

Different minds, meaningful math

By Ron Hardman – Kilroy’s Workshop · Educational information, not clinical advice

Start with the learner in front of you—not a stereotype about how a particular kind of brain “does math.”

Different needs, not one learning recipe

Neurodiversity refers to variation among minds and brains. Dwyer’s conceptual paper argues for attending to strengths, difficulties, and surrounding environments, while listening to neurodivergent people. It is a framework, not a single diagnosis or a prescribed math method. [\[1\]](#)

That distinction matters whether your family is discussing autism, ADHD, writing difficulties, or another learning difference. An individual’s diagnosis is not a complete teaching plan. Ask what helps this learner understand this task, and use their preferred language when discussing their experience.

What actual studies can—and cannot—tell us

Autism does not imply one math profile. Chen and colleagues analyzed reading and math in 114 autistic children and 96 comparison children. Their analysis identified contrasting academic profiles within the autistic group, including relative math strengths and weaknesses. This supports caution about stereotypes; it does not assign any new learner to a fixed category. [\[2\]](#)

Anxiety and performance can be related. Passolunghi and colleagues compared 32 high-math-anxiety and 34 low-math-anxiety students in grades 6–8. The high-anxiety group scored lower on several math and memory measures. The study was observational, not a trial showing that an app or relaxation strategy improves math. Children with learning disabilities were excluded, so it is not direct evidence for every neurodivergent learner. [\[3\]](#)

Three evidence-informed teaching choices

The 2021 IES guide recommends systematic instruction, clear mathematical language, and well-chosen representations for elementary students struggling with math. It also recommends number lines and deliberate word-problem instruction. These findings are useful starting points, but they do not establish the effectiveness of our teen course. [\[4\]](#)

1. **Show a complete example.** Name the goal, identify the numbers and units, explain each operation, and check the result.
2. **Connect the picture to the symbols.** Say exactly what a tile or ruler mark represents. A decoration is not an explanation.
3. **Make the next step visible.** Offer a short sequence the learner can refer to. Ask which step needs another example.

These are our practical design choices, not a claim that all neurodivergent learners are visual learners. Offer options and notice whether they are useful.

A practical comparison: border or surface?

A rectangular display board measures 3 feet by 2 feet.

- **Cover its face:** $3 \times 2 = 6$ **square feet**. Imagine six 1-foot squares.
- **Trim its edge:** $3 + 2 + 3 + 2 = 10$ **feet**. Follow the four sides.

Ask the learner to point to the quantity needed before calculating. Then ask why one answer uses square feet and the other uses feet. Our on-screen area/perimeter lab lets you change the dimensions and compare. This example is original practice, not an assessment of neurotype.

Choose a manageable routine

Here is an optional home routine to try—not a research-tested dosage:

1. Agree on one small goal, such as distinguishing area from perimeter.
2. Read or listen to a worked example. Pause wherever needed.
3. Try a similar question. Keep the steps visible during supported practice.
4. Ask what helped. Stop or take a break if the learner needs one.
5. On another occasion, try a question without method hints and record the support actually used.

Shop Class Math does not time its course checks. That is a product choice, not a claim that all timed practice is harmful: the IES guide includes timed activities as one tool for fluency. [\[4\]](#)

What parents should look for

Prefer a specific observation—"explained square feet with tiles; needed help choosing the operation"—to a broad label like "bad at math." Compare similar tasks over time, note support, and invite the learner to explain their reasoning. A three-question check is a small sample, not proof of mastery.

Persistent difficulty or distress calls for an individualized discussion with educators and qualified professionals. These guides and course features offer educational practice, not clinical assessment or treatment. We have not established that Shop Class Math improves outcomes for any diagnosis.



A real workshop moment from our community. Photo supplied by Ron. No diagnosis or research participation is implied. Shop Class Math activities require no shop tools.

Sources & evidence limits

1. Dwyer, P. (2022). The Neurodiversity Approach(es): What Are They and What Do They Mean for Researchers? *Human Development*, 66, 73–92. <https://doi.org/10.1159/000523723>
Conceptual paper about neurodiversity; not evidence that a particular teaching intervention works.
2. Chen, L., et al. (2019; online 2018). Quantitative Analysis of Heterogeneity in Academic Achievement of Children With Autism. *Clinical Psychological Science*, 7(2), 362–380. <https://doi.org/10.1177/2167702618809353>
Empirical subgroup analysis; findings do not predict an individual child's abilities.
3. Passolunghi, M. C., Caviola, S., De Agostini, R., Perin, C., & Mammarella, I. C. (2016). Mathematics Anxiety, Working Memory, and Mathematics Performance in Secondary-School Children. *Frontiers in Psychology*, 7, 42. <https://doi.org/10.3389/fpsyg.2016.00042>
Observational comparison of selected high- and low-anxiety groups; not a treatment experiment.

4. What Works Clearinghouse (2021). Assisting Students Struggling with Mathematics: Intervention in the Elementary Grades. Institute of Education Sciences.

<https://ies.ed.gov/ncee/wwc/practiceguide/26>

Evidence-based practice guide for elementary grades; extension to teenagers requires caution.

Sources checked September 21, 2026. This is a selected-source parent guide, not a systematic review. Written by Ron Hardman - Kilroy's Workshop; no clinical review or product-efficacy study is claimed.

Read online: <https://shopclassmath.com/neurodiversity-and-math.html>