Diocese of Fresno

Office of Catholic Education

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CREATIVE LEADERSHIP SOLUTIONS

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Present

MATHEMATICS POWER STANDARDS 2021-2022

FIRST GRADE

<u>Introduction</u>

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:

Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on, making ten, decomposing a number leading to ten, using the relationship between addition and subtraction, and creating equivalent but easier or known sums. 1.OA.6

Concepts	*Skills*
- Demonstrating fluency - Strategies - Relationship - Add - Subtract - Counting on - Making ten - Decomposing - Equivalent - Sums	- Add within 20 - Subtract within 20 - Counting on - Creating equivalent but easier/known sums - Decomposing number leading to 10

Topics
- Reading fluently in ELA

Big Ideas	**Essential Questions**
- Add and subtract within 20 helps me to share toys with friends. - Fluently add and subtract within 10 - Count on helps me start at one number and helps me get to a higher number. - Knowing how to make a 10 helps me to combine a number. It will help me solve addition problems whose sum equals 10 and will help in solving subtraction problems where I'm taking away from a ten more fluently. - Decomposing a number helps me to know what other numbers make up the first number. - Having an understanding of related facts helps me know that subtraction and addition work together. - Creating equivalent sums helps me know that one number will also be equal to that number (six is equal to six)	**Why is it important to fluently add and subtract within 10?** **How can knowing the relationship between addition and subtraction help me when solving math problems fluently?** **How do you decompose a number?** **Which strategy is the easiest for you to solve? Why?**

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

Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), 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 and explain the reasoning used.1.NBT.6

Concepts	*Skills*
● Subtract ● Multiples ● Range ● Positive ● Zero ● Differences ● Models ● Drawings ● Place Value ● Operations ● Relationships	● Subtract multiples of 10 in the range 10-90 ● Use concrete models or drawings ● Use strategies based on place value ● Use properties of operations ● Use the relationship between addition and subtraction ● Relate the strategy to a written method ● Explain the reasoning used

Topics

●

Big Ideas	Essential Questions
- Subtract multiples of 10 in the range of 10-90 from multiples of 10-90 (positive and zero differences) will help the students have a better understanding of the tens place value. - To be able to subtract using the following strategies: - concrete models - drawings - place value - properties of operations - related facts - written method - To be able to explain the strategy chosen to solve subtraction problems with multiples of 10 will help the students master different ways of solving the problem.	**How would you use concrete models or drawings to subtract multiples of tens?** **What are multiples of 10?** **Why is it important to know the relationship between addition and subtraction?** **Why would a multiple of 10 be subtracted from a range or 10-90?**

Bloom's Taxonomy Level: Apply
Depth of Knowledge Level: DOK 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 #3:

Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used. 1.NBT.5

Concepts	*Skills*
● Two-digit number ● More ● Less ● Reasoning ● Mental	● Mentally find 10 more or 10 less ● Explain the reasoning used ● Understand a two-digit number (ones/tens) ● Without having to count

Topics

●

Big Ideas	**Essential Questions**
● Understanding the ones and tens place value in a two-digit number helps me count my money by 10's and 1's. ● Mentally finding 10 more of a number without having to count helps me add my money faster. ● Mentally finding 10 less of a number without having to count will help me mentally subtract faster. ● Explain how to mentally find 10 more helps me understand how I spend my money. ● Explain how to mentally find 10 less helps me understand how I only have to change the tens place value; it will also help me have a better understanding of place value.	● **What strategy did you use to find ten more? Ten less?** ● **Why would you need to find 10 more or 10 less of a number?** ● **How would you explain the ones and tens in a two-digit number?**

Bloom's Taxonomy Level: Understand
Depth of Knowledge Level: DOK 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 #4:

Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.1.MD.4

Concepts	*Skills*
● Organize ● Represent ● Interpret ● Ask and answer questions ● Total number ● Data ● Category ● More ● Less ● Data points	● Organize data ● Represent data ● Interpret data ● Tell how many more in a category ● Tell how many less in a category ● Answer questions about the total number of data points ● Ask questions about the total number of data points

Topics

●

Big Ideas	**Essential Questions**
● Interpreting data with up to three categories helps me to understand and read different types of graphs. ● Organizing data with up to three categories will help me create my own graph. ● Representing data with up to three categories will help me come up with different questions to ask people and to show my results in a graph. ● Interpreting data and telling how many are in each category will help me understand what I am reading. ● Telling how many more are in one category than another will help me better read graphs and will help me determine what operation I need to use. ● Telling how many less are in one category than another will help me identify it is a subtraction problem and will help me become more fluent with my subtraction facts.	● **How would you organize, represent, and interpret data with up to three categories?** ● **Why would it be important to know how many are in each category?** ● **What operation would you use (addition/subtraction) to find how many more in one category than in another? How many less in one category than in another?** ● **How would you find the total number of data points?**

Bloom's Taxonomy Level: Analyze
Depth of Knowledge Level: DOK1

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:

Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape 1.G.2

Concepts	*Skills*
● Shapes ● Compose ● Two-dimensional shapes ● Three-dimensional shapes ● Composite shape	● Compose two-dimensional shapes ● Compose three-dimensional shapes ● Create a composite shape ● Compose new shapes from the composite shape

Topics

●

Big Ideas	**Essential Questions**
● Understanding two-dimensional shapes helps me find vertices. ● To understand three-dimensional shapes helps me find sides. ● To understand what composing means it will help me compose 2-D shapes. ● Understanding composite shapes helps me create new shapes. ● To compose two-dimensional shapes helps me make new shapes. ● To compose three-dimensional shapes, create new shapes.	● **What is the difference between two-dimensional and three-dimensional shapes?** ● **What is a composite shape?** ● **Why would you need to compose a new shape from the composite shape?**

● Creating composite shapes helps me understand shapes better. ● To compose a new shape from the composite shape helps me understand there are lots of different shapes.	

Bloom's Taxonomy Level: Apply
Depth of Knowledge Level: DOK2

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:

Tell and write time in hours and half-hours using analog and digital clocks. 1.MD.3

Concepts	_Skills_
- Time - Analog clocks - Digital clocks - Hours - Half-hours	- Tell time - Write time - Tell time in hours using an analog clock - Tell time in hours using a digital clock - Tell time in half-hours using an analog clock - Tell time in half-hours using a digit clock

Topics

●

Big Ideas	**Essential Questions**
- Knowing the difference between an analog and digital clock helps me know the difference between them. - To tell time in hours using an analog clock helps me to know at time I need to be eating dinner. - To tell time in hours using a digital clock helps me to know how long a movie lasts. - To tell time in half-hours using an analog clock helps me know for how long I can play with a friend.	**What is the difference between analog and digital clocks?** **What is the difference between hours and half hours?** **Why is it important to tell and write time?**

- To tell time in half-hours using a digital clock helps me to know for how long is my recess. - To write time in hours helps me tell time faster. - To write time in half-hours helps me tell time faster.	

Bloom's Taxonomy Level: Understand
Depth of Knowledge Level: DOK1

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