Student Math Profile Checklist—Special Ed Services

Does the student show evidence of the following?
YES—attach evidence
NO—attach evidence and describe techniques used to develop skill set
NT—Not Taught or no evidence of instruction on this skill—attach plan for instruction.

Base-ten Concepts, Operations on Numbers and their Meaning and Relationships:

____ Can count to ___10 ___12 ___20 ___50 ___100 ___1,000 ___∞
____ Knows more and less when difference is clear
____ Can use counting/one-to-one correspondence to solve problems (which one is more?--when difference is not clear)
____ Understands and can demonstrate an exchange of 10 ones units for 1 ten unit.

____ Can put ones units into a base ten form with manipulatives (13 ones→ exchange for 1 ten and model as 1 ten and 3 ones)
____ Can demonstrate that numbers can be put in different but equal forms
(27→ 27 ones, or 2 tens and 7 ones, or 1 ten and 17 ones or 13 ones and 14 ones, etc).
____ Can explain standard addition algorithm in terms of equal exchange of
___ones and tens
___ones, tens and hundreds
____ Can explain standard subtraction algorithm in terms of equal exchange of
___ones and tens
___ones, tens and hundreds
____ Understands and can demonstrate that subtraction is the inverse of addition

____ Can consistently derive correct answers within 20 with manipulatives/drawings, fingers, chips, hash marks, etc.

____ Can add/subtract ten with tens rods (ex: 22 + 10 = 32)

____ Can add/subtract other multiples of ten with ten rods (74-40 = 34)

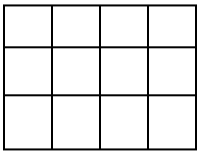
____ Can add/subtract ten in head (ex: 22 + 10 = 32)
____ Can add/subtract other multiples of ten in head (74-40 = 34)

____ Can answer addition and subtraction facts within 20 with automaticity

____ Facts that are difficult/not automatic:

____ Understands and can demonstrate that multiplication is repeated addition
(3 x 4 = 3 + 3 + 3 + 3 = 12 → 3 carrots x 4 people means each person gets 3 carrots)

____ Understands and can demonstrate that multiplication can be shown through area and a rectangle:
3 linear in. x 4 linear in. = 12 1x1 squares



____ Uses patterns to access 1x1-digit multiplication

____ Uses "facts I know" to access other facts

____ Understands and can demonstrate that division is repeated subtraction

____ Understands and can demonstrate that division is the inverse of multiplication

____ Can solve 2 digit/1 digit division problems using multiplication

____ Can explain that regrouping in standard multiplication algorithm is regrouping tens

____ Can show the distributive property and use to multiply 1 x 2 digit numbers (8 x
____ Can explain that 45
X 37
represents
5 ones x 7 ones plus 4 tens x 7 ones plus 7 ones x 4 tens plus 4 tens x 3 tens

____ Other Strategies student uses to derive "Math Facts" with some fluency:

____ Can answer multiplication and division facts within 100 with automaticity

____ Facts that are difficult/not automatic:

See SCoS **Number and Operations Strand** Obj. 1.01 Grades K-3

Supplemental Program Recommendations to be delivered in a systematic and explicit manner over period of time:
Number Worlds—Development of early number concepts
Strategic Math Series—Base-ten and Concrete/Representational/Symbolic approach to operations
See also SpEd Instruction Checklist for further recommendations/information

Language and Math Translation:

____ Ability to translate language into math sentences

____Student recognizes addition problems and can

___Draw or demonstrate problem

___ Translate into abstract math sentence.

____Student uses "types of subtraction problems" to think through if a problem is addition or subtraction and to

___Draw or demonstrate problem

___ Translate into abstract math sentence.

____ Understanding of the concept of Equality on concrete level

____Student can demonstrate the concept of equality with their body as a scale

____Responds to equal quantities with even "scale"

____Responds to unequal quantities by lowering larger quantity

____ Understanding of the concept of Equality on symbolic level

____Student can discuss what an equal sign means in a math problem

____Student can explain that any two things that are equal can be put into a math sentence with an equal sign.

____Student can __add __subtract __multiply __divide same amount on both sides of equation WITHOUT variables and discuss what has happened (values have changed but <u>equality</u> has been maintained.)

____Student can __add __subtract __multiply __divide same amount on both sides of equation WITH variables and discuss what has happened (values have changed but <u>equality</u> has been maintained.)

____Student can set up an equality given several values and choosing two (Ex: given the values 10, 12, 6 + 5, 5 + 5, student can select the two equal terms and write them as an equality.

____Student can set up an equality given several more complicated values and choosing two (Ex: given more complicated values with words: The number of cards in a deck, a dozen, the number of sides in a triangle x 3, The number of days in a year – 100), the student can select the two equal values and write them as an equality.

____Ability to translate relational sentences into math sentences

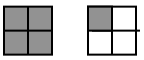
____ Student uses strategy of figuring out "which one has more so how do we equalize" when translating problems. (Ex: *There are 5 dogs to every cat in the animal shelter this week.* Set up an equation. Think: <u>There are more dogs</u> so I'll need **to increase the amount of cats** to make the two amounts **<u>equal</u>**. I'll need 5 times more cats. D = 5C. Check: If there were 8 cats that would mean D = 5*8. 40 dogs. Yes, that makes sense, because I knew there had to be more dogs to start with (also show the non-example 5*D = C: If there were 8 dogs we'd have 40 cats, that doesn't make sense, because we know that we started out with more dogs.) Review: If there are 8 cats there are 40 dogs. <u>In order to have the same amount of each type of animal</u>, we needed to multiply the cats by 5.

See SCoS **Algebra Strand**: Grade 2—5.02; Grade 3—5.03, 5.04; Grade 4—5.02; Grade 5—5.02

* See Richard E. Mayer, "Mathematical Problem Solving" from <u>Mathematical Cognition</u>, Royer; Information Age Publishing

See also <u>SpEd Instruction Checklist</u> for further recommendations/information

Fractions:

_____ Knows that ½ of something is a fractional part.
_____ Understands that "half" means ½.
_____ Understands that ½ means precisely ½ (and not just a word for part of the whole).
_____ Has worked with fractions in concrete form and understands that 1/8 is smaller than ¼, etc.
_____ Has worked with fractions in concrete form and can explain and demonstrate why 1/16 is smaller than 1/8, etc. (it takes more pieces to make the whole so each piece is smaller).
____ Can explain what the numerator and denominator represent.
____ Can use concrete fraction pieces to compare fractions and figure out which represents a smaller or larger fractional part (3/8 vs. 5/16, etc.).
____ Can make exchanges with concrete fractions in order to simplify and combine fractions (1/8 + **(¼)** = 1/8 + **(1/8 + 1/8)** = 3/8).
____ Can make exchanges with abstract fractions by multiplying <u>by some form of 1</u> in order to simplify and combine fractions (1/8 + ¼ = 1/8 + ¼ (2/2) = 1/8 + 2/8 = 3/8).
____ Can explain why we are not changing the value of the fraction when we multiply by some form of 1 (identity principle) and that we are just breaking it into more pieces according to what we need).
____ Can demonstrate the concept of multiplying by a fraction by ripping up a piece of paper into fractional parts: 1 x ½ = ½  ½ x ½ = ¼  ¼ x ½ = 1/8 
____ Can demonstrate the concept of multiplying by a fraction by repeated addition (3 x ¼ cup equals ¼c + ¼c + ¼c = ¾ c)
____ Demonstrates awareness that multiplying by whole numbers increases a value, but multiplying by fractions (less than one) decreases a value.
____ Can explain this difference (if I have 2 people and give them each 3 cups of milk, I gave out 6 cups total, but if I have 2 people and give them each ½ cup of milk I gave out less than 2, or 1 cup total).
___ Can multiply abstract fractions and explain if answer is sensible (¼ x 1/3 = 1/12—that makes sense because I do expect the answer to be a part of a fraction and smaller than ¼ or 1/3)
___ Can demonstrate what it means to show equal forms of a fraction--mixed number versus improper fraction (1 ¼ = →  = → 5/4)
___ Can convert between abstract improper fractions and mixed numbers and explain that you are breaking up the wholes into equal fractional parts or grouping the fractional parts into equal wholes to express the same value in a different form.
___ Can demonstrate the concept of dividing by a fraction by using repeated subtraction (3 cups ÷ ¼ means you subtract out ¼c repeatedly→ you will end up with **<u>12</u>** portions of ¼ cup each).
___ Can explain why dividing by a whole number increases a value but dividing by a fraction increases a value (6 ÷ 2 means you have 6 cups and subtract out, or dole out, 2 cup servings until you are done which yields 3 servings; 6 ÷1/2 means you have 6 cups and dole out ½ cup servings, so you'll get more out of your 6 and end up with 12 servings).
___ Can divide abstract fractions and explain if answer is sensible (1/2 ÷1/4 = 2; that makes sense because I can get 2 servings of ¼ cup out of ½ cup.)

See SCoS **Number and Operations Strands**: Grade 2—1.02; Grade 3—1.05a, b, c, e; Grade 4—1.03; Grade 5—1.02; Grade 6—1.04b, d; Grade 7—1.02b

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Supplemental Program Recommendations to be delivered in a systematic and explicit manner over period of time:
Marilyn Burns Fraction Kit—Development of physical, conceptual and abstract understanding of fraction basics.
Lesson for Extending Fractions—Development of early work with operations on fractions.
Teaching Arithmetic: Lessons in Multiplying and Dividing Fractions—Operations developed through concrete understanding.
See also <u>SpEd Instruction Checklist</u> for further recommendations/information

Sped Math Instruction checklist

Elementary school

Indicate dates of instructional delivery and days per week.

- Instruction that followed the County Instructional Calendar
    - Duration of Implementation _____Days per week_____
    - Notes:

- Remedial instruction that uses a C-R-A approach
    - Strategic Math Series—Units:_____
        - Duration of Implementation _____Days per week_____
        - Notes:

    - Mathline
        - Duration of Implementation _____Days per week_____
        - Notes:

    - Touch Math
        - Duration of Implementation _____Days per week_____
        - Notes:

- Research-backed Remediation Program
    - Number Worlds: Level _____ Unit_____

        - Duration of Implementation _____Days per week_____
        - Notes:

Sped Math Instruction checklist

Middle school

Indicate dates of instructional delivery and days per week.

- Instruction that followed the County Instructional Calendar
    - Duration of Implementation _____Days per week_____
    - Notes:

- Remedial instruction that uses a C-R-A approach
    - Wake County Remedial Warm-ups
        - Level 1 ___ Level 2 ____
        - Duration of Implementation _____Days per week_____
        - Notes:
    - Strategic Math Series—Units:_____
        - Duration of Implementation _____Days per week_____
        - Notes:

- Research-backed Remediation Program
    - Number Worlds: Level _____ Unit_____

        - Duration of Implementation _____Days per week_____

        Notes: