Diocese of Fresno

Office of Catholic Education

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Present

MATHEMATICS POWER STANDARDS 2021-2022

THIRD 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

3.G.2. Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape. 33

Power Standard #1:

3.OA.5. Apply properties of operations as strategies to multiply and divide. Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property.)

Concepts	*Skills*
• Properties • Operations • Associative • Distributive • Properties of Operations • Commutative Property • Associative Property • Distributive Property • Strategies • Multiply • Divide	• Apply properties of operations to multiply • Apply properties of operations to divide • Use strategies to multiply • Use strategies to divide • Know multiplication facts • Know the commutative property of multiplication • Know the associative property of multiplication • Know the distributive property of multiplication • Find the answer when applying the distributive property. • Find the answer when applying commutative property (reversing the order of the factors) • Find the answer when applying the associative property

Topics

- Students need to know distribution, operations, multiplications, and addition in science for motion, forces and measurement.

Big Ideas	**Essential Questions**
• These skills will carry on through the academic career in elementary, middle school, high school and a higher education. • Understanding how to multiply and divide will help you with teams on a playground, in sports, equal shares of snacks/supplies.	• How are multiplication and division related? • How do we use multiplication and division to solve problems?

• These are life skills that will be used in your home and career.	• What are the properties of multiplication? • What strategies can we use to memorize math facts?

Bloom's Taxonomy Level: apply
Depth of Knowledge Level: DOK 1

Assessment Item:

Tristan has 24 candies and wants to share them with 6 of his friends. He will share 4 pieces with each of his friends. Write 2 multiplication sentences to demonstrate Commutative property.

Three-Column Rubric

EXPECTATION	STUDENT SELF-ASSESSMENT	TEACHER ASSESSMENT
I can explain commutative property.		
I can write multiplication sentences showing how the factors can be switched with the product remaining the same.		

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:

3.OA.7. Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. **By the end of Grade 3, know from memory all products of two one-digit numbers.**

Concepts	*Skills*
• Relationships between multiplication and division • Properties of Operations • Fluently • Operations • Products • One-digit numbers • Digit • Relationship • Multiplication • Division • Strategies	• Fluently multiply within 100 • Fluently divide within 100 • Know from memory all products of two one-digit numbers • Know properties of operations • Use strategies as relationship between multiplication and division • Use properties of operations

Topics

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Big Ideas	**Essential Questions**
• These skills will carry on through the academic career in elementary, middle school, high school and a higher education. • Understanding how to multiply and divide will help you with teams on a playground, in sports, equal shares of snacks/supplies. • These are life skills that will be used in your home and career.	• How are multiplication and division related? • How do we use multiplication and division to solve problems? • What are the properties of multiplication? • What strategies can we use to memorize math facts?

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

Assessment Item:

If there is 40 pounds of dog food, Marci has 8 dogs and each dog eats 5 pounds a week. How can she write this as a multiplication and division sentence?

Three-Column Rubric

EXPECTATION	STUDENT SELF-ASSESSMENT	TEACHER ASSESSMENT
I can write a multiplication sentence.		
I can write a division sentence.		
I can explain how multiplication and division are inverse operations.		

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:

3.OA.8. Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

Concepts	*Skills*
• Two-step • Word problems • Four operations • Equations • Letter • Reasonableness • Answers • Unknown quantity • Mental Computation • Estimation • Rounding	• Solve two-step word problems • Use the four operations • Representation of the problems • Use equations with a letter • Assess the reasonableness of answers • Use mental computation strategies • Use estimation strategies • Use rounding strategies

Topics

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Big Ideas	**Essential Questions**
• These skills will carry on through the academic career in elementary, middle school, high school and a higher education. • Understanding how to add, subtract, multiply and divide will help you with teams on a playground, in sports, equal shares of snacks/supplies, calculating totals, and answering if you have enough of something. • These are life skills that will be used in your home and career. • Students will work with these skills on other disciplines including science and social studies.	• How are multiplication and division related? • How do we use multiplication and division to solve problems? • What are the properties of multiplication? • What strategies can we use to memorize math facts?

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

Assessment Item:

Herbert played a video game Monday night and scored 405 points. On Wednesday night, he scored 263 points. Then, on Friday night he scored 713. Estimating his combined scores for Monday and Wednesday, were they higher than Friday's score? Explain how you got your answer.

Three-Column Rubric

EXPECTATION	STUDENT SELF-ASSESSMENT	TEACHER ASSESSMENT
I was able to use mental math to estimate scores.		
I was able to add Monday and Wednesday scores.		
I was able to subtract Friday's score from the combined total of Monday's and Wednesday's score.		
I was able to explain how I got the answer.		

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:

3.NBT.2. Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

Concepts	*Skills*
• Addition • Subtraction • 1000 • Place value • Strategies • Algorithms • Properties of Operations • Relationships between addition and subtraction	• Fluently add within 1000 • Fluently subtract within 1000 • Use strategies based on place value • Use strategies based on properties of operations • Use strategies based on the relationship between addition and subtraction • Use algorithms based on place value • Use algorithms based on properties of operations • Use algorithms based on the relationship between addition and subtraction •

Topics

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Big Ideas	**Essential Questions**
• These skills will carry on through the academic career in elementary, middle school, high school and a higher education. • Understanding how to add and subtract will help you with teams on a playground, in sports, equal shares of snacks/supplies. • Adding and subtracting will be involved in science activities. • These are life skills that will be used in your home and career.	• Why is understanding place value important? • How do we round to the nearest 1000, 100, 10? • Why is it important to be able to round?

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

Assessment Item:

Shanika had 915 Smarties to eat for her snack for the week. Herbert had 721 and Vanessa had 113 smarties to eat for the week. Did Shankia have more Smarties than Herbert and Vanessa combined? Explain.

Three-Column Rubric

EXPECTATION	STUDENT SELF-ASSESSMENT	TEACHER ASSESSMENT
I was able to add Herbert and Vanessa's totals.		
I was able to take Herbert and Vaness's total and subtract it from Shanika's total.		
I was able to determine who had more Smarties.		
I was able to write in words how I found the answer.		

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:

3.MD.3.

Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two step "how many more" and "how many less" problems using information presented in scaled bar graphs. For example, draw a bar graph in which each square in the bar graph might represent 5 pets.

Concepts	*Skills*
• Scaled picture graph • Scaled bar graph • Data • Categories • One-step problems • Two-step problems • "How many more?" • "How many less?" • Scale • Key	• Draw a scaled picture graph in which each picture represents a specific value • Draw a scaled bar graph in which each square represents a specific value • Represent a data set with several categories • Use information from the scaled bar graph • Solve one-step problems -"how many more?" • Solve one-step problems-"how many less?" • Solve two-step problems - "how many more?" • Solve two-step word problems - "how many less?"

Topics

- Scaled and bar graphs can be used in science when measuring motion, force and distance.
- Scaled and bar graphs can be used in science when studying the life cycle in plants and animals.
- In social studies, a bar graph can be used as a Richter scale to measure earthquakes in California.

Big Ideas	**Essential Questions**
• These skills will carry on through the academic career in elementary, middle school, high school and a higher education.	• What is a picture graph? • What is a bar graph? • How do we represent information in a picture or bar graph?

• Understanding how to represent data in the form of graphs will help you in science, social studies, and sports. • Tracking data over time (weather, growth, surveys, decision making, outcomes) • These are life skills that will be used in many careers. • Some learning modalities are visual and the graphs help with learning.	• What are some examples of situations where it may be helpful to utilize a picture or bar graph?

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

Assessment Item:

Use the data from the frequency chart to create a horizontal bar graph.

Favorite Fruits	
Fruit	Total vote of Fruit
Apple	9
Banana	8
Strawberry	6

Which fruit was chosen the most?

How many less strawberries than bananas were chosen?

Three-Column Rubric

EXPECTATION	STUDENT SELF-ASSESSMENT	TEACHER ASSESSMENT
I was able to create a bar graph using the data from the frequency table.		
I was able to use the data from the bar to choose which fruit was chosen more.		

I was able to use the data from the bar graph to determine how many less strawberries there are than bananas.		

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:

3.NF.1. Understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a part of size 1/b.

Concepts	*Skills*
• Fractions 1/b • Part • Whole • Equal parts • Quantity	• Understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts • Understand a fraction a/b as the quantity formed by a part of size 1/b
Topics •	

Big Ideas	**Essential Questions**
• Life skills for cooking, building models, sewing, crafts. • Understanding how to divide resources/snacks/supplies into equal shares. • These are life skills that will be used in many careers later in life.	• What is a fraction? • What is a part? • What is a whole? • What are equal parts? • How do we use fractions in our daily life?

Bloom's Taxonomy Level: understand

Depth of Knowledge Level: 1

Assessment Item:

Sven has a whole pizza. Draw a circle and divide it into 6 equal parts. He has 5 friends and he would like to share the pizza evenly with them. Shade how many slices he would give to his friends and then write the fraction.

Three-Column Rubric

EXPECTATION	STUDENT SELF-ASSESSMENT	TEACHER ASSESSMENT
I was able to draw and divide a circle into 6 equal parts.		
I was able to shade in the circle for the number of slices Sven shared with his friends.		
I was able to write a fraction showing the shared amount.		

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:

3.NF.3. Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.

Concepts	*Skills*
• Fractions • Equivalence • Size • Equivalent Fractions	• Explain equivalence of fractions in special cases • Compare fractions by reasoning about their size
Topics •	

Big Ideas	**Essential Questions**
• Life skills for cooking, building models, sewing, crafts. • Understanding how to divide resources/snacks/supplies into equal shares. • These are life skills that will be used in many careers later in life.	• What is a fraction? • What is a part? • What is a whole? • What are equal parts? • What are equivalent fractions? • How do we use fractions in our daily life?

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

Assessment Item:

Monica has a pizza that she splits into two parts with her friend Noel. Robert has the same size pizza that he splits into four parts and shares with his friend Marcos. Draw a circle and show the parts of Monica's pizza. Shade in Monica's part of the pizza. Draw a circle and show the parts of Robert's pizza. Shade in Robert's part of the pizza. Will Monica and Robert have the same amount of pizza? Write the fractions for the shaded parts for each pizza using the equivalent symbol.

Three-Column Rubric

EXPECTATION	STUDENT SELF-ASSESSMENT	TEACHER ASSESSMENT
I was able to draw a circle and divide it into 2 equal parts.		
I was able to shade 1 part of the pizza.		
I was able to draw a circle and divide it into 4 equal parts.		
I was able to shade 2 parts of the pizza.		
I was able to write 1/2 fraction.		
I was able to write 2/4 fraction.		
I was able to use the equivalent symbol showing that the fractions were equal.		

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:

3.NF.3a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.

Concepts	*Skills*
• Fractions • Equal • Equivalent • Equivalent Fractions • Point • Number line • Size	• Understand two fractions as equivalent if they are the same size • Understand two fractions as equivalent if they are the same point on a number line
Topics •	

Big Ideas	**Essential Questions**
• Life skills for cooking, building models, sewing, crafts. • Understanding how to divide resources/snacks/supplies into equal shares. • These are life skills that will be used in many careers later in life.	• What is a fraction? • What is a part? • What is a whole? • What are equal parts? • What are equivalent fractions? • How do we use fractions in our daily life?

Bloom's Taxonomy Level: understand
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 #9:

3.G.1. Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

Concepts	*Skills*
• Shapes • Different • Categories • Subcategories • Attributes • Rhombus • Rectangle • Quadrilateral • Square • Sides • Define • Belong • Shared	• Understand that shapes belong to different categories • Understand that shapes may share attributes • Understand that the shared attributes can define a larger category • Recognize rhombuses as an example of a quadrilateral • Recognize rectangles as an example of a quadrilateral • Recognize squares as an example of a quadrilateral • Draw examples of quadrilaterals • Draw examples of quadrilaterals that do not belong to a subcategory

Topics

- Subcategories are used in writing and discussing informational writing to recognize attributes and categories.
- Subcategories are used in units and lessons in social studies to recognize attributes and categories.
- Subcategories are discussed in science when breaking down life cycles of plants and animals to recognize attributes and categories.

Big Ideas	Essential Questions
● Arranging desks when students are being put into small groups. ● These skills can be used when designing a home, garden, farm or ranch. ● Art classes work with different shapes. ● Students playing different types of games.	● How do we classify geometric shapes? ● What are the different shapes? ● What are the attributes of the different shapes?

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 #10:

3.G.2. Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape.

Concepts	*Skills*
• Partition • Shapes • Parts • Equal • Equal Areas • Unit Fraction • Whole • Express • Describe	• Partition shapes into parts with equal areas • Express the area of each part as a unit fraction of the whole. • Partition a shape into 4 parts with equal area • Describe the area of each part as ¼ of the area of the shape.

Topics

- Physical Education uses the concepts of equal areas, partitions, parts when explaining the rules and objectives of volleyball, basketball courts, football field, and even when playing Four-Square.

Big Ideas	**Essential Questions**
• Arranging desks when students are being put into small groups. • These skills can be used when designing a home, garden, farm or ranch. • Art classes work with different shapes. • Students playing different types of games.	• How do we classify geometric shapes? • What are the different shapes? • What are the attributes of the different shapes? • What are equal parts?

Bloom's Taxonomy Level: analyze
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**