to track change from baseline (Phung 2016). There has been 1 study validating the use of smartphone-based charts in measuring visual acuity; however, this validation was application specific and more studies must be conducted to evaluate the true validity of these charts (Bastawrous 2015).

## Use the Calculator Now

[Click here to access the Snellen chart on MDCalc.](#)

## Calculator Creator

Herman Snellen, MD

[Click here to read more about Dr. Snellen.](#)

## References

### Original/Primary Reference

- Snellen, H. *Probekbuchstaben zur Bestimmung der Sehschärfe*. Utrecht: Van de Weijer. 1862.

### Validation References

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### Contact EB Medicine:

Phone: 1-800-249-5770  
or 678-366-7933  
Fax: 770-500-1316  
PO Box 1671  
Williamsport, PA 17703



### Contact MD Aware:

MDCalc  
Phone: 646-543-8380  
12 East 20th Street  
5th Floor  
New York, NY 10003

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