



# Mathematics: Synopsis

## WHY IS MATH DIFFICULT?

SPECIAL EDUCATION SERVICES

Students struggling in the area of mathematics are unable to calculate accurately, efficiently, sequentially, and in an organized manner even though they may understand the math concept. Math can be very difficult due to the need for precise sequences, visual organization and memory recall of math facts.

Common difficulties in math include:

- Sloppy handwriting, including poor spacing between digits, & incorrect lining of digits.
- Errors copying math problems from a book or the board.
- Failure to self-monitor (stay on task, sequence multi-step problems).
- Deficits in organization (interfering with turning homework in on time).
- Compulsive tendencies (retracing digits or rewriting numbers until they look perfect).
- Uncontrollable tics interfering with the student's ability to track his/her place.
- Trouble sitting long enough to complete a multi-step math problem.
- Difficulty paying attention when important information is presented.
- Impulsivity leading to errors in calculation.

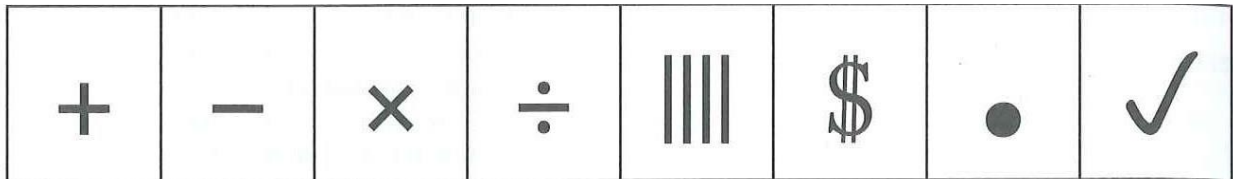
### Tricks and Tips to Address Challenges in Mathematics

- Use lined paper turned sideways or graph paper with boxes to help students line up numbers vertically.
- Adjust worksheets to provide for larger workspace.
- Reduce copying from the board or copying questions from a textbook.
- Have an assistant check accuracy of work that has been copied.
- Give student a copy of teacher notes, overheads, or slides.
- Have students use color to highlight operational symbols or important directions.
- Reduce the number of problems on a page.
- Fold or cover part of the worksheet so the student sees one problem at a time.
- Give one direction at a time.
- Frequently check student's work for time on task and computation accuracy.
- Draw the actions embedded in word problems using pictures or symbols.
- Provide a chart of math words that relate to operations and their operational symbols.
- Encourage students to mark out unnecessary words in word problems.
- Allow students to use manipulatives for concrete representation.
- Give students a model example of the problem.
- Provide opportunities for movement or breaks.
- Teach concepts using concrete, meaningful examples before introducing the abstract. For example, use a pizza to teach fractions.

### Additional Tricks and Tips to Address Challenges in Mathematics

- Help students retain conversion tables. “Kids Hate Doing Most Dirty Chores Mom!” (Kilometers, Hectometers, Dekameters, Meters, Decimeters, Centimeters, Millimeters).
- Help students maintain the sequence of operations. “Does McDonald’s Sell Burgers?” (Divide, Multiply, Subtract and Bring Down) long division steps.
- Allow use of a calculator.
- Use cognitive strategies for memory cues, “ $56 = 7 \times 8$ .”
- Teacher works one-on-one for the first few problems after direct instruction to ensure student grasps concept.
- Allow use of multiplication table or number chart to assist with multi-step problems.

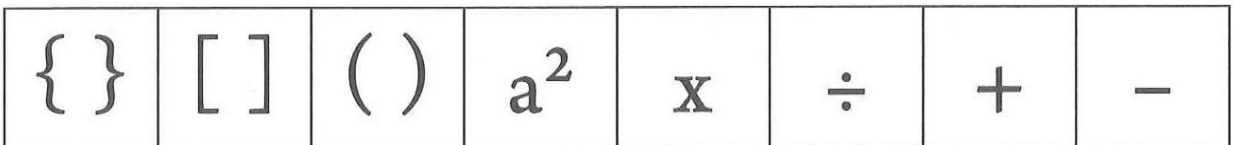
#### MATH EDITING STRIP



A math editing strip can be put on a student’s desk to remind the student to check their work. Students check each area one at a time from left to right.

- Plus, minus, multiplication, division: check the operational system in their work
- Bars: check to see that the numbers line up vertically
- Dollar sign: check for inclusion and placement of the dollar sign
- Decimal point: check for inclusion and placement of the decimal point
- Check mark: check the computation for accuracy

#### ALGEBRAIC EDITING STRIP



An algebraic editing strip is a visual representation for the order of operations in solving an algebraic equation. The strategy is to remember “B.B. PEMDAS” for Braces, Brackets, Parenthesis, Exponents, Multiplication, Division, Addition, Subtraction.

#### SUMMARY

Consider the use of purposeful and meaningful activities to assist students in their ability to perform accurate mathematical calculations. With your support of direct instruction, editing cues, modified materials, extended time, or decreased production requirements students may be able to develop confidence in their mathematical ability.

#### RESOURCE

Packer, L.E., S.K. Pruitt. 2010. Challenging Kids, Challenged Teachers: Teaching Students with Tourette’s Bipolar Disorder, Executive Dysfunction, OCDE, ADHD, and More. Maryland: Woodbine House.

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