## Cobb County School District 5/20/21

Second Grade Mathematics Teaching & Learning Framework 2021-22							
Quarter 1	Quart	er 2	Quarter 3	Quarter 4			
Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	
9 weeks	6 weeks	3 weeks	9 weeks	3 weeks	2 weeks	4 weeks	
Extending	<b>Becoming Fluent with</b>	Understanding	Applying	Understanding	Develop-	Review,	
Base Ten Understanding	Addition and	Measurement,	Base Ten Understanding	Plane and	ing	Mastery, and	
	Subtraction	Length, and Time		Solid Figures	Multipli- cation	Extend	
Topic 1: Place value	Topic 1: Addition and	Topic 1: Measure	Topic 1: Applying base-ten understanding	Topic 1:	Topic 1:	Review all	
*MGSE2.NBT.1	Subtraction	and Estimate	*MGSE2.NBT.7	Reasoning	Work with	standards based	
(Place value- 100s)		Lengths	(Add and subtract within 1,000)	about shapes	equal	on student	
*MGSE2.NBT.3	*MGSE2.OA.1	MGSE2.MD.4	MGSE2.NBT.6	and their	groups of	needs.	
(Read and write numbers to	(One and two step word	(Measure)	(Four 2-digit numbers)	attributes	objects to	Mastery:	
1000)	problems within 100)	MGSE2.MD.2	*MGSE2.NBT.8		gain	MGSE2.NBT.1	
MGSE2.NBT.2	*MGSE2.NBT.5	(Measure objects	(Add and subtract 10 or 100 to 100-900)	*MGSE2.G.3	foundation	(Place value- 100s)	
(Count within 1,000)	(Fluently add and subtract	twice)	MGSE2.NBT.9	(Partition circles	of multipli-	MGSE2.NBT.5	
MIGSE2.NB1.4	within 100)	MGSE2.MD.1	(Explain why strategies work)	and rectangles)	cation.	(Fluently add and	
(Compare numbers to 1,000)	*MGSE2.OA.2	(Appropriate tools)	Tania 2. Addition and Culturation	MGSE2.G.2		subtract within	
Topic 2: Addition and subtraction	(Fluently dad and subtract	MGSE2.MD.3	Topic 2: Addition and Subtraction	(Partition a	MGSE2.OA.4	100)	
stratogios	within 20j	(Estimate lengths)	(One and two step word problems)	rectangle)	(Array 5x5)	MGSE2.OA.1	
*MCSE2 OA 1		Topic 2: Polato	(One and two step word problems)	*MGSE2.G.1	MGSE2.OA.3	(One step word	
(One step word problems within 20)		addition and	(Eluently add and subtract within 20)	(Recognize and	(Odd and		
*MGSF2 OA 2		addition and	(Thenkiy add and Subtract Within 20)	uraw shapes)	even)	/Eluently add and	
(Fluently add and subtract within 10)		length	Topic 3: Money			subtract within 20	
		*MGSF2 MD 5	*MGSE2.MD.8			Extend:	
Topic 3: Money and graphing		(Word problems	(Money)			MGSE3.OA.1	
*MGSE2.MD.8		involving length)				(Interpret	
(Money: penny, nickel, dime)	Additional standards	MGSE2.MD.6				multiplication with	
MGSE2.MD.10	assessed on the report cara:	(Numberline)				arrays)	
(Graphing)	NB1.1-5	Topic 3:	Additional standards assessed on the report card:			MGSE3.OA.2	
		Understanding time	NBT.3-4			(Interpret division	
		MGSE2.MD.7		Additional		with arrays)	
		(Time 5 minutes)		standards			
		Topic 4: Represent		report card			
		and interpret data		NBT.2-4.7.9:			
		MGSE2.MD.9		OA.1-2, MD.8			
		(Line plot)					
		MGSE2.MD.10					
		(Graphing)					
These units were v	vritten to build upon concept	s from prior units, so lat	er units contain tasks that depend upon the concer	ots addressed in ear	lier units.		

All units will include the Mathematical Practices and indicate skills to maintain.

NOTE: Mathematical standards are interwoven and should be addressed throughout the year in as many different units and tasks as possible in order to stress the natural connections that exist among mathematical topics.

Grades K-2 Key: MGSE = Mathematics Georgia Standards of Excellence CC = Counting and Cardinality, G= Geometry, MD=Measurement and Data, NBT= Number and Operations in Base Ten, OA = Operations and Algebraic Thinking

\*Assessed on report card during that quarter

Revised 5/20/21

In the same way, subtraction can be shown on a number line. This student started at 37 and counted up to 63 to find a difference of 26.

63 - 37 = 26 +20 +3 +3 +3 -37 57 60 63

The hundreds chart can be used for students to demonstrate both addition and subtraction. This example shows the problem 82 – 39.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
		-		and the second se					
51	52	53	54	55	56	57	58	59	60
51 61	52 62	53 63	54 64	55 65	56 66	57 67	58 68	59 69	60 70
51 61 71	52, 62 72	53 63 73	54 64 74	55 65 75	56 66 76	57 67 77	58 68 78	59 69 79	60 70 80
51 61 71 81	52 62 72 82	53 63 73 83	54 64 74 84	55 65 75 85	56 66 76 86	57 67 77 87	58 68 78 88	59 69 79 89	60 70 80 90

This student started at 82 and moved back 30 to land on 52. The next step was to count back 9 and land on 43.

Adding and subtracting can be understood by using expanded notation.

Students use place value understanding to solve these problems.

Second graders use their knowledge of addition and subtraction to solve one- and two-step word problems. The sample below shows a <u>two-step</u> word problem.

A farmer had 8 cows and some horses in a field. There were 45 animals in the field. Later, the farmer sent 6 more horses into the field. What is the total number of horses in the field?



The student would start by subtracting 8 (cows) from the total 45 (animals).

45-8 (8=5+3)

45 - 5 = 4040 - 3 = 37 There are 37 horses in the field.

If 6 more horses were added into the field that would mean there was a total of 43 horses.

# Parent Math Strategy Guide Grade 2

Strategies for Addition and Subtraction



**Cobb County Schools** 



Below is a strategy that might be used to assist second graders in thinking about subtraction when working with facts. 24 - 924 - (4 + 5)24 - 4 = 2020 - 5 = 15Working with Base Tens

Place value is a primary focus for second graders. Students need to understand that numbers represent amounts of hundreds, tens and ones. This begins by working with



Students need to understand the meaning in numbers.



Second grade students will add and subtract mentally within 20. They will know their addition facts from memory by the end of the year. Second graders move into addition using base tens to represent the problem. They then move to using numbers.

	+			
 235	+	69	=	304

A goal in second grade is for students to add mentally using strategies. One strategy is *making a friendly number*.

26 + 37 =		26 + 37 =			
26 + 37 <mark>+3</mark>	OR	(26 - 3) + (37+3			
26 + 40 = 66		23 + 40 =63			
66 <b>- 3</b> = 63					

64 + 19 = 83	
Another strategy to help	6 <mark>4</mark>
students understand	<u>+ 19</u>
addition involves working with	13
partial sums.	<u>70</u>
	83

Students in second grade can use a number line to show addition problems.





## Grade 2 Unit 1 **Extending Base Ten Understanding**

#### Volume 1 Issue 1

## References

## Dear Parents,

#### **Helpful Links:**

http://www.gamequarium.co

http://www.gamequarium.co m/placevalue.html

https://www.mathplaygroun d.com/tb addition/index.ht

http://xtramath.org/

http://www.coolmath4kids.c

Welcome to the new school year! We are eager to work with you and your students as we learn new mathematical concepts. Your student's math class is calling for students to be actively engaged in doing math in order to learn math. In the classroom, students will frequently work on tasks and activities to discover and apply mathematical thinking. Students will be expected to explain or justify their answers and to write clearly and properly.

## Concepts Students will Use and Understand

- Use models, diagrams, and number sentences to represent numbers within 1,000.
- Write numbers in expanded form and standard form using words and numerals. .
- Identify a digit's place and value when given a number within 1,000.
- Compare two 3-digit numbers with appropriate symbols (<, =, and >).
- Understand the difference between place and value. Represent and solve problems . involving addition and subtraction.
- Understand and apply properties of operations and the relationship between addition • and subtraction.
- Know the multiple meanings for addition (combine, join, and count on) and subtraction ٠ (take away, remove, count back, and compare)
- Represent and solve problems involving addition and subtraction.
- Understand and apply properties of operations and the relationship between addition and subtraction.
- Understand how addition and subtraction affect quantities and are related to each • other.
- Know the multiple meanings for addition (combine, join, and count on) and subtraction (take away, remove, count back, and compare)
- Use the inverse operation to check that they have correctly solved the problem.
- Solve word problems using dimes, nickels and pennies.

## Vocabulary

- **Expanded form:** A multi-digit number is expressed in expanded form when it is written as a sum of single-digit multiples of powers of ten. For example, 643 = 600 + 40 + 3.
- Base ten blocks: A manipulative used to build numbers and to help with addition and subtraction at the conceptual level.
- Hundred: A whole number that can be thought of as a bundle of ten tens.
- **Thousand:** A whole number than be thought of as a bundle of ten hundreds.
- **Place value:** The value of a digit based on its place in a number. •

- **Greater than (>):** More than- shows the relationship between numbers.
- Less than (<): Less than- shows the relationship between numbers.
- symbols: +, -, =, >, <
- **Total:** The number when sets are combined.
- Sum: The total when numbers are added.
- **Difference** The result when one number is subtracted from another.
- Equation: A mathematical expression where one part is equal to the other part. Example: 50 + 26 = 70 + 6.
- Fluently is accurately and efficiently.

#### Try http://www.amathsdictionaryforkids.com/ for further examples.

### Symbols

- + addition
- subtraction
- > greater than
- < less than

## Ask students to build two and three-digit numbers using base ten block paper. Have them write the number in standard form and expanded form and talk to you about the size of the digits.

Example 2

Example 1

Create "Number Clusters" in journals so students can practice number fluency and flexibility.



## Example 3

Ask students if 14 tens and 8 ones have the same value as 1 hundred 3 tens and 18 ones? Explain your thinking?

### Example 4

Have students represent amounts of money less than one dollar using dimes, nickels and pennies. Try to connect to real-world scenarios.

- Encourage your child to skip count by 2's, 5's, and 10's.
- Lay cards numbered from 0-9 face down on the table. Have your child pick out 3 of the cards and make the largest number that they can. Then have them make the lowest number that they can.
- Have your child study how numbers are related to 5 and 10 so they can apply relationships by knowing 5 + 4 or 8 + 3. They might picture 5 + 4 on a ten-frame to mentally see 9 as the answer. For remembering 8 + 7, they might think 8 is 2 away from 10, take 2 away from 7 to make 10 + 5 = 15.



## Grade 2 Unit 2 Becoming Fluent with Addition and Subtraction

#### Volume 1 Issue 2

## References

#### Helpful Links:

www.gregtangmath.com

www.gamequarium.com/ placevalue.html

https://www.mathplaygro und.com/thinkingblocks.ht ml

www.xtramath.org/

www.coolmath4kids.com/

## Dear Parents,

We hope your school year is off to a great start and you are seeing the deeper understanding of math concepts already this year. During this unit your child will be exploring addition and subtraction of two-digit numbers and will get to try many different strategies based on place value and understanding. Please keep in mind that while these strategies may be different from the way you are familiar with adding and subtracting, the purpose of these strategies is to build a strong foundation of place value when computing so students will eventually understand why the traditional methods of addition and subtraction work.

## Concepts Students will Use and Understand

- Represent and solve problems involving addition and subtraction.
- Understand and apply properties of operations and the relationship between addition and subtraction.
- Understand how addition and subtraction affect quantities and are related to each other.
- Know the multiple meanings for addition (combine, join, and count on) and subtraction (take away, remove, count back, and compare)
- Use the inverse operation to check that they have correctly solved the problem.
- Use strategies such as doubles, doubles plus and minus one, and make a ten to work on fluency. *Fluently is accurately and efficiently.*

## Vocabulary

- **Expanded Form:** A multi-digit number is expressed in expanded form when it is written as a sum of single-digit multiples of powers of ten. For example, 643 = 600 + 40 + 3.
- **Base Ten Blocks:** A manipulative used to build numbers and to help with addition and subtraction at the conceptual level.
- Place Value: The value of a digit based on its place in a number.
- Join: to put together (add)
- Separate: to take apart (subtract)
- **Total:** The number when sets are combined.
- **Sum:** The total when numbers are added.
- **Inverse Operations:** the inverse operations for addition is subtraction; the inverse operation for subtraction is addition.
- **Difference:** The result when one number is subtracted from another.
- **Equation:** A mathematical expression where one part is equal to the other part. Example: 50 + 26 = 70 + 6.

Try http://www.amathsdictionaryforkids.com/ for further examples.

### **Symbols**

- + addition
- subtraction
- = equal

### Example 1

Students are going to use their understanding of place value and expanded form from unit 1 to help them add and subtract within 100 fluently. The following is a common way students might add 2-digt numbers.

2<sup>nd</sup> grade students do not need to be able to use parenthesis and write their thoughts this detailed. They just need to be able to understand that they can group tens and group ones and the order does not matter.

Keep in mind that "naked" numbers are abstract and given a context can help students conceptualize the numbers more easily. Instead of using the numbers 47 and 29, say 47 acorns and 29 acorns.

## Example 2

An open number line allows students to add or subtract in chunks and serves as a visual recording method to keep track of the computation. Students are encouraged to use this strategy in a way that makes sense to them – numbers may be broken apart in many different ways. This is 1 example of using an open number line to model addition.



### Example 3

Students can also use an open number line to model adding up to find the difference between 63 and 37.





2020-2021

## Example 4

Students start to work with two-step word problems using simple numbers. Promote students reading, thinking about and visualizing 1 sentence at a time.

Jose had 24 tickets after playing ski ball. He used 7 of tickets to buy a rubber ball and some more to buy an eraser. Jose has 9 tickets left. How many tickets did the eraser cost?

- Put 100 counters (macaroni, buttons, etc.) into a container.
- Have your child write a story problem that has an answer of "58". Let your child take out a handful (or more) of the counters and count them. Ask him to add up or subtract to find out how many marbles are left in the container.
- Ask your child to write a story problem that has an answer of "68".
- Check out the websites from page 1.



## Grade 2 Unit 3

## Understanding Measurement, Length, and Time

#### Volume 1 Issue 3

## References

#### Helpful Links:

www.gamequarium.com/e stimation.html

www.gamequarium.com/t imemath.html

www.gamequarium.com/ measurement.html

https://www.abcya.com/g ames/measuring

## Dear Parents,

During this unit, your child will be transitioning from measuring lengths with informal units to measuring with these standard units: inches, feet, centimeters, and meters. The measure of length is a count of how many units are needed to match the length of the object or distance being measured. It is important that they understand what a length unit is and how it is used to find a measurement. They need many experiences measuring lengths with appropriate tools so they can become very familiar with the standard units and estimate lengths.

## Concepts Students will Use and Understand

- Know the following customary units for measuring length: inch, foot, yard
- Recognize the need for standard units of measure
- Use rulers and other measurement tools with the understanding that linear measure involves an iteration of units.
- Know the following metric units for measuring length: centimeter and meter
- Compare the relationship of one unit of measurement to another, within the same system
- Check by measuring to determine if estimates are accurate for length
- Determine the appropriate tool for measuring length; inch ruler and yardstick, centimeter ruler, and meter stick
- Understand the importance and usefulness of reasonable estimations
- Connect the whole-number units on rulers, yardsticks, meter sticks and measuring tapes to number lines showing whole-number units starting at 0
- Use these measuring tools to model different representations for whole-number sums and differences less than or equal to 100 using the numbers 0 to 100.
- Be able to represent the length of several objects by making a line plot
- Collect data in a bar graph or picture graph
- Tell time to the nearest five minutes
- Understand the relationship of hours and days

## Vocabulary

- inch: A customary unit of length; 12 inches = 1 foot
- foot: A customary unit of length; 1 foot = 12 inches
- yard: A customary unit of length equal to 3 feet
- centimeter: A metric unit of length 1/100 of a meter
- meter: The standard unit of length in the metric system
- estimate: To make an appropriate or rough calculation, often based on rounding
- minute: Unit of time equal to 60 seconds
- **hour:** Unit of time equal to 60 minutes

#### Example 1

For standard MGSE2.MD.9 students need to represent the length of several objects by making a line plot. Students should round their lengths to the nearest whole unit

Measure objects in your desk to the nearest inch, display data collected on a line plot. How many objects measured 2 inches? 3 inches? Which length had the most number of objects? How do you know?



#### Example 2

In P.E. class Kate jumped 14 inches. Mary jumped 23 inches. How much farther did Mary jump than Kate? Write an equation and then solve the problem.

#### Student 1

My equation is  $14 + \_\_ = 23$  since I am trying to find out the difference between Kate and Mary's jumps. I used place value blocks and counted out 14. Then I added blocks until I got to 23. I needed to add 9 blocks. Mary jumped 9 more inches than Kate.



#### Student 2

My equation is 23 - 14 =\_\_\_\_\_. I drew a number line. I started at 23. I moved back to 14 and counted how far I moved. I moved back 9 spots. Mary jumped 9 more inches than Kate.



#### Example 3

Look at your ruler to see how long one inch is. Now, estimate the length of this paper in inches.

- Measure items found around the house. Have your child first estimate how long they are, then measure. Do this using both customary and metric units of length. Talk about measuring tools and when to measure items in inches, feet and yards, or when to measure items using centimeters or meters.
- Have your child tell you what time it is to the nearest five minutes. Start discussing how long it takes to do things like brushing teeth, getting ready in morning, or how long their sports practice might be.



# <u>Grade 2 Unit 4</u> Applying Base Ten Understanding

#### Volume 1 Issue 4

## References

#### Helpful Links:

#### Math Magician (Fact Practice)

https://www.mathplay.com/math-magicianaddition-game/math-magicianaddition\_html5.html

https://www.mathplay.com/math-magiciansubtraction-game/mathmagiciansubtraction html5.html

#### ABCYa (Counting Money)

http://www.abcya.com/countin g\_money.htm

#### Learning Box (Place Value)

http://www.learningbox.com/Ba se10/BaseTen.html

#### Johnnie's Math Page

(Operations Practice) http://jmathpage.com/topics/jm p2ndgradeoperations.html

## Johnnie's Math Page (Number Practice)

http://jmathpage.com/topics/jm p2ndgradenumbersense.html

## Dear Parents,

During this unit, your child will be exploring addition and subtraction of two and three-digit numbers and will get to try many different strategies based on place value and understanding. Please keep in mind that while these strategies may be different from the way you are familiar with adding and subtracting, the purpose of these strategies is to build a strong foundation of place value when computing so students will understand why the traditional methods of addition and subtraction work but will have a variety of strategies than can use for flexibility and efficiency. Students will also be working with money and they use their place value understanding to solve simple word problems involving money.

## Concepts Students will Use and Understand

- Continue to represent and solve problems involving addition and subtraction.
- Add up to 4 two-digit numbers.
- Understand and apply properties of operations and the relationship between addition and subtraction (inverse operations).
- Become fluent with mentally adding or subtracting 10 or 100 to a given three-digit number.
- Know the multiple meanings for addition (combine, join, and count on) and subtraction (take away, remove, count back, and compare)
- Recognize and use place value to manipulate numbers.
- Count with pennies, nickels, dimes, and dollar bills.
- Solve problems using mental math strategies.

## Vocabulary

- **expanded form:** A multi-digit number is expressed in expanded form when it is written as a sum of single-digit multiples of powers of ten. For example, 643 = 600 + 40 + 3.
- **base ten blocks:** A manipulative used to build numbers and to help with addition and subtraction at the conceptual level.
- place value: The value of a digit based on its place in a number.
- symbols: +, -, =,
- join: to put together (add)
- **separate:** to take apart (subtract)
- total: The number when sets are combined.
- **sum:** The total when numbers are added.
- **inverse operations:** the inverse operations for addition is subtraction; the inverse operation for subtraction is addition.
- difference: The result when one number is subtracted from another.
- equation: A mathematical expression where one part is equal to the other part. Example: 50 + 26 = 70 + 6.

#### Fluently is accurately and efficiently.

#### **Symbols**

- + addition
- subtraction
- = equal

#### Example 1

Students are going to use their understanding of place value and expanded form from unit 1 to help them add and subtract within 100 fluently and within 1000 using strategies based on place value. The following is a common way students might add 2 or 3-digt numbers.

	248
248 + 345 =	+345
500 + 80 + 13	500
500 + 80 = 580	80
580 + 13 = 593	+ 13
	593

2<sup>nd</sup> grade students need to understand that they can group hundreds, tens and ones and the order does not matter. Drawing Base Ten blocks to help them solve this problem is also common.

Keep in mind that "naked" numbers are abstract and given a context can help students conceptualize the numbers more easily. Instead of using numbers such as 248 and 345, say 248 pencils and 345 pencils.

#### Example 2

An open number line allows students to add or subtract in chunks and serves as a visual recording method to keep track of the computation. Students are encouraged to use this strategy in a way that makes sense to them – numbers may be broken apart in many different ways. This is one example of using an open number line to model addition. Students become more efficient in their models as their knowledge solidifies.



#### Example 3

Students can also use an open number line to model adding up to find the difference between 236 and 79.



#### Example 4

Students start to work with two-step word problems using simple numbers. Promote students reading, thinking about and visualizing 1 sentence at a time:

Jose had 24 tickets after playing ski ball. He used 7 of tickets to buy a rubber ball and some more to buy an eraser. Jose has 9 tickets left. How many tickets did the eraser cost?

- Let your child count the change from your pockets or purse.
- Encourage your child to practice skip counting by 5's, 10's, and 100's starting at numbers other than 0. For example, skip count by 5's from 35 to 50 or skip count by 10's from 78 to 128.
- Have students mentally add up to four 2-digit numbers. For example, add 20 + 30 + 10. Progress to adding more difficult 2-digit numbers such as 27 + 15 + 10 + 12. Students
- Check out the websites from page 1.



## Grade 2 Unit 5 Understanding Plane and Solid Figures

#### Volume 1 Issue 5

## References

#### Helpful Links:

Math Playground http://www.mathplaygrou nd.com/index\_geometry.h tml (Geometry and Spatial Reasoning Activities)

Geometry and Shapes https://mrnussbaum.com/ math/geometry-andshapes

#### Johnnie's Math Page (Geometry Practice) <u>http://www.jmathpage.co</u> <u>m/wpjmp/start-geometry/</u>

Your child's math class is calling for students to be actively engaged in math activities in order to develop conceptual understanding of skills and concepts! In the classroom, students will frequently work on tasks and activities to discover and apply mathematical reasoning and thinking. Students are expected to explain or justify their answers and to write clearly and properly.

## Concepts Students will Use and Understand

- Further develop understandings of basic geometric figures
- Identify and describe plane figures and solid figures based on geometric properties
- Expand the ability to see geometry in the real world
- Partition shapes into equal shares by cutting, slicing, or dividing
- Represent halves, thirds, and fourths using rectangles and circles to create fraction models
- Compare fractions created through partitioning same-sized rectangular or circular wholes in different ways
- Understand what an array is and how it can be used as a model for repeated addition

## Vocabulary

Dear Parents,

- angle: the amount of turn between two rays that have a common end point (the vertex)
- attribute: the characteristics of a shape or object
- **column:** when numbers, objects, or shapes are arranged one above the other (in a vertical line)
- cube: a solid figure that has six square faces, six edges, and six vertices
- edge: a line segment joining two corners
- face: the surfaces of a solid figure
- fraction: a number that has a numerator and a denominator
- irregular polygon: a two-dimensional shape that does not have all equal sides or all equal angles
- partition: to separate or divide
- polygon: a two-dimensional shape
- quadrilateral: a polygon with four sides
- regular polygon: a two-dimensional shape that has all sides equal and all angles equal
- row: when numbers, objects, or shapes are arranged side-by-side (in a horizontal line)

• vertex/vertices: the point where two or more lines meet; the corner of a shape

## Symbols

Angles



#### Example 1

Standard G.1 calls for students to identify, describe, and draw triangles, quadrilaterals, pentagons, and hexagons, including regular and irregular polygons.

Draw a closed shape that has 5 sides. What is the name of the shape?



#### Example 2

Standard G.2 calls for students to partition a rectangle into squares and determine the total number of squares in the shape.

Split the rectangle into 3 rows and 4 columns. How many small squares did you make?



The rectangle was partitioned into 12 squares.

#### Example 3

Standard G.3 calls for students to partition circles and rectangles into 2, 3, or 4 equal shares. This standard is a precursor to fractions, which students will explore in third grade.

Divide each rectangle into fourths a different way.







#### Example 4

Students will investigate the meaning of equal shares. When a circle is folded or cut into three equal parts, each part is equal to one third of the whole.



- Quiz your child with shape riddles! For example, provide your child with the following riddle: I am a quadrilateral; I have four sides of equal length; I have four square angles. What shape am I? (square)
- Look for two-dimensional shapes around your home and at the market. What are some attributes of the shapes? Investigate the number of sides, angles, and vertices in the shapes.
- Look for three-dimensional shapes around your home and at the market. What are some attributes of the shapes? Investigate the number of faces, edges, and vertices of the shapes.
- Give your child some shape cut-outs (such as circles, triangles, rectangles, squares, etc.). Allow your child to fold the paper shapes and partition them into equal parts.
- Have your child draw various regular and irregular shapes and identify the number of sides, angles, and vertices in each shape. Ask your child to justify the meaning of various shapes (example: a rhombus has four sides of equal length).



## Grade 2 Unit 6 **Developing Multiplication**

#### Volume 1 Issue 6

## References

## Dear Parents,

#### **Helpful Links:**

#### Under the Sea

http://www.learnalberta.c a/content/me3us/flash/les sonLauncher.html?lesson= lessons/08/m3 08 00 x.s wf (Arrays)

Harcourt School http://www.harcourtscho ol.com/activity/space arra vs/ (Space Arrays)

Math Nook http://www.mathnook.co m/math/skill/evenoddnu mbergames.php (Even/Odd Number Games)

Number Ninja http://www.abcya.com/nu mber ninja odd even.ht m

(Even or Odd Game)

Your child's math class is calling for students to be actively engaged in math activities in order to develop conceptual understanding of skills and concepts! In the classroom, students will frequently work on tasks and activities to discover and apply mathematical reasoning and thinking. Students are expected to explain or justify their answers and to write clearly and properly.

## Concepts Students will Use and Understand

- Understand and model multiplication as repeated addition and as rectangular arrays.
- Determine if a number is odd or even (within twenty).

## Vocabulary

- array: objects that are arranged in rows and columns •
- column: when numbers, objects, or shapes are arranged one above the other (in a vertical • line)
- even: a number that can be divided exactly by 2 .
- odd: a number that cannot be divided exactly by 2
- partition: to separate or divide
- **product:** the answer to a multiplication problem •
- row: when numbers, objects, or shapes are arranged side-by-side (in a horizontal line)
- sum: the answer to an addition problem

Try <u>www.amathsdictionaryforkids.com</u> for further examples.

## Symbols

+ Addition

Example 1

Standard OA.3 calls for students to apply their work with doubles addition facts to the concept of odd or even numbers. Is 8 an even number? Prove your answer. Possible student answers:



### Example 2

Standard OA.4 calls for students to apply their knowledge of addition to express the total number of objects in an array using repeated addends.

Find the total number of counters below.



#### Activities for at Home

- Observe a set of objects. Is the set odd or even? Why? (see example 1 for ways to prove the concept of odd/even)
- Count out an even number of objects. Arrange the objects into arrays (see example 2). For example, if I have 12 pennies, how can I arrange the pennies so that I have an equal number of pennies in each row? Your child might arrange the pennies in 1 group of 12, 2 groups of 6, 3 groups of 4, etc.
- Discuss ways that odd and even numbers are used in the world. For example, if playing a game of Checkers, you need two players. If there are three players, two of the players must team up.
- Look for arrays! Observe how the rows of seats in a movie theatre create an array. Look at the arrangement of eggs in cartons at the store, etc.



## <u>Second Grade Unit 7</u> Review, Mastery, and Extend

#### Volume 7 Issue 1

**Helpful Links:** 

preview 3<sup>rd</sup> Grade:

(3.OA.1/2)

/8773

Links for Parents to build background knowledge to

## References

## Dear Parents,

Second Grade is coming to an end! At this time, students are reviewing standards learned, mastering standards, and possibly previewing standards for third grade. The second-grade focus was to:

- Add and subtract within 20 from memory
- Add and subtract within 1000
- Solve 1 and 2-step word problems

## Concepts students may preview for 3<sup>rd</sup> Grade

- 3.OA.1 Interpret multiplication with arrays
- 3.OA.2 Interpret division with arrays

### Vocabulary

- **Factors**: two or more whole numbers multiplied together to get a given number called the product
- **Product**: the result of multiplication
- Array: the arrangement of objects in equal rows. Example:

			6			
2	•	•	•	•	•	•
2	٠	٠	٠	٠	•	•

- **Quotient**: the result of division
- **Dividend**: number being divided; total amount being dividing into groups. Ex. 24 ÷ 8 = 3; 24 is the dividend, 8 is the divisor, and 3 is the quotient.
- **Divisor**: number dividing into the total; may be the number of groups or the number of items in a specific number of groups.

#### Example 1



This shows multiplication using grouping with 3 groups of 5 objects and can be written as 3 × 5.

(3.OA.1) https://learnzillion.co m/lesson\_plans/6841representmultiplication-usingarrays

http://nrich.maths.org

(3.0A.2) https://learnzillion.co m/lesson\_plans/5215solve-divisionproblems-using-array



## Home Activities

- A Fair Share: give your child the responsibility of sharing a box of markers, a bag of candy etc. between 2-4 people. Begin with problems that do not have remainders.
- Using playing cards, have your child draw 2 cards and have them create an array from the two numbers. Have your child explain to you the multiplication of the array and relationship to division (take the total array and divide by one of the numbers).