numeracy + consultants
numbers are all we do

Numeracy Specialist Program

Level 3

Primary Numeracy Intervention

Course #2

Slide 2

Course 1	Course 2
• Focused on creating student groups	• Focus is on individual students
• Differentiation within groups	• Crisis level intervention
• Finding common skills and differentiation when skills & targets were not the same	• Instruction geared towards students strengths and weaknesses
• Making decisions for what was best for the whole group, not necessarily individual students	• Progression of Addition and Subtraction (Deep Dive)
	• Alternative forms of data tracking with observational tasks

Slide 3

An Intervention Crisis

Kindergarten 2019/2020 School Year


EDUCATION

Michigan ends in-person school year for K-12 students due to coronavirus

Online learning pushed for the rest of the school year.

John Wisely
Detroit Free Press

School Year
(September - March)
Missed last 3 months

First Grade 2020 / 2021 School Year


EDUCATION

Michigan schools, parents have tough choice to make — and time is running out

John Wisely and Kristen Jordan Shamus Detroit Free Press

Virtual School
September - February 2021
February till June F2F

Second Grade 2021 / 2022 School Year

New School -
Has not had a full year of inperson school in his life.
In January his Teacher asked for a closer look at his skills

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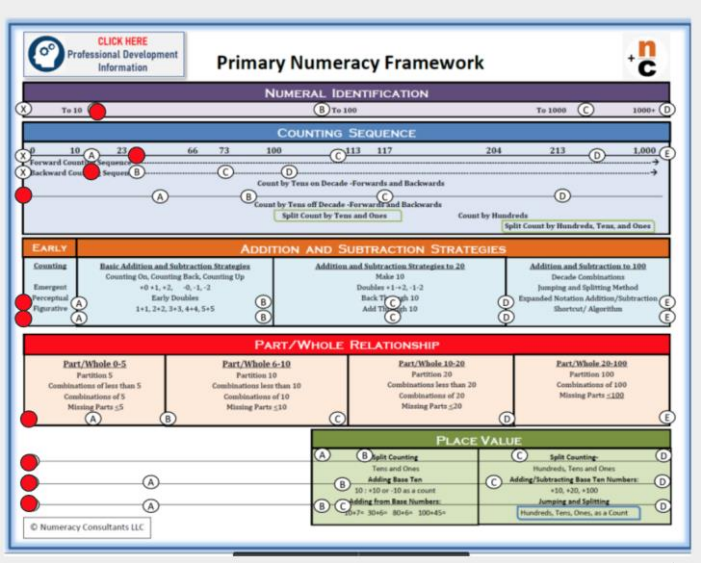
Slide 4



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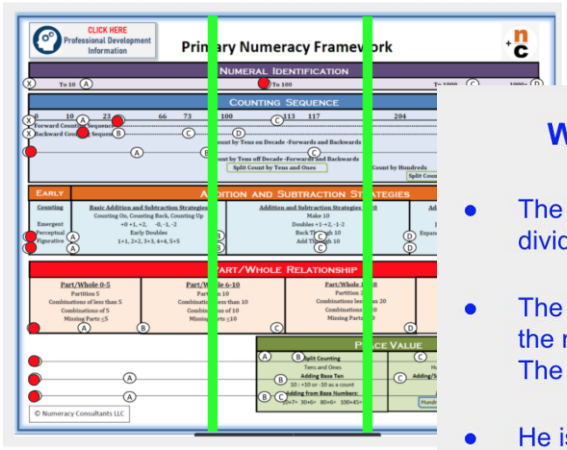

What Level is He?

- The framework is loosely divided into thirds.
- The first third is Kindergarten, the middle third is First Grade, The last third is Second grade
- He is clearly performing in the kindergarten range according to the framework.

Slide 6

map GROWTH

Student Progress Report

2020 Mathematics Student Achievement Norms

Grade	Fall Mean	Fall SD	Winter Mean	Winter SD	Spring Mean	Spring SD
K	139.56	12.45	150.13	11.94	157.11	12.03
1	160.05	12.43	170.18	12.59	176.40	13.18
2	175.04	12.98	184.07	13.01	189.42	13.44
3	188.48	13.45	196.23	13.64	201.08	14.11
4	199.55	14.40	206.05	14.90	210.51	15.56
5	209.13	15.19	214.70	15.88	218.75	16.70
6	214.75	16.12	219.56	16.74	222.88	17.47
7	220.21	17.41	224.04	17.96	226.73	18.60
8	224.92	18.94	228.12	19.33	230.30	19.95
9	226.43	19.83	228.67	20.06	230.03	20.63
10	229.07	20.23	231.21	20.61	232.42	21.25
11	231.72	20.61	233.49	20.91	234.25	21.65
12	233.02	21.60	233.31	23.07	234.19	24.63

Norms Reference Data: 2020 Norms.
Growth Comparison Period: Fall to Spring

Term/ Year	Grade	RIT Score (+/- Std Err)	RIT Growth	Growth Projection	Percentile Range
WI22	2	156-159-162			2-4-6
FA21	2	148-151-154			3-5-7

Math: Ma
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150
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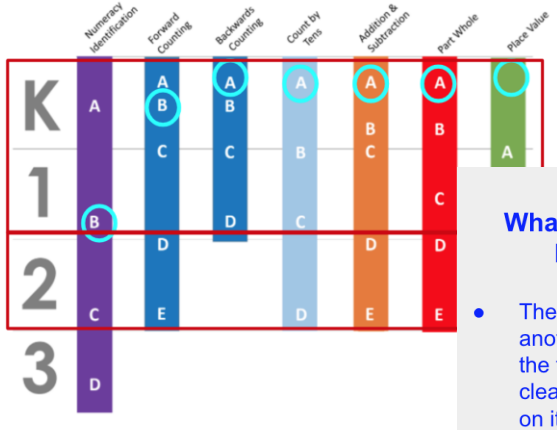
Slide 7

Numeracy Consultants
Leveled Math Intervention k-2



What Grade Level is he Performing at?

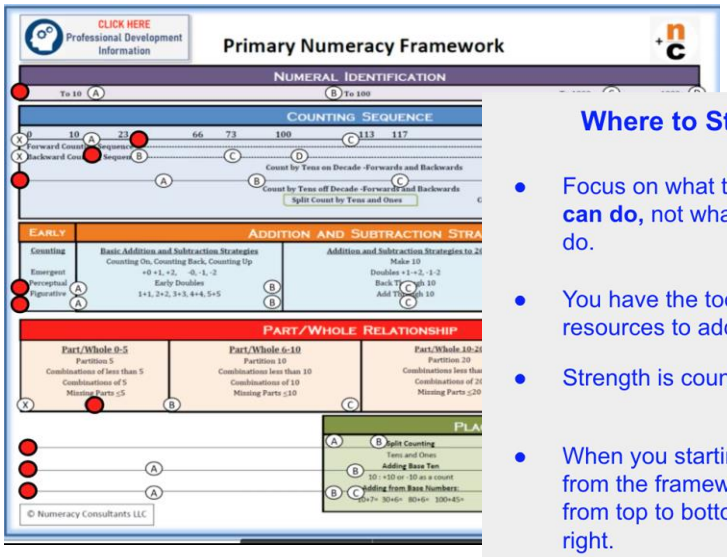
- The grade level chart is just another representation of the framework, but it has clearly defined grade levels on it.
- The framework can be very overwhelming and confusing for people who have not been trained. Use the leveled chart to explain to parents.

Slide 8

Where to Start?

8

Slide 9



Where to Start?

- Focus on what the student **can do,** not what they can't do.
- You have the tools and resources to address this!
- Strength is counting to 23.
- When you starting working from the framework you work from top to bottom and left to right.
- Numeral ID is embedded into the counting materials.
- Taking the time to strengthen his counting will help develop his addition and subtraction as well.

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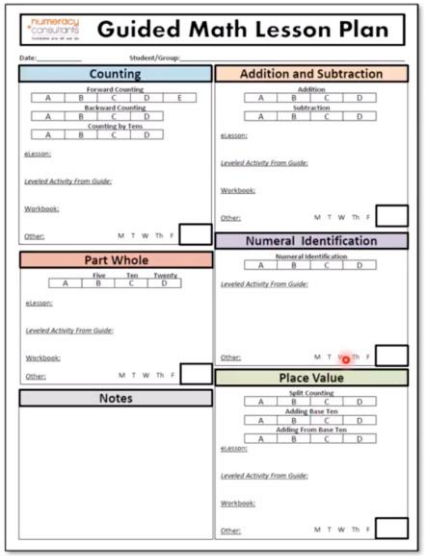
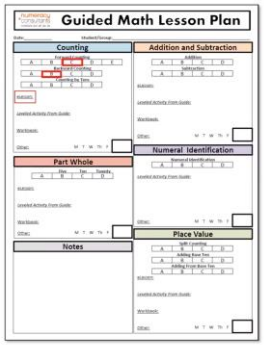
Slide 10



Lesson Plan

- Lesson plan is designed to help keep you organized and on point.
- Lesson Plan has all 5 Domains. You do not work on all 5 domains at once.
- Lesson Plan:
  1. eLesson
  2. Leveled Activity
  3. Workbook
  4. Other

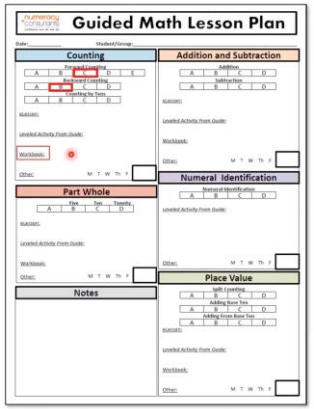
Slide 11

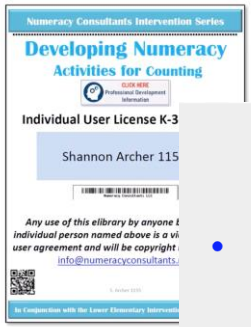


eLessons 2.0 Introductory & 1.0 Supplemental

- The premade eLessons may not hit the exact ranges that you want to practice or may not give you enough practice that you need.
- Look ahead before you use the materials. You can always supplement with direct Leveled Activities.
- You can occasionally go off level to instruct. Backward counting will often lag forward counting and it is ok to have them do some backwards while working with forward even if it is above their tested range.

Slide 12

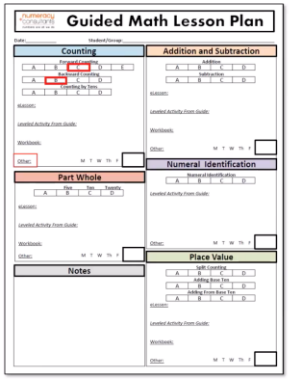




Workbook

- There are never specific problems designated for counting backwards. You determine which to use.
- Some workbook pages are long and they do not have to finish the entire page.
- You can use a workbook page as many times as you need. Is not a "one and done" resource.

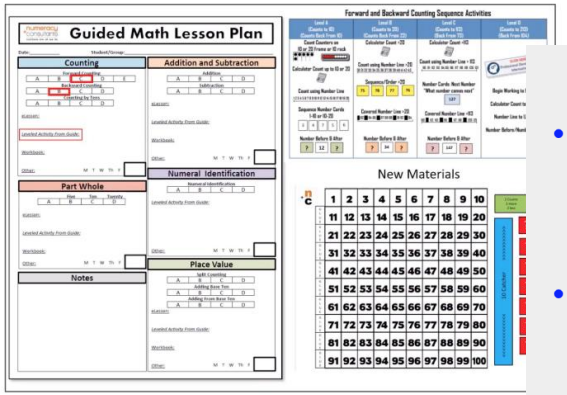
Slide 13



Online Activities

- Many "games" can be found on our website.
- These can be used for your lessons.
- The "games" should be monitored and done with the students. Do not just assign and walk away.

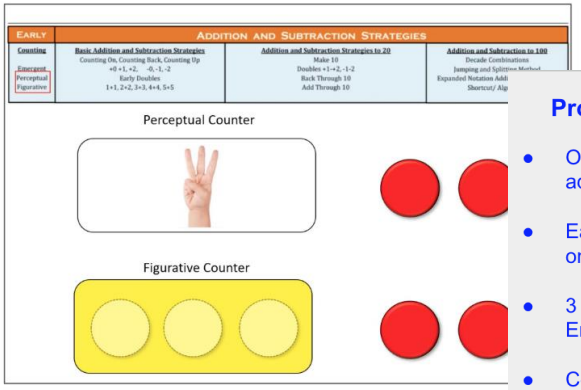
Slide 14



Leveled Activities

- Leveled Activities are the most efficient way to deliver instruction because you have control over all questions, prompts, and materials.
- Though we are working on forward and backwards counting, we are going to intentionally do some things that will help develop addition and subtraction.
- Mystery number before and number after can help a student develop +1 and -1 thinking.
- Using multiple mystery numbers can help develop counting on and counting back starting from a random number.

Slide 15



Progression of Addition

- Oral counting overlaps with addition and subtraction.
- Early "Counting" develops one to one correspondence.
- 3 Types of Counters: Emergent, Perceptual, Figurative
- Counting Sets: Will count two separate sets, will not combine.
- Combining Sets: Will count both sets as one.
- Combining sets (early number bonds) is the beginning of developing part/whole.
- Partitioning can be developed early on when students are in the counting one to one stage.

Slide 16

Assumption:

My students are adding or ready to add.

Addition Check List

- Can the student count one to one objects up to 20 ? (Numeracy Screener)
- Can the student count forwards and backwards to 23?
- Can the student do number before and number after (eLesson and workbook)?
- Can the student start counting at different numbers within in 0-23?
- Can the student do one or two counts before or after?

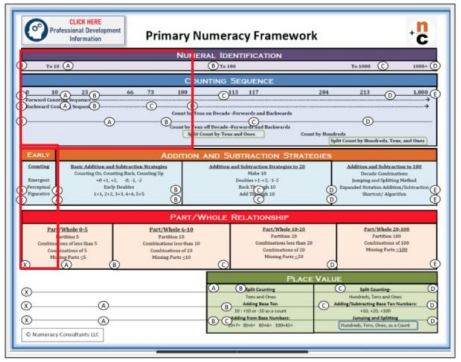
Progression of Addition

- Addition Checklist
- When transitioning to addition, know if the practice uses concrete visuals or abstract digits.
- When transitioning from concrete to abstract, be aware of how the student is solving the problems.
- Remember, it is good to use manipulatives. Most students will need manipulatives early on.
- However, manipulatives become problematic when they become the only strategy, instead of a being used as a tool to develop understanding.

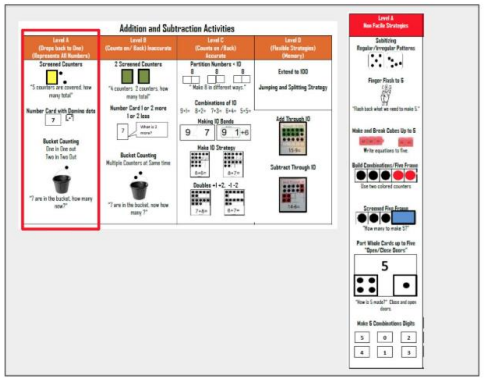
Slide 17

Instruction for Vonnie

- Focus on making his counting as strong as possible to help prepare him for addition and subtraction.
- Until we start directly working on addition and subtraction we will not know if the improvements in counting transferred over or not.
- According to his assessment results, we need to be prepared to start counting and combining sets.
- This could progress very quickly or not.
- Trust the process!!



Slide 18



Instruction for Vonnie

- Counting sets and screening sets
- Working on counting on and counting back.
- Writing simple equations to match pictures.
- Part / Whole is a scaffold of addition and subtraction, it is not meant to be separate, but developed alongside with addition and subtraction.
- Mix in some part /whole as well (make 5 one way, then make 5 a different way…)

Slide 19

Separation/Take-Away Subtraction:

- Imagine you have 10 cookies and eat 3. Subtraction here helps find the **remaining** amount: 10 cookies - 3 cookies = 7 cookies left.
- This is the most common understanding of subtraction.
- We focus on a starting quantity (minuend) from which we remove a part (subtrahend) to find the remaining amount (difference).

Comparison Subtraction:

- This focuses on the **difference** between two quantities.
- Imagine you have 10 cookies and your friend has 5. How many more cookies do you have? Here, subtraction helps compare: 10 cookies - 5 cookies = 5 cookies more.
- We look at two separate amounts and find the distance between them.

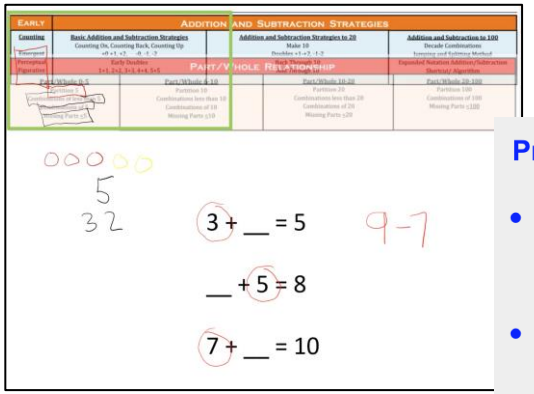
Choosing without Context:

- If a subtraction problem is presented without context (like a word problem), it's generally assumed to be **separation/take-away** subtraction.
- This is because it's the more fundamental concept and applies to many real-life situations.

For example, if you see the equation: 8 - 3 = ?, it's safe to assume you're starting with 8 and removing 3 but it also could be looked as as comparison how many more is 8 than 3, it depends on how you describe the relationship when working with the isolated problems.

When working with problems in isolation, it is fine to describe both methods, particularly because once students get to comparison subtraction, the “how many more”, the language suggests the opposite of the operation needed and students can have experiences prior.

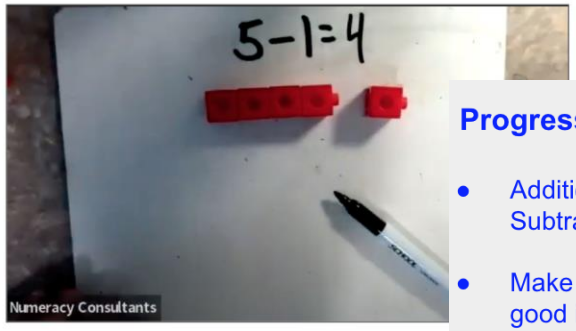
Slide 20



Progression of Subtraction

- Understanding of part/whole is critical to advance in subtraction strategies.
- Subtraction is finding the difference between two numbers. The difference is the quantity between two numbers.
- If a student does not have part/whole understanding in place, their strategies for subtraction will be very limited and focused on lower concrete strategies.
- The gap between addition and subtraction is very common. Level C addition Level A subtraction is one of the most common level combinations.

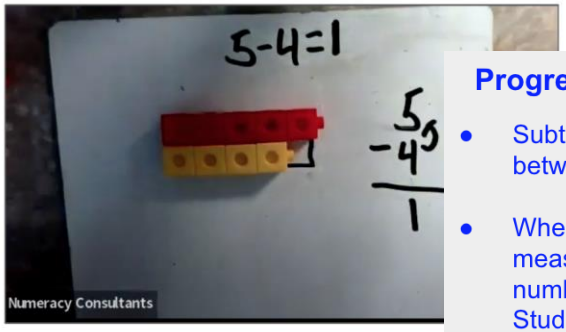
Slide 21



Progression of Subtraction

- Addition 5→ Part Whole 5→ Subtraction 5
- Make and take away is a good initial strategy to teach subtraction. You are going to have less than what you started with.
- Make and take away is not supposed to be the only strategy a student is exposed to. Students can get trapped into this strategy.
- If a student is not ready or exposed to other strategies, they will use their fingers to substitute for concrete manipulatives.

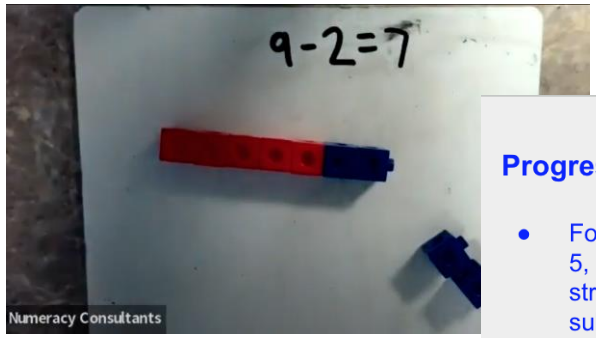
Slide 22



Progression of Subtraction

- Subtraction is the difference between two numbers.
- When using the comparison measurement model, both numbers are represented. Students will be able to visually see the “difference” between the two models.
- Counting back is one strategy that can be used to find the difference.
- Students need to learn to “trust” the backward count.
- Counting up is another strategy to find the difference.
- There are different ways to find the difference between two numbers. With each problem students will have a decision to make on how to do this.

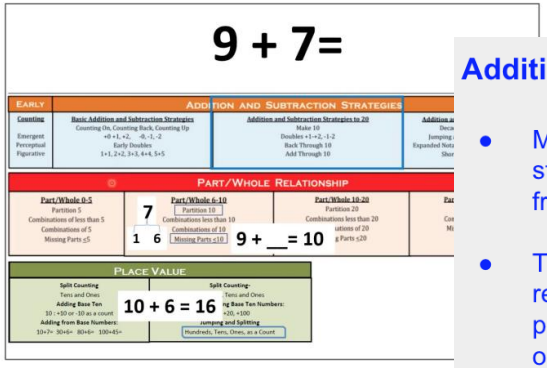
Slide 23



Progression of Subtraction

- For subtraction greater than 5, all of the concepts and strategies learned from subtraction up to 5 still apply.
- Students will build upon previous strategies they have used.
- Both counting back or counting up (connecting to addition) are two strategies that will work.
- These strategies cannot be “taught or memorized.” They have to be developed.

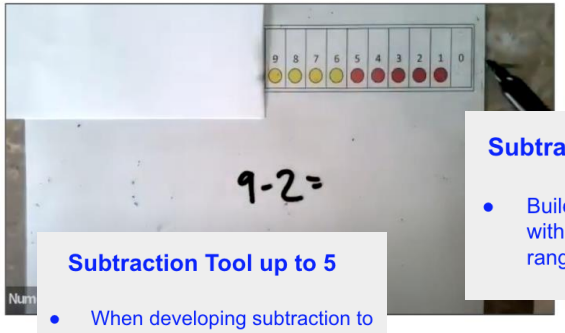
Slide 24



Addition / Subtraction to 20

- More advanced addition strategies require skill sets from other domains.
- The make ten strategy requires multiple skills from part/whole and place value in order to efficiently use the strategy.
- The doubles strategy requires several skills from part/whole.
- For subtraction problems up to 20, connect to early skills and then connect to addition strategies, like making ten or working though ten, that will help them become more efficient and fluent.

Slide 25



Subtraction Tool up to 10

- Build upon what you worked on with 5 but stretch the number range to 10.

Subtraction Tool up to 5

- When developing subtraction to 5, go through the progression of scaffolds.
- Use the tool so they can trust the count.
- The counting up strategy is very hard to develop for some students. It will take time and many students who struggle will not completely understand the strategy when you are done working on 5 and that is okay.
- Subtraction is a marathon, not a sprint. It is going to take time, sometimes lots of time!!

Subtraction Tool up to 20

- The goal is for a student to efficiently solve problems up to 20.
- Counting up or connect to addition and transition to building off of the make ten strategy that they learned for addition.
- Multiple skills from other domains must be in place for them to understand how to use this strategy.

Slide 26

Progress Monitoring

Observational Tasks and Documentation

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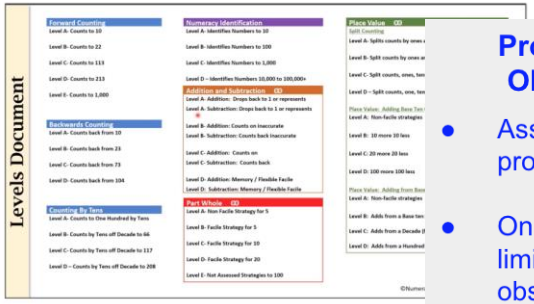
Slide 27

True or False

You can only use the Primary Numeracy Assessment for progress monitoring.



Progress Monitoring / Observational Tasks

- Assessment provides a progress monitoring tool.
- Only using the assessment, limits when and what you can observe.
- The Levels Document is a centralized document designed to be used as a quick reference and provides a description of each level.
- Counting Skills are orally prompted by you.
- For Numeral ID, you need a number card or a white board.
- Eyeballs = “look for additional materials that are provided for observational tasks.”
- Observational task is you observing a student do a task.

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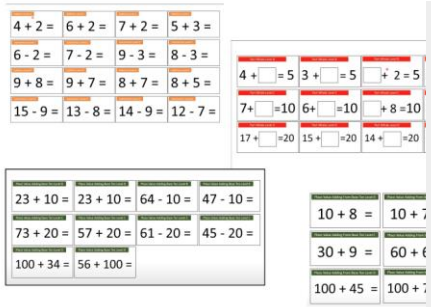

Eyeballs ∞ (Additional Materials Provided)

- Cards are leveled to show what strategy you are attempting to observe.
- Addition and Subtraction is not about getting the right answer, but about the strategy they used to solve the problem.
- Part / Whole:
  LEVEL B - 5
  LEVEL C - 10
  LEVEL D - 20
- Place Value cards are not about the correct answer, but did they use place value concepts to correctly solve the problem.

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Slide 30

Levels Document

Addition and Subtraction

Level A- Addition: Drops back to 1 or represents

Level A- Subtraction: Drops back to 1 or represents

Level B- Addition: Counts on inaccurate

Level B- Subtraction: Counts back inaccurate

Level C- Addition: Counts on

Level C- Subtraction: Counts back

Level D- Addition: Memory / Flexible Facile

Level D: Subtraction: Memory / Flexible Facile

4 + 2 =	6 + 2 =	7 + 2 =	5 + 3 =
6 - 2 =	7 - 2 =	9 - 3 =	8 - 3 =
9 + 8 =	9 + 7 =	8 + 7 =	8 + 5 =
15 - 9 =	13 - 8 =	14 - 9 =	12 - 7 =

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Slide 31

Levels Document

Part Whole

Level A- Non Facile Strategy for 5

Level B- Facile Strategy for 5

Level C- Facile Strategy for 10

Level D- Facile Strategy for 20

Level E- Not Assessed Strategies to 100

4 + ☐ = 5	3 + ☐ = 5	☐ + 2 = 5	5 + ☐ = 5
7+ ☐ =10	6+ ☐ =10	☐ + 8 =10	5+ ☐ =10
17 + ☐ =20	15 + ☐ =20	14 + ☐ =20	12 + ☐ =20

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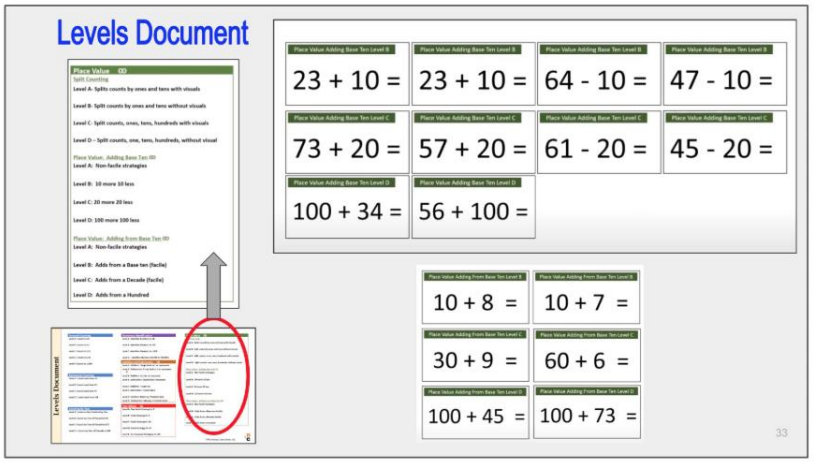
Slide 32



Slide 33

Observational Data Sheet

- The data sheet can be used in place of the progress monitoring tool from the assessment.
- Observational tasks can be blended with the assessment data to document progress.
- You can easily incorporate progress monitoring into your lessons.
- Must plan ahead and know what you are going to observe and document.