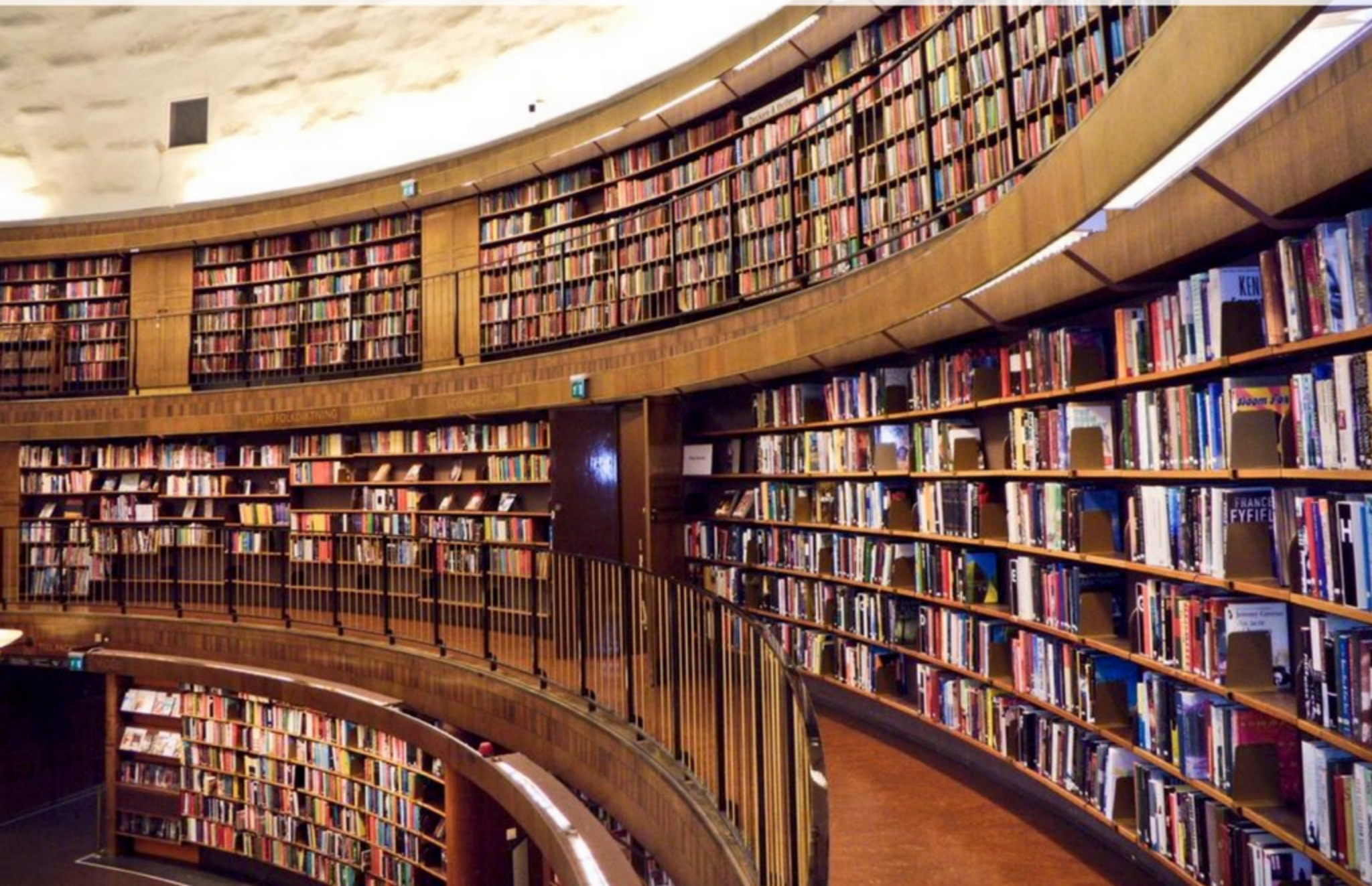


# Review of Math Learning Disability Research



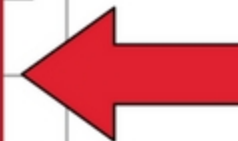
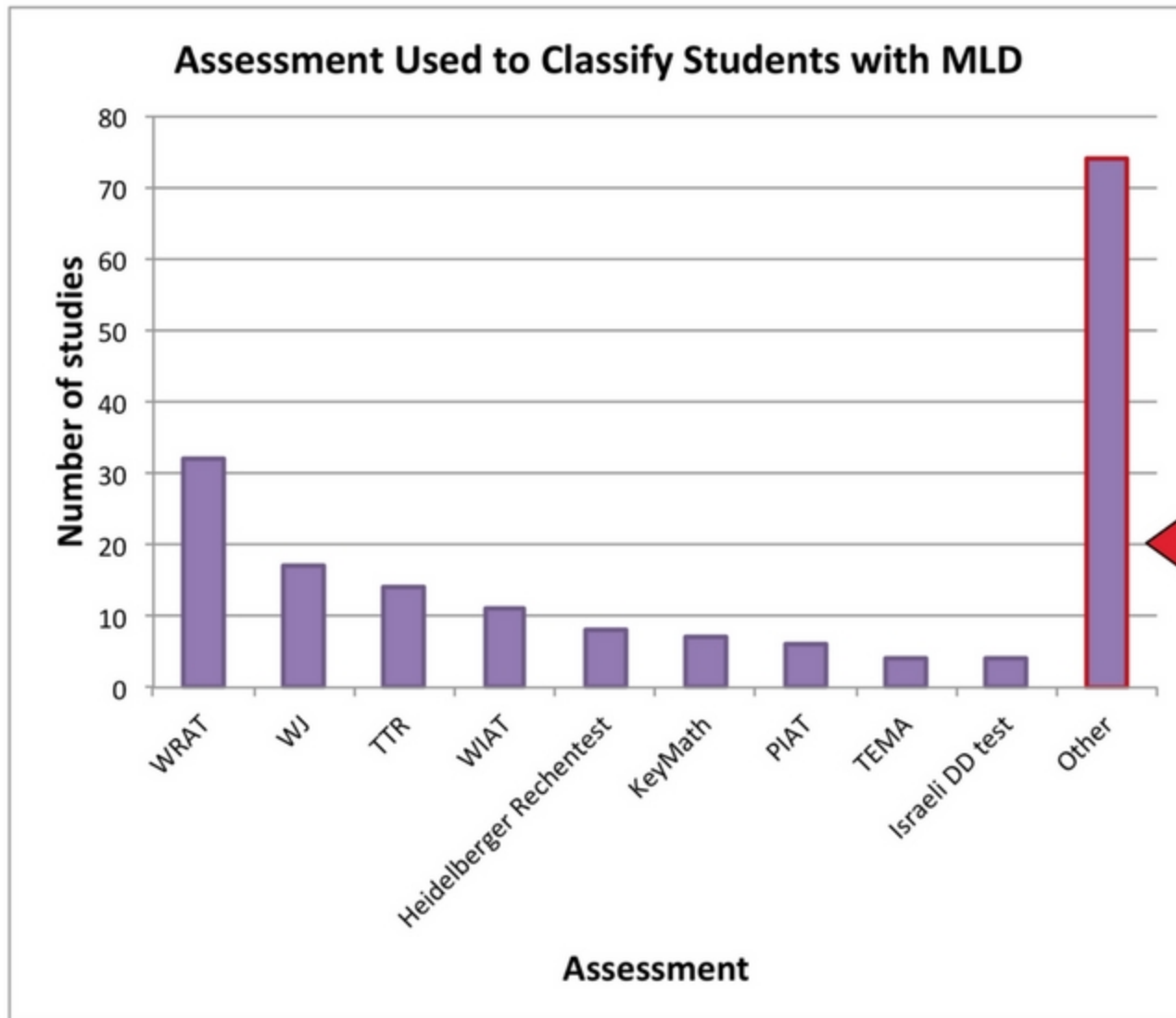
Reviewed 164 studies published on math learning disabilities (i.e., dyscalculia) from 1974 to 2013



**Question 1:** How did researchers identify students with a math learning disability (MLD)?

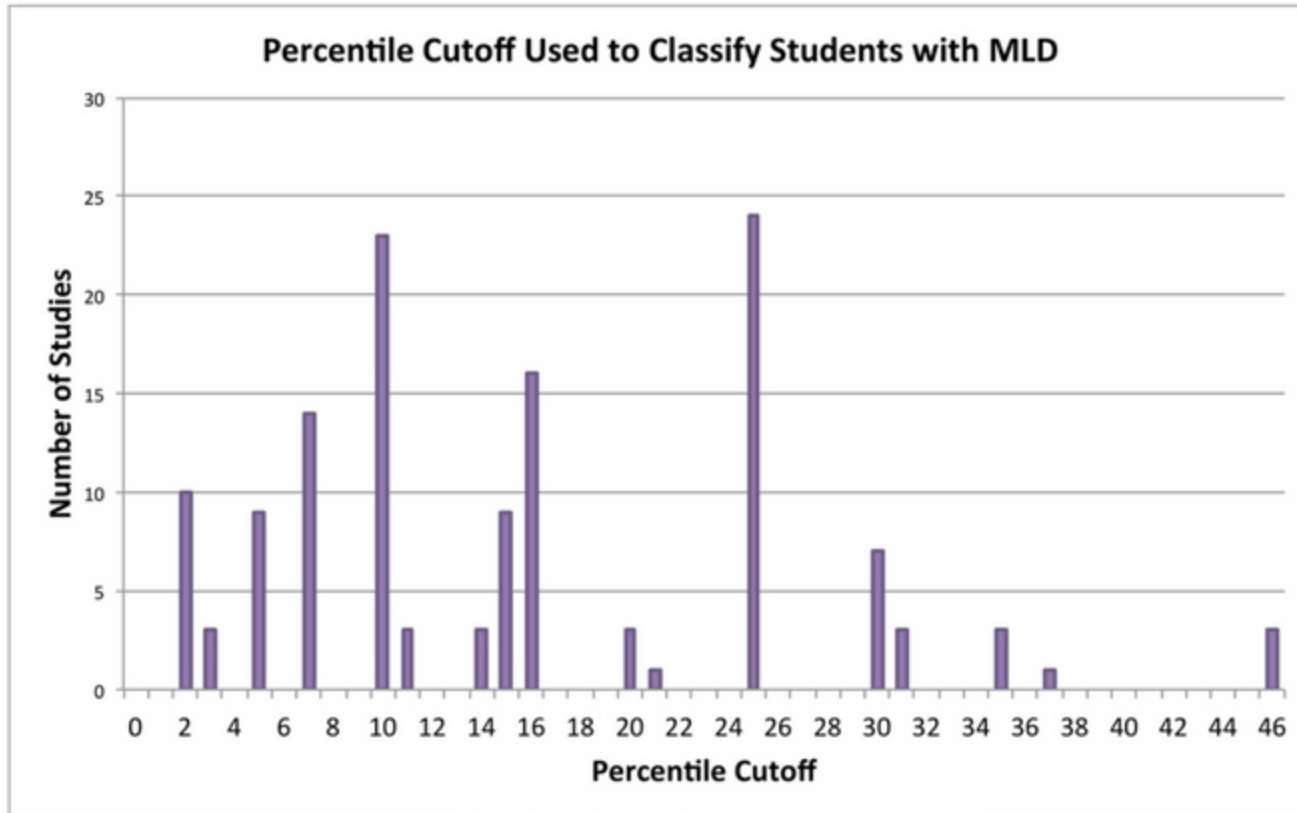


# Variability in assessments used to identify MLD



Most used assessment not commonly used in the field

# Variability in cutoff score used to define MLD

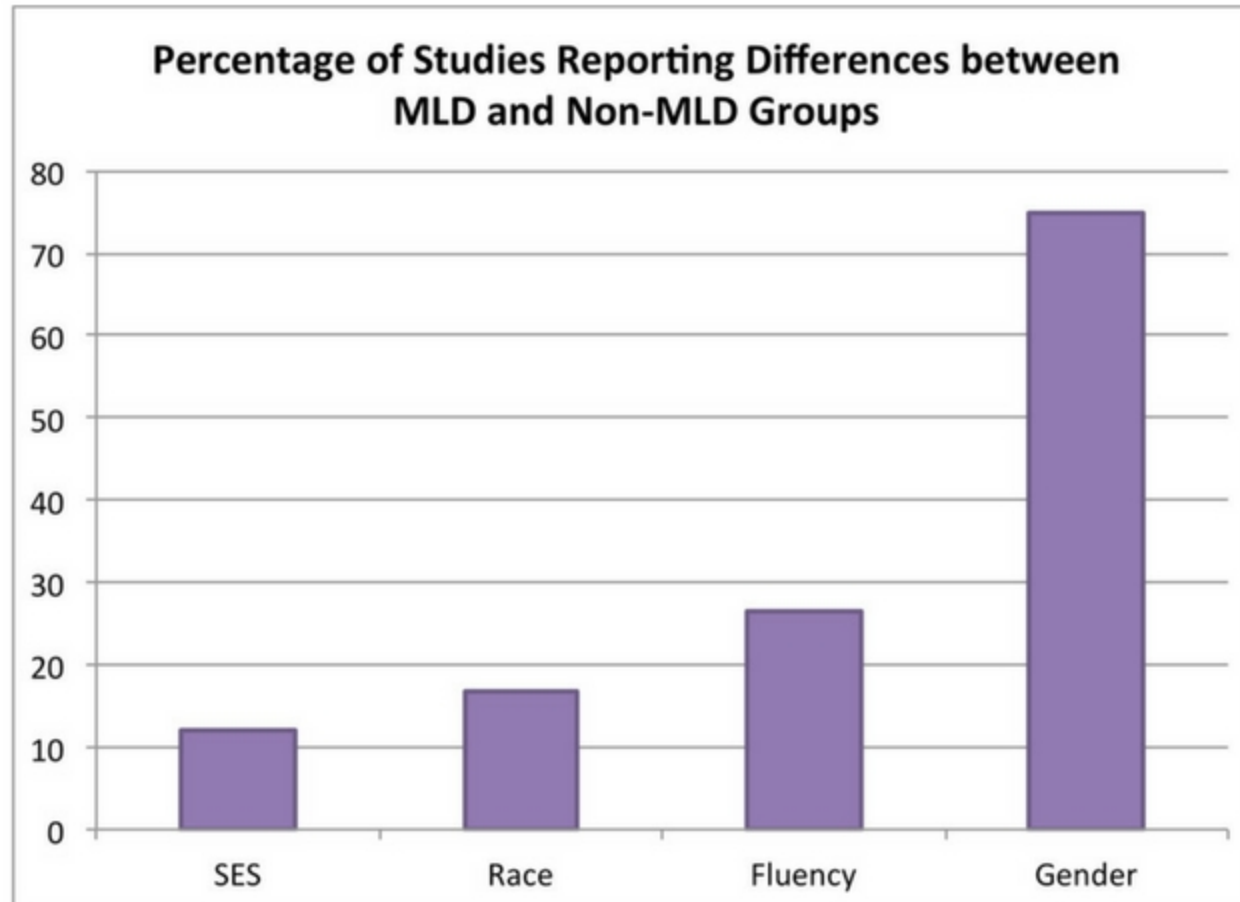


— Variability in cutoff score to define MLD —

**Question 2:** Do studies report demographic differences between the MLD and non-MLD groups?



# Most studies not reporting differences between groups



Majority of studies not reporting or controlling for demographic differences between groups

Question 3: What mathematical topics are studied?

The chalkboard contains the following mathematical content:

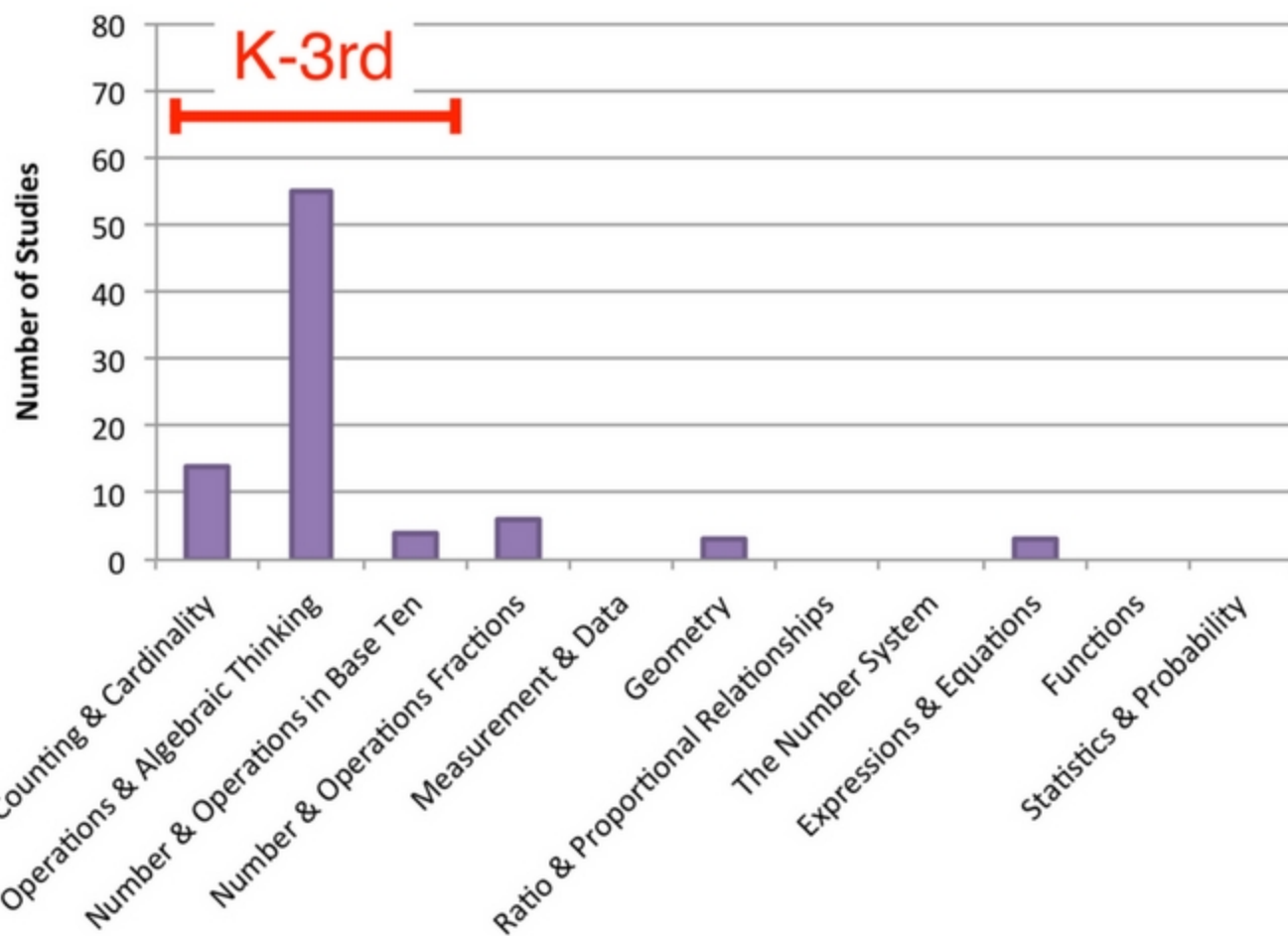
- Algebra:**
  - Division:  $\div x + -$
  - Equation:  $14.06$  over  $2.03$  with a  $y$  axis label.
  - Equation:  $\frac{2}{3} > \frac{1}{4}$
  - Equation:  $1.666$
  - Equation:  $2 \ 3 \ 6$  over  $+4 \ 5 \ 1$  over  $6 \ 8$
  - Equation:  $13 \times 8 = 104$
  - Equation:  $28$  over  $-15$  over  $-130$
  - Equation:  $20 + 7 = 27$
  - Equation:  $E = mc^2$
  - Equation:  $(a+b)^3 = (a-b)(a^2 + 2ab + b^2)$
  - Equation:  $(b)^2 = a^2 + 2ab + b^2$
- Geometry:**
  - Graph: A coordinate system with  $x$  and  $y$  axes and a jagged line.
  - Diagram: A right-angled triangle with vertices  $P$ ,  $Q$ , and  $R$ . The right angle is at  $Q$ . The angle at  $P$  is  $30^\circ$ .
  - Diagram: A cuboid with vertices  $A$ ,  $B$ ,  $C$ , and  $E$ .
  - Diagram: A triangle with a vertical line through its center.
- Other Text:**
  - Words: "Square", "Roots", "Cube", "Triangles", "Cuboid", "Area", "Right angle", "Cube", "A", "8", "24 = 1", "2/3", "4", "9", "30", "R", "A", "8".



# Almost exclusive focus on elementary mathematics



Common Core State Standards Math Domains



# Findings

- #1 - Lack of consistency in MLD identification criteria across studies

#2 - Lack of control for demographic differences

#3 - Narrow focus on basic arithmetic (K-3rd)



## Need for methodological change to:

- #1 - Ensure that students classified as having MLD are comparable across studies

#2 - Ensure that MLD are not conflated with low achievement due to environmental/social factors

#3 - Explore MLD in the context of more advanced mathematics (e.g., algebra)