Diocese of Fresno

Office of Catholic Education

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CREATIVE LEADERSHIP SOLUTIONS

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Present

MATHEMATICS POWER STANDARDS 2021-2022

SECOND GRADE

Introduction

In June 2021, a committee comprised of teachers and administrators led by Dr. Bill Sternberg from Creative Leadership Solutions worked over a period of three days to identify math Power Standards in Kindergarten through 8th Grade (and Algebra). This work, grounded in research from Doug Reeves, Larry Ainsworth, Dylan Wiliam and others offered the opportunity to collaboratively identify those standards that would be consistently focused upon throughout the year for maximum learning impact in math. The following three criteria were used in the identification of these standards:

Leverage*:* *Does this indicator apply to other subjects?*

Endurance*:* *Will this indicator be taught over multiple years of instruction?*

Essentiality*:* *Is this indicator an essential skill students need to know and be able to do as soon as they enter their next level of instruction?*

Over the course of three days, our committee met in grade level teams to first identify those indicators that possessed leverage. From this list, grade level teams then identified indicators that also possessed endurance, effectively reducing the number of indicators from the original list. Lastly, grade level teams were paired with their vertical counterparts (e.g., Kindergarten was paired with First Grade) to identify indicators that possessed essentiality. Thus, from a list of 30 (or more) grade level math indicators, teams were able to identify 8-12 (depending upon grade level) indicators that would become Power Standards for their specific grade level.

As explained during this process, the intent is to focus consistently on these Power Standards through multiple units of instruction. In reviewing grade level math indicators, there are some that do not require an equal amount of focus as others: In other words, there are supporting standards that may only need to be taught for a smaller time period (e.g., 4-6 weeks) in order for a student to demonstrate mastery of that specific indicator. However, Power Standards identified in this process are those that will require a much more concerted focus throughout the academic year to better prepare students in their learning journey.

Under each Power Standard identified, you'll note graphic organizers that identify the C*oncepts* (nouns or noun phrases) of each Power Standard along with S*kills* (what we want students to know and be able to do). As well, there is a section labeled "*Topics*" which allows other content area teachers to identify units of instruction where these specific Power Standards can be inserted as a means of building cross-curricular connections. The "*Topics"* section is one that should continually be added to over time as there will undoubtedly be multiple opportunities for insertion of these Power Standards in other content areas.

The last piece you'll note under each identified Power Standard is a table listing "*Big Ideas"* and "*Essential Questions"*. The *"Big Ideas*" are those critical understandings of the purpose and meaning behind learning the Power Standard that we want students to possess in *their own words*. In essence, students should know the *why* of what they are learning, not just the *what*. The *"Essential Questions"* are those questions teachers use during instruction encompassing these Power Standards as a means to build interest and understanding from their students. We would expect student replies to these *"Essential Questions"* to resemble the *"Big Ideas"* within this table.

Contents

Power Standard #1:

2.OA.1. Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

Concepts	*Skills*
• add • subtract • word problems • 1-step problem • 2-step problem • take from • put together • take apart • compare • drawings • equations • symbols	• use addition within 100 • use subtraction within 100 • solve one-step word problems • solve two-step word problems • use drawings to represent the problem • understand equations • identify symbols for the unknown number
Topics • Connect ELA skills and the understanding that summarizing a passage, breaking apart the information and identifying word problems are similar in content.	

Big Ideas	**Essential Questions**
• Understanding addition and subtraction will help me to understand how to add and subtract correctly. • Fluency adding and subtracting within 100 helps me to work through math problems faster and allows me to spend more time on other areas of math.	• Why is it important to use one- and two-step word problems? • Why is it important to compare numbers? • How do drawings help in representing the problem?

Bloom's Taxonomy Level: Apply
Depth of Knowledge Level: 2

Assessment Item:

Three-Column Rubric

EXPECTATION	STUDENT SELF-ASSESSMENT	TEACHER ASSESSMENT

Point Value Three-Column Rubric

EXPECTATION	STUDENT SELF-ASSESSMENT			TEACHER ASSESSMENT
	3	2	1	
	3	2	1	
	3	2	1	

*If using point values, create explicit expectations for student performance under each point value for each specific standard expectation.

EXPECTATION	**3**	**2**	**1**

Power Standard #2:

2.OA.2. Fluently add and subtract within 20 using mental strategies. By the end of Grade 2, know from memory all sums of two one-digit numbers.

Concepts	*Skills*
• fluency • add • subtract • 1-digit number • 2-digit number • sums • mental strategies • memory	• know how to add within 20 • know how to subtract within 20 • work on fluency to know from memory the sums of two one-digit numbers • utilize mental strategies

Topics

- apply skills to real life situation within the school setting and outside of school

Big Ideas	**Essential Questions**
• Adding and subtracting fluently within 20 will help me to work more efficiently while solving higher-level math problems. • Knowing all sums of two-digit numbers from memory will allow me to skip the step of figuring out the sum and move on.	• Why is fluency the key to add and subtract within 20? • Why use mental strategies instead of manipulatives? • Why memorize all sums of two one-digit numbers?

Bloom's Taxonomy Level: Apply
Depth of Knowledge Level: 1

Assessment Item:

(This assessment will be an exit ticket that will be given at the end of each day - the students will be given three digits that are a part of a related fact and they will have to write the two addition sentences and two subtraction sentences.)

Given numbers - 15, 8, 7 Example: 15 - 7 = 8, 15 - 8 = 7, 8 + 7 = 15, 7 + 8 =15

Three-Column Rubric

EXPECTATION	STUDENT SELF-ASSESSMENT	TEACHER ASSESSMENT
I can fluently add two numbers in an addition sentence whose sum is equal to or less than 20		
I can fluently subtract two numbers in a subtraction sentence whose difference is equal to or less than 20		
I can understand a related fact and where each		

Point Value Three-Column Rubric

EXPECTATION	STUDENT SELF-ASSESSMENT			TEACHER ASSESSMENT
	3	**2**	**1**	
	3	**2**	**1**	
	3	**2**	**1**	

*If using point values, create explicit expectations for student performance under each point value for each specific standard expectation.

EXPECTATION	3	2	1

Power Standard #3:

2.OA.3. Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.

Concepts	*Skills*
• determine • group • objects • odd • even • pairing objects • counting by 2s • equation • express even number • sum • equal addends	• know and use odd numbers • know and use even numbers • compare groups up to 20 • pair objects • count by 2s • write an equation to express an even number as a sum • understand two equal addends

Topics

- understanding the importance of fluency in all other content areas

Big Ideas	**Essential Questions**
• Understanding the difference between groups of objects with odd and even members will help me work with equations.	• How will pairing objects help me determine the difference between an odd and an equal number? • Why is it important to identify equal groups in an equation?

Bloom's Taxonomy Level: Analyze	
Depth of Knowledge Level: 1	

Assessment Item:

Josh and Sarah want to split 13 cookies evenly amongst themselves. Can they evenly divide the cookies between themselves? Explain why or why not. Draw a picture to show your answer.

Three-Column Rubric

EXPECTATION	STUDENT SELF-ASSESSMENT	TEACHER ASSESSMENT
I can determine if a number is odd or even.		
I can explain why or why not the number is even.		
I can model how to divide a number into two groups.		

Point Value Three-Column Rubric

EXPECTATION	STUDENT SELF-ASSESSMENT			TEACHER ASSESSMENT
	3	2	1	
	3	2	1	
	3	2	1	

*If using point values, create explicit expectations for student performance under each point value for each specific standard expectation.

EXPECTATION	**3**	**2**	**1**

Power Standard #4:

2.OA.4. Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

Concepts	*Skills*
• addition • objects • arrange • arrays • columns • rows • equation • addend • equal addends • sum	• to know addition • to know objects arranged in arrays • to understand arrays • to know the difference between columns and rows • to understand how to solve an equation • to know an equal addend and a sum
Topics • They can use the skills learned in Social Studies (eg. timelines) and graphing in Science	

Big Ideas	**Essential Questions**
• Having knowledge and understanding the difference between rows and columns arranged in arrays will help me when working with subject matter and calculating the total amounts of equal addends.	• Why is addition helpful while working with rows and columns?

Bloom's Taxonomy Level: Apply
Depth of Knowledge Level: 1

Assessment Item:

Three-Column Rubric

EXPECTATION	STUDENT SELF-ASSESSMENT	TEACHER ASSESSMENT

Point Value Three-Column Rubric

EXPECTATION	STUDENT SELF-ASSESSMENT			TEACHER ASSESSMENT
	3	2	1	
	3	2	1	
	3	2	1	

*If using point values, create explicit expectations for student performance under each point value for each specific standard expectation.

EXPECTATION	3	2	1

Power Standard #5:

2.NBT.1. Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones.

Concepts	*Skills*
• digit • 3-digit numbers • amounts • hundreds • tens • ones • equal	• understand 3-digit numbers • understand that digits represent amounts • identify hundreds • identify tens • identify ones
Topics • skills can be applied to multiple disciplines	

Big Ideas	**Essential Questions**
• Knowing and being able to identify the amounts of hundreds, tens and ones will assist me while working with place values.	• Why is knowing the place value important when working with bigger numbers?

Bloom's Taxonomy Level: Understand
Depth of Knowledge Level: 2

Assessment Item:

Three-Column Rubric

EXPECTATION	STUDENT SELF-ASSESSMENT	TEACHER ASSESSMENT

Point Value Three-Column Rubric

EXPECTATION	STUDENT SELF-ASSESSMENT			TEACHER ASSESSMENT
	3	2	1	
	3	2	1	
	3	2	1	

*If using point values, create explicit expectations for student performance under each point value for each specific standard expectation.

EXPECTATION	3	2	1

Power Standard #6:

2.NBT.2. Count within 1000; skip-count by 2s, 5s, 10s, and 100s.

Concepts	*Skills*
• count • skip-count	• know how to count within 1000 • understand skip-counting by 2s • understand skip-counting by 5s • understand skip-counting by 10s • understand skip-counting by 100s
Topics • understand measurement and place value	

Big Ideas	**Essential Questions**
• Counting within 1000 and understanding the concept of skip-counting by 2s, 5s, 10s, and 100s will lessen the time spent calculating the answer. • Identifying the patterns of skip-counting by a given number will make it easier to add and subtract given problems.	• How will skip-counting help in adding and subtracting? • Why is knowing how to skip-count by a given number helpful while counting up to 1000?

Bloom's Taxonomy Level: Apply
Depth of Knowledge Level: 1

Assessment Item:

Three-Column Rubric

EXPECTATION	STUDENT SELF-ASSESSMENT	TEACHER ASSESSMENT

Point Value Three-Column Rubric

EXPECTATION	STUDENT SELF-ASSESSMENT			TEACHER ASSESSMENT
	3	2	1	
	3	2	1	
	3	2	1	

*If using point values, create explicit expectations for student performance under each point value for each specific standard expectation.

EXPECTATION	3	2	1

Power Standard #7:

2.NBT.7. Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

Concepts	*Skills*
• add • subtract • concrete models • drawings • place value • properties of operations • relationship between addition and subtraction • a written method • 3-digit number • hundreds • tens • ones • decompose • compose	• know how to add and subtract within 1000 • know how to use concrete models • know how to utilize drawings • use place value strategies • understand properties of operations • know how to add 3-digit numbers • know how to subtract 3-digit numbers • understand how to compose tens or hundreds • understand how to decompose tens or hundreds
Topics • relate knowledge and skills to real life	

Big Ideas	**Essential Questions**
• Using concrete models or drawings and knowing how to apply strategies based on place value will help me see the relationship between addition and subtraction in order to solve 3-digit addition and subtraction problems with or without regrouping. • Differentiating between how to compose and decompose numbers	• Why representing a problem with concrete models is essential in helping add or subtract the amounts of hundreds, tens and ones we are working with? • How is drawing quick pictures helpful while working with larger numbers like 3-digit numbers?

will give me an idea when it is necessary to use this strategy.	

Bloom's Taxonomy Level: Apply
Depth of Knowledge Level: 2

Assessment Item:

Three-Column Rubric

EXPECTATION	STUDENT SELF-ASSESSMENT	TEACHER ASSESSMENT

Point Value Three-Column Rubric

EXPECTATION	STUDENT SELF-ASSESSMENT			TEACHER ASSESSMENT
	3	2	1	
	3	2	1	

	3	2	1	

*If using point values, create explicit expectations for student performance under each point value for each specific standard expectation.

EXPECTATION	3	2	1

Power Standard #8:

2.NBT.9. Explain why addition and subtraction strategies work, using place value and the properties of operations.

Concepts	*Skills*
• addition • subtraction • strategies • place value • properties of operations	• know how to add • know how to subtract • utilize addition strategies • utilize subtraction strategies • understand place value • know properties of operations
Topics • Use for problem solving	

Big Ideas	**Essential Questions**
• Knowing the strategies for addition and subtraction will allow me to see the connection between place value and solving various problems using properties of operations.	•

Bloom's Taxonomy Level: Understand
Depth of Knowledge Level: 3

Assessment Item:

Three-Column Rubric

EXPECTATION	STUDENT SELF-ASSESSMENT	TEACHER ASSESSMENT

Point Value Three-Column Rubric

EXPECTATION	STUDENT SELF-ASSESSMENT			TEACHER ASSESSMENT
	3	2	1	
	3	2	1	
	3	2	1	

*If using point values, create explicit expectations for student performance under each point value for each specific standard expectation.

EXPECTATION	3	2	1

Power Standard #9:

2.MD.5. Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.

Concepts	*Skills*
addition subtraction word problems lengths units drawings rulers equations symbol unknown numbers	• use addition within 100 • use subtraction within 100 • understand how to solve word problems • involve lengths given in the same units • use drawings to solve problems • understand unknown number and how to represent the problem • use symbols to solve equation
Topics • measurement and units of length	

Big Ideas	**Essential Questions**
•	•

Bloom's Taxonomy Level: Apply
Depth of Knowledge Level: 2

Assessment Item:

Three-Column Rubric

EXPECTATION	STUDENT SELF-ASSESSMENT	TEACHER ASSESSMENT

Point Value Three-Column Rubric

EXPECTATION	STUDENT SELF-ASSESSMENT			TEACHER ASSESSMENT
	3	2	1	
	3	2	1	
	3	2	1	

*If using point values, create explicit expectations for student performance under each point value for each specific standard expectation.

EXPECTATION	**3**	**2**	**1**

Power Standard #10:

2.G.2. Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.

Concepts	*Skills*
• Partition • rectangle • rows • columns • same-size • count • total number	• know how to partition a rectangle • understand how to partition a rectangle into rows • understand how to partition a rectangle into columns of same-size squares • count to find total number of same-size squares
Topics • math geometry skills	

Big Ideas	**Essential Questions**
•	•

Bloom's Taxonomy Level: Apply
Depth of Knowledge Level: 2

Assessment Item:

Three-Column Rubric

EXPECTATION	STUDENT SELF-ASSESSMENT	TEACHER ASSESSMENT

Point Value Three-Column Rubric

EXPECTATION	STUDENT SELF-ASSESSMENT			TEACHER ASSESSMENT
	3	2	1	
	3	2	1	
	3	2	1	

*If using point values, create explicit expectations for student performance under each point value for each specific standard expectation.

EXPECTATION	3	2	1
