

Tips for Appropriate Eye Chart Design

The design of the eye chart you use can *significantly* affect the visual acuity values you receive (Bailey, 2012). The National Expert Panel to the National Center for Children’s Vision and Eye Health (NCCVEH) at Prevent Blindness recommends single, LEA SYMBOLS® or HOTV optotypes surrounded with four crowding bars at a 5-foot screening distance for children ages 3, 4, and 5 years (Cotter, Cyert, Miller, & Quinn, 2015).

Examples include:



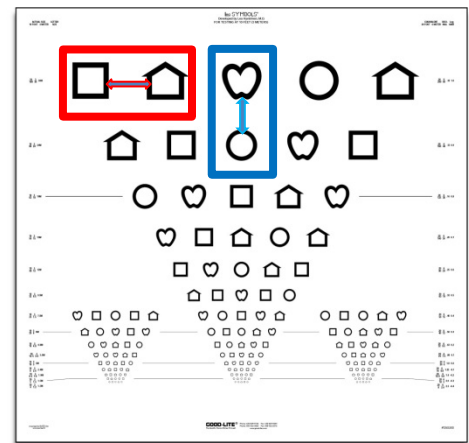
The NCCVEH also recommends a critical line “Sight Line” kit with 5 optotypes per card inside a crowded rectangle for a 10-foot screening distance. Cards are available for children ages 3, 4, 5, and 6 years and older.



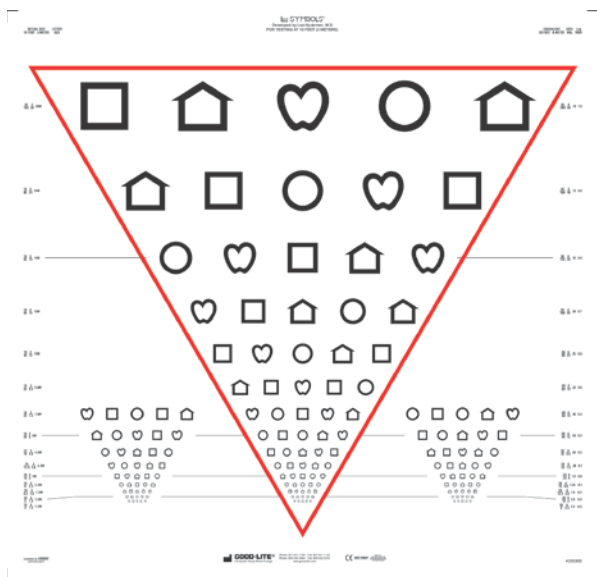
If you are required to use threshold eye charts, national and international guidelines suggest how charts should be designed for standardization (Committee on Vision, 1980; International Council of Ophthalmology, 1984; World Health Organization, 2003; & American National Standards Institute, Inc., 2010).

The 6 guidelines are:

1. *Optotypes should be of approximate equal legibility.* “Optotype” is the name for the picture, symbol, letter, or number the child is to identify. Approximate equal legibility helps to prevent guessing.
2. *Each line on an eye chart should have the same number of optotypes.* Some 9” x 14” charts will have fewer than 5 optotypes on the top two lines to fit a light box. This is acceptable; you are concerned with lines 20/50 and below.
3. *Horizontal spacing between optotypes should be equal to the width of the optotypes on that line (red box).*
4. *Vertical spacing between lines should be the height of the optotypes in the next line down (blue box).*
5. *The size of optotypes should progress down the chart by 0.1 log units between rows (Figures 1 and 2).* Typically these charts are referred to as “proportionally spaced” or “logMAR” in a catalog or e-commerce description.
6. *Optotypes should be black on a white background with luminance between 80 cd/m2 and 160 cd/m2.*



A line drawn outside the optotypes on an appropriate design would resemble an inverted pyramid instead of a rectangle.

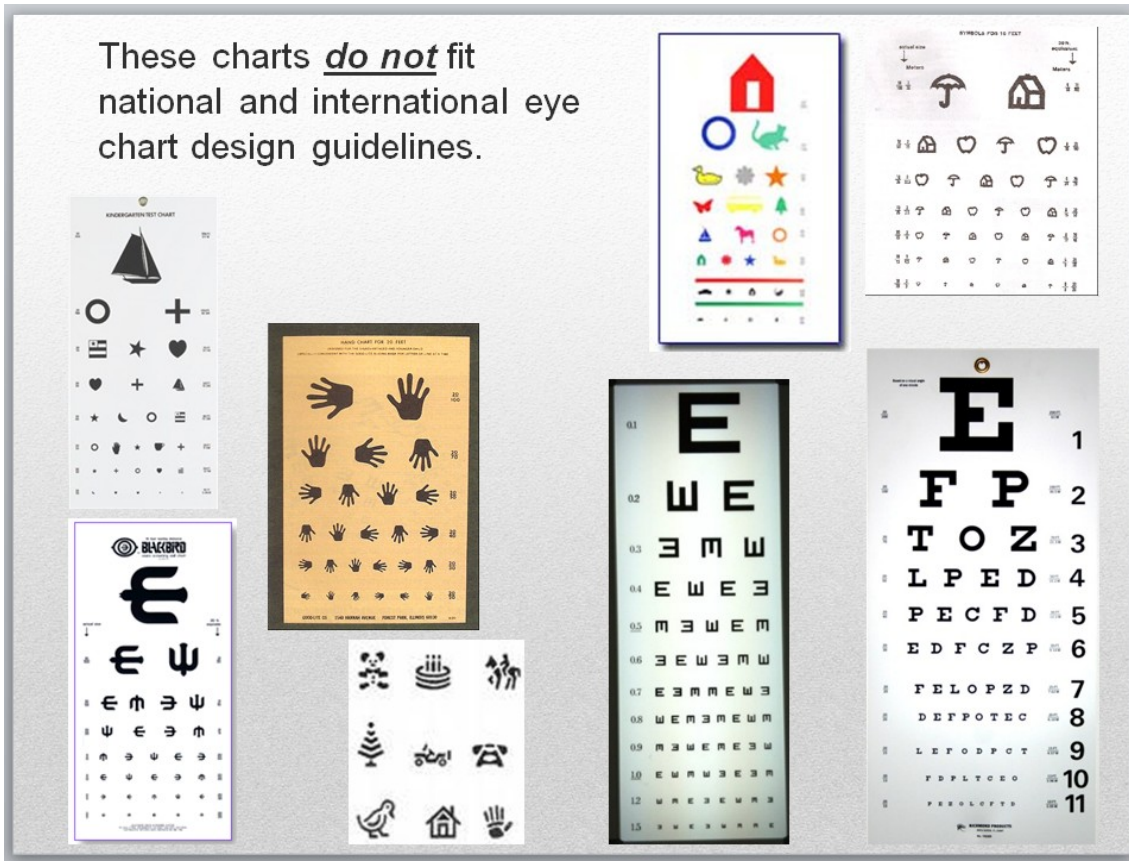


YES



NO

These charts do not fit national and international eye chart design guidelines.



Additional tips include:

- Standardized threshold charts will be used at 10 feet, not 20 feet.
- You will see 20/32 on the chart instead of 20/30.
- Regardless of the screening distance (5 to 10 feet), report and record the 20/XX Snellen equivalency number.
- The 2016 joint statement from the American Academy of Pediatrics, American Association for Pediatric Ophthalmology and Strabismus, American Academy of Ophthalmology, and American Association of Certified Orthoptists also recommends LEA SYMBOLS® or HOTV optotypes for preschool-aged children (Donahue et al., 2016).
- Sloan Letter charts are recommended for vision screening when children comfortably know their letters, according to the 2016 joint statement from the American Academy of Pediatrics, American Association for Pediatric Ophthalmology and Strabismus, American Academy of Ophthalmology, and American Association of Certified Orthoptists (Donahue et al., 2016).

References:

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