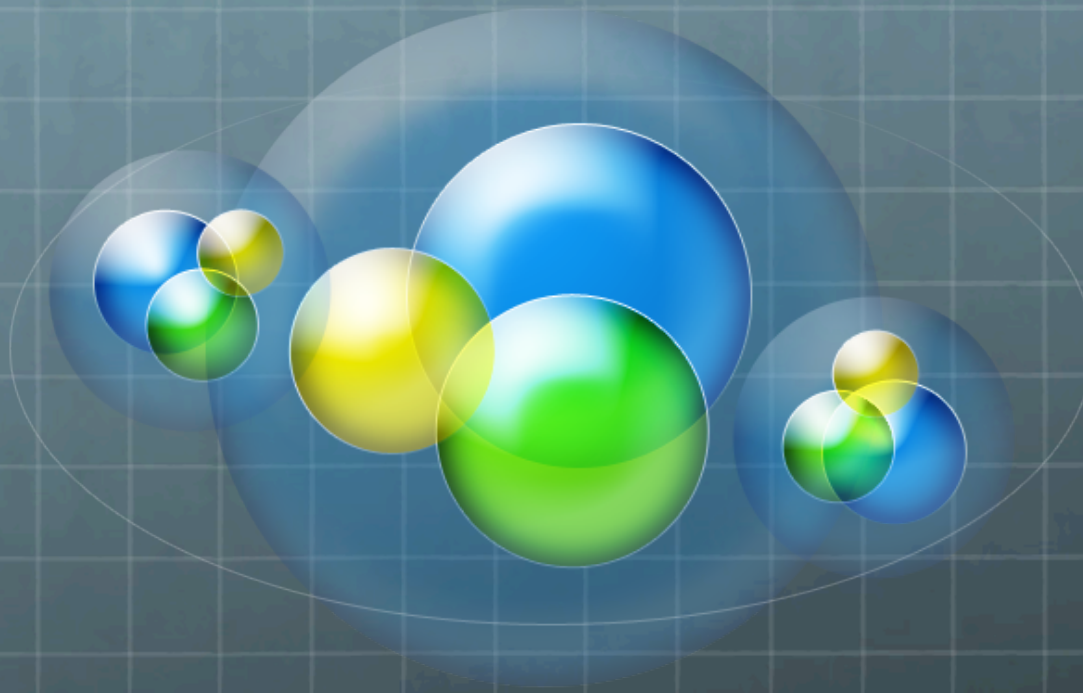




# Making it Work!

Aligning Math IEP Goals with Math Practices



# Howard County Public School System

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**Given the shift in  
recent math standards,  
how are you  
supporting students  
with special needs?**

How have we taught this concept to students with special needs?

1. John invests \$4000 compounded yearly in a bank that pays compound interest at the rate of 5% per year. Find the amount that John has in the bank after 3 years.

**Solution:**

For compound interest,

$$T = P \left( 1 + \frac{r}{100} \right)^n$$

$P$ : \$4000

$r$ : 5

$n$ : 3

$$\begin{aligned} T &= 4000 \left( 1 + \frac{5}{100} \right)^3 \\ &= \$4630.50 \end{aligned}$$



Repeat 100 times!!!



# Shifts in Math Instruction

The following are the key shifts called for by the Common Core:

1. Greater focus on fewer topics.
2. Coherence: Linking topics and thinking across grades
3. Rigor: Pursue **conceptual understanding**, procedural skills and fluency, and application with equal intensity



The following are the student learning behaviors called for by the Common Core:

1. **Make sense of problems** and persevere in solving them.
2. **Reason abstractly** and quantitatively.
3. **Construct viable arguments and critique the reasoning of others.**
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. **Look for and make use of structure.**
8. **Look for and express regularity in repeated reasoning.**

 SO...

 Given the shift in  
recent math standards,  
how are you  
supporting students  
with special needs?



# Our Journey



$\frac{3}{4}$



# How



$\frac{3}{4}$





Why



$\frac{3}{4}$



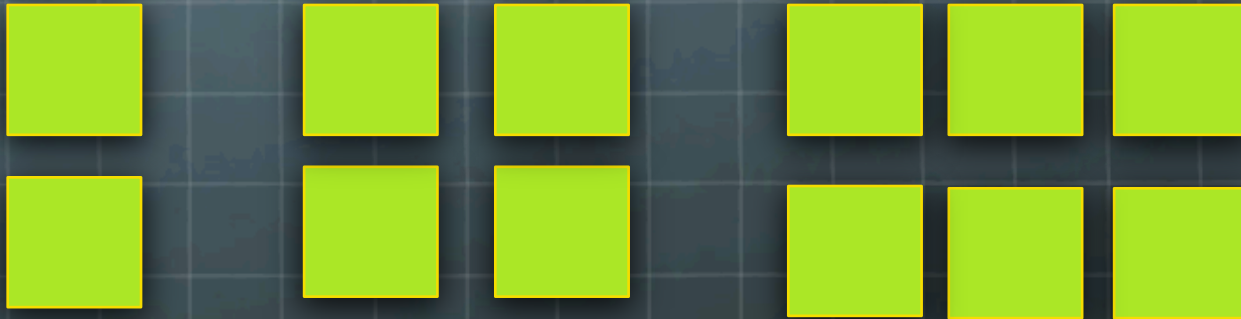
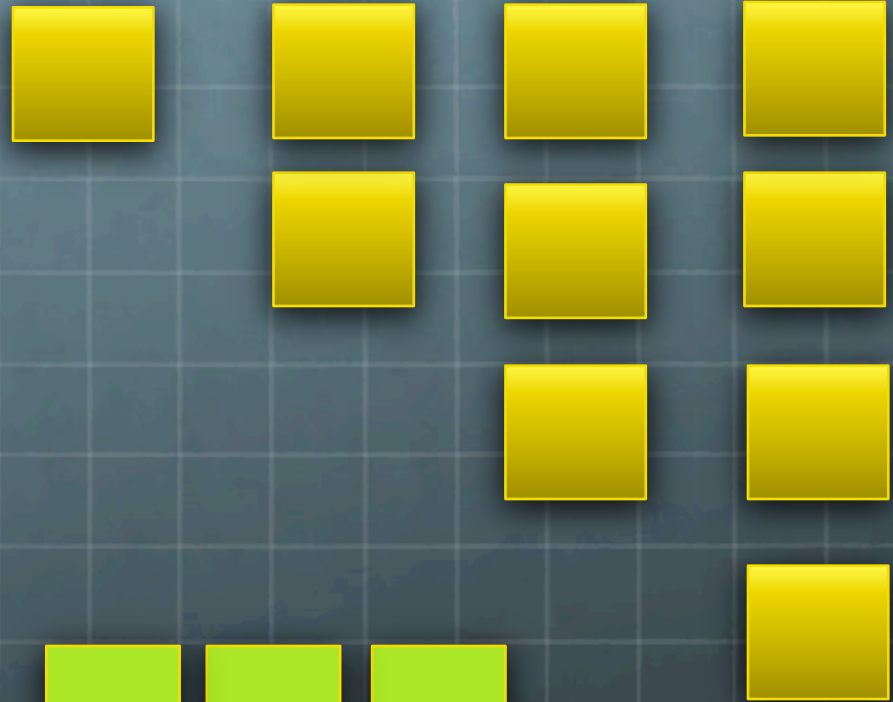
**Given prompts, student will count by rote from 1 to 20 with 70% accuracy.**



Given no more than 2 visual prompts, student will continue the pattern by naming the next term or terms with 75% accuracy.

**3/4**





$$2 \times 3 = 6$$



Given a two step problem without negative numbers, student will independently solve for a variable with 80% accuracy.



Given a problem, student will break it into component parts that can be solved with 80% accuracy.

3/4





$$\begin{array}{r}
 18 = 4a + 10 \\
 -10 \quad -10 \\
 \hline
 8 = 4a \\
 \hline
 \frac{8}{4} = \frac{4a}{4} \\
 2 = a
 \end{array}$$



$$18 = 4a + 10$$

I know that  $10 + 8 = 18$

So  $4a$  must equal 8

$$4a = 8$$

4 times something equals 8

I know that  $4 \times 2 = 8$

So  $a$  is 2

$$a = 2$$



# Current IEP Objectives



3/4



Align the Goals and  
Objectives to the Math  
Practices



$\frac{3}{4}$



How would you rewrite  
the Goals and Objectives  
in terms of the Math  
Practices?



$\frac{3}{4}$





# The Document

| Mathematics Practices                                                           | Partial                                                          | Moderate                                                                                                         | Strong                                                           |
|---------------------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| Given a problem to solve, the student will explain and justify their reasoning. |                                                                  |                                                                                                                  |                                                                  |
|                                                                                 | Explain their thought processes in solving a problem in one way. | Explain their thought processes in solving a problem and representing concretely, pictorially and/or abstractly. | Discuss, explain, and demonstrate with multiple representations. |
| DATE                                                                            |                                                                  |                                                                                                                  |                                                                  |
| COMMENT                                                                         |                                                                  |                                                                                                                  |                                                                  |
|                                                                                 | Identify the variables and what the problem is asking.           | Analyze information (givens, constraints, relationships, goals)                                                  | Monitor and evaluate the process and course as necessary.        |
| DATE                                                                            |                                                                  |                                                                                                                  |                                                                  |
| COMMENT                                                                         |                                                                  |                                                                                                                  |                                                                  |
|                                                                                 | Choose a solution path.                                          | Make conjectures and plan a solution pathway.                                                                    | Check answers to problem and ask "Does this make sense?"         |
|                                                                                 |                                                                  | predict whether solution will be bigger or smaller and justify your prediction                                   |                                                                  |

# The Document

| A                                                                                                                                                                                                                  | B                                                                                                                                                                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Goal Area</b>                                                                                                                                                                                                   | <b>Objectives</b><br>(you would select 2-3 objectives that are the most critical for the student):                                                                                                                   |
| Example with parentheses - first year only:<br>Given a problem to solve (fractions, equations, variables, operations) the student will explain and justify their reasoning.                                        | <ul style="list-style-type: none"> <li>*Be sure to include givens (i.e. given a problem to solve)</li> <li>*Be sure to include necessary prompts</li> <li>*Be sure to include criteria for each objective</li> </ul> |
|                                                                                                                                                                                                                    |                                                                                                                                                                                                                      |
| <b>Examples of the goal above adjusted for specific students:</b>                                                                                                                                                  | <b>Possible Objectives:</b>                                                                                                                                                                                          |
| Specify prompts as needed) {FirstName} will make sense of given problems and persevere in solving them.                                                                                                            | justify the manner in which data is displayed                                                                                                                                                                        |
| Given a problem involving geometric reasoning (specify prompts as needed), {FirstName} will explain and justify his,her} reasoning.                                                                                | select the most appropriate display of data                                                                                                                                                                          |
| Given a problem involving algebraic reasoning (specify prompts as needed), {FirstName} will explain and justify his,her} reasoning.                                                                                | will explain the correspondence between given equations, tables, graphs, verbal descriptions, visual models, and/or data                                                                                             |
| Given a problem involving fractional reasoning (specify prompts as needed), {FirstName} will explain and justify his,her} reasoning. (Fractional reasoning includes fractions, statistics, proportions,            | represent data as equations                                                                                                                                                                                          |
| <div> <div>☰</div> <div>Make sense... ▾</div> <div>Making Sense IEP SAMPLE ▾</div> <div>Persevere... ▾</div> <div>Behavioral &amp; Study Skills IEP Sample ▾</div> <div>...Precision ▾</div> <div>◀ ▶</div> </div> |                                                                                                                                                                                                                      |

# The Document

**Objectives (you would select 2-3 objectives that are the most critical for the student):**

\*Be sure to include givens (i.e. given a problem to solve)

\*Be sure to include necessary prompts

\*Be sure to include criteria for each objective

persevere through a problem or task

try several approaches in finding a solution to a problem or task prior to asking for a hint

try several approaches in finding a solution to a problem

stay with a task by making multiple attempts

stay with a task by making one attempt

label (units, titles, intervals, etc.) accurately

express details with precision

enter or record the correct information

learn from previous solution attempts

will struggle with various attempts over time

After determining a strategy was not successful, try new strategies

find the error in his/her solution path

try strategies and evaluate results

take risks in problem solving

# Aligning Goals and Objectives to the Math Practices

- 🌐 Help avoid simply memorizing how.
- 🌐 Encourage teachers to really look for why a student can't solve a problem.
- 🌐 Help students discover why math works, and help teachers coach that discovery.
- 🌐 Help kids apply problem solving skills across a variety of situations.



# Session Feedback

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