



Playing Cards (#252500)

Of the four sets of cards included in the test materials, the Playing Cards is the easiest in measuring the visual acuity of very young children. It functions also as regular teaching material when learning the concepts of similar/different, big/small, bigger/smaller.

Suggestions for the Play Situation

If the child has difficulties in picture perception use the *Lea 3-D Puzzle* (#251600) first, then compare the 3-D symbols with the pictures of the symbols drawn by tracing around the puzzle pieces or with the pictures on the *Flash Cards* (#251900) before using the *Playing Cards* for sorting games:

Level I: Sorting each symbol type separately

All *Playing Cards* with the symbol “house” are stacked one by one next to the “house” flash card. Then do the same with the “apple,” “ball,” and “box.”

Level II. Sorting two or more symbols

- Give the child a mix of two different symbol shapes in all different sizes and have him/her sort them by matching them up with the corresponding flash card.
- If the number of cards is too much for the child, choose three to four of the biggest sizes of both symbols. Next time you play you can choose smaller sizes.
- Repeat Step 1 and add a third symbol and the matching flash card. Then repeat, adding the fourth symbol.
- Instead of placing the playing cards into stacks, make neat rows of cards next to the flash card(s).
- Sort the cards within the row in the order from the biggest to the smallest.

In each game situation, make sure you do not use symbols that are too small for the child to see. Later you can introduce a smaller size by having the child look at it from a shorter distance and/or with a magnifying device.

If the child wants to play with the 3-D forms in the middle of the game, allow that, because the child may need tactile confirmation.

Visual Acuity

During the game, it becomes obvious which size of symbols is the smallest the child can respond to, thus giving you approximate visual acuity value. To determine the child’s visual acuity you need to measure the distance at which the smallest symbol is seen. Use your hand to measure the distance rather than a ruler so as not to disturb the play situation.

You can also measure visual acuity by asking the child to place the corresponding *Lea Puzzle* piece on the card that you place in front of the child.

If you use the *Lea Playing Cards* as a game playing “pairs”, the child may be motivated to get quite close to the recognition threshold.

The M size, i.e. the actual size of the symbol, is printed on the back of the playing cards. The following tables give you the visual acuity values when measured at 16, 8 or 4 inches (at 40cm, 20cm or 10cm).

If the child recognized the 1.0M symbols at a distance different from the three distances given in the table, for example at 5”, the visual acuity is calculated using the closest distance in the following table, in this case 4 in.

40 cm (16 in) Test Distance			
Letter Size	40 cm (16 in)	20 cm (8 in)	10 cm (4 in)
16 M	20/800	20/1600	20/3200
10 M	500	1000	2000
6.3 M	320	630	1250
4.0 M	200	400	800
2.5 M	125	250	500
1.6 M	80	160	320
1.0 M	50	100	200
.63 M	32	63	125

$$\frac{5''}{4''} \times \frac{20}{200} = \frac{1/8 \times 20}{4 \times 200_{10}} = \frac{1}{4} \times \frac{20}{40} = \frac{20}{160}$$

Similarly, if the British notation is used and the 1.6M cards were seen at 12 cm distance:

40 cm (16 in) Test Distance			
Letter Size	40 cm (16 in)	20 cm (8 in)	10 cm (4 in)
16 M	6/240	6/480	6/950
10 M	150	300	600
6.3 M	95	190	380
4.0 M	60	120	240
2.5 M	38	75	150
1.6 M	24	48	95
1.0 M	15	30	60
.63 M	9	18	36

$$\frac{12 \text{ cm}}{10 \text{ cm}} \times \frac{6}{95} = \frac{1/2 \times 6}{10 \times 95_5} = \frac{1}{10} \times \frac{6}{8} = \frac{6}{80}$$

If the decimal notation is used, the calculation is following: $12\text{cm}/10\text{cm} \times 0.06 = 0.07$

40 cm (16 in) Test Distance			
Letter Size	40 cm (16 in)	20 cm (8 in)	10 cm (4 in)
16 M	.025	.0125	.006
10 M	.040	.020	.010
6.3 M	.063	.032	.016
4.0 M	.100	.050	.025
2.5 M	.160	.080	.040
1.6 M	.250	.120	.060
1.0 M	.400	.200	.100
.63 M	.630	.320	.160

When using the metric system, visual acuity can also be calculated simply by dividing the distance used (in meters) by the M-value: $0.12\text{m}/1.6\text{M} = 0.07$.

If the calculations are found too difficult, writing down the M-value and the distance used is enough for follow-up. When visual acuity values of the eyes need to be compared, as during the follow-up of training of an amblyopic eye, show the cards to the child at the same distance. Then you can see the difference in visual acuity values as lines of visual acuity tests without any calculations.