

Fourth Grade Mathematics Teaching & Learning Framework 2021-22							
Quarter 1	Quarter 2		Quarter 3			Quarte	r 4
Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8
9 weeks	9 weeks	3 weeks	3 weeks	3 weeks	2 weeks	2 weeks	5 weeks
Whole Numbers, Place Value and	Multiplication and Division of Whole	Fraction	Operations	Fractions	Geometry	Measure-	Review,
Rounding in Computation	Numbers	Equivalents	with	and		ment	Mastery and
0 1			Fractions	Decimals			Extend
rounding MGSE4.NBT.1 (Place value understanding) MGSE4.NBT.2 (Read, write and compare multi-digit numbers) MGSE4.NBT.3 (Place value rounding) Topic 2: Addition and subtraction MGSE4.NBT.4 (Fluently add and subtract/algorithm) MGSE4.OA.3 (Addition and subtraction multistep word problems) Topic 3: Measurement word problems and	MGSE4.OA.2 (Multiplicative comparison word problems) MGSE4.OA.1 (Interpret multiplication equations) MGSE4.NBT.5 (Multiply 2 digit by 2 digit and 4 digit by 1 digit) MGSE4.OA.4 (Factor pairs) MGSE4.OA.5 (Number or shape patterns) Topic 2: Division MGSE4.NBT.6 (Whole number quotients and remainders) MGSE4.OA.3	Fraction Equivalents MGSE4.NF.2 (Compare fractions) MGSE4.NF.1 (Fraction a/b = (n x a)/ (n x b)	Addition and subtraction of fractions MGSE4.NF.3 (decompose, mixed numbers, word problems) MGSE4.NF.5 (Denominator s 10 and 100) Topic 2: Multiplication	Fractions and decimals MGSE4.NF.7 (Comparing decimals) MGSE4.NF.5 (Denominators 10 and 100) MGSE4.NF.6 (Decimal notation) Topic 2: Problem Solving MGSE4.MD.2	Geometry MGSE4.G.2 (Classify 2-D figures) MGSE4.G.1 (Points, lines, angles, etc.) MGSE4.G.3 (Symmetry)	problems involving measure- ment MGSE4.MD.2 (Word problems- conversions etc.) MGSE4.MD.1 (Know relative size of measure- ment) Topic 2:	standards based on student needs. <u>Mastery</u> MGSE4.NBT.4 (Fluently add and subtract/algorithm) MGSE4.OA.3 (Multistep word problems with all operations) MGSE4.NF.3 (decompose, mixed numbers, word problems) MGSE4.NF.6
perimeter MGSE4.MD.2 (Word problem: money, capacity, mass etc.) MGSE4.MD.3 (Perimeter w/rectangles)	(Multiplication and division multistep word problems) Topic 3: Area MGSE4.MD.3 (Area w/rectangles) MGSE4.MD.8 (Rectilinear figures)		of fractions MGSE4.NF.4 (Multiply a fraction by a whole number) Topic 3: Line plots MGSE4.MD.4 (line plots w/fractions)	(Word problems- elapsed time, distance etc.)		Understand concepts of angles MGSE4.MD.5 (Angles) MGSE4.MD.6 (Angles- protractor) MGSE4.MD.7 (Angle measure as additive)	(Decimal notation) Extend MGSE5.NBT.1 (Place value) MGSE5.NBT.2 (Powers of 10) MGSE5.NBT.5 (Fluently multiply) MGSE5.NBT.6 (Whole number quotients)
These units were wri	tten to build upon concepts from prior units, so later	units contain tasks	s that depend up	oon the concepts	addressed in e	arlier 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 3-5 Key: MGSE= Mathematics Georgia Standards of Excellence G= Geometry, MD=Measurement and Data, NBT= Number and Operations in Base Ten, OA = Operations and Algebraic Thinking

Students in fourth grade are encouraged to see the relationship between multiplication and division. Their task is to make sense of division and have a real understanding of the concept, thereby preparing for more complicated strategies in subsequent grades. One strategy that supports this is *multiplying up*.



This student has used the *multiplying up* strategy to find the solution to $624 \div 6$.

One strategy, *partial quotients*, began in grade 3 and continues in grade 4 with larger numbers.

Students are exposed to various strategies to ensure a good foundation in number sense.



A fourth grader has to understand the unit fraction and be able to apply this understanding to addition and subtraction of fractions.

 $\frac{5}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$ OR $\frac{2}{8} + \frac{3}{8}$ etc...

Students need to see fractions on a number line and apply this knowledge to different situations.

		The	nun	nber	line	e ma	rked	l off	in t	hird	s	
0			1			2			3			4
$\frac{0}{3}$	$\frac{1}{3}$	$\frac{2}{3}$	33	$\frac{4}{3}$	<u>5</u> 3	<u>6</u> 3	$\frac{7}{3}$	83	<u>9</u> 3	$\frac{10}{3}$	$\frac{11}{3}$	$\frac{12}{3}$

A fourth grader should develop an understanding of a fraction as a number.

Understanding fraction equivalence is very important in grade 4. Students need to understand how an equivalent fraction is obtained. 2 = 8

$$\frac{1}{3}$$
 $\frac{1}{12}$

12

The whole is the square, measured by area. The left drawing is divided into 3 rectangles of equal area, and the shaded region is 2 of the 3 equal pieces. The right drawing is divided into 3 x 4 small rectangles of equal area, and the shaded area comprises 2 x 4 of these and so it represents $2 \times 4 = 8$.

3x4 12

Grade 4 expectations when working with fractions are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.

Parent Math Strategy Guide

Grade 4

Multiplication & Division Working with Fractions



Math



By the time students reach 4th grade, they have mastered addition and subtraction strategies. Students now understand the standard algorithm for addition and subtraction and are able to apply it fluently to solve real-world problems.

Fourth graders come to this grade level knowing multiplication facts from memory. Students can use strategies to help them with these facts:



72

 $8 \times 10 = 80 \\ 80 - 8 = 72$ OR $8 \times 5 = 40 \\ 8 \times 4 = \frac{32}{32}$

A fourth grade student is familiar with building simple multiplication problems using base ten blocks. This drawing shows the problem **4 x 13**.



Students investigated working with the distributive property in grade 3.

(4 x 10) + (4 x 3) 40 + 12 = 52 A strategy that helps students multiply numbers mentally is *doubling and halving*.



Here the student halves one number and multiplies the other number by two to get a friendly number that is easy to work with mentally.

Students now begin to work with the *area model of multiplication* using 2-digit x 2-digit numbers.



Here a student has built a 12 x 23 area model that shows the product 276.

Once again, the distributive property (based on the model) helps students understand multiplication.

12 x 23 = 276 (10 + 2) x (20 + 3) (10 x 20) + (2 x 20) + (10 x 3) + (2 x 3) 200 + 40 + 30 + 6 = 276

Once students have understood the models and can apply the distributive property to these multiplication problems, they move to *partial products*.

20 800 180 6 240 54	
6 240 54 X	
Students draw	49
Students draw models and	<u>(26</u>
Students draw models and	800
models and	240
a developed a dise	180
product. +	54
1	L 274

Fourth graders explore division by finding whole number quotients and remainders using strategies based on place value and the properties of operations. A strategy based on place value that is used to assist students with understanding division is *explicit trades*.



In this example, the student had to trade 2 tens for 20 ones. This should be clearly explained using place value language.



Grade 4 Unit 1 Whole Numbers, Place Value and Rounding In Computation

Volume 1 Issue 1

References

Helpful Links:

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

http://www.jmathpage.com/ wpjmp/start-fourth/ 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

Concepts Students will Use and Understand

- Read and write multi-digit numbers in numerals, number names and expanded form.
- Round multi-digit numbers to any place.
- Compare rounded multi-digit numbers and express their relationship using >, <, or =.
- Fluently add and subtract multi-digit whole numbers.

explain or justify their answers and to write clearly and properly.

- Represent problems using equations.
- Solve word problems including those about distance, time, volume, mass and money.
- Represent measurement quantities.
- Use perimeter formulas for rectangles.

Vocabulary

Dear Parents,

- digit: any of the numerals from 0-9
- place value: value of a digit according to its place in a number
- equation: mathematical expression where one part is equal to another part
- expression: numbers and symbols with no equal sign
- perimeter: the distance around or the border of a 2D shape

Symbols

Example 1

- + addition
- subtraction

How is the 2 in the number 8,286 similar to and different from the 2 in the number 8,528?

Example 2 Mr. Smith is building a fence around his rectangular garden. If the length of the garden is 8 feet and the width is 6 feet, how much fencing does Mr. Smith need to buy?



Mr. Smith needs 28 feet of fencing to enclose the garden.

A pound of apples costs \$2. Rachel bought 3 pounds of apples. If she gave the clerk a \$10 bill, how much change will she get back?

Possible Solution:

If Rachel bought 3 pounds of apples at \$2 a pound, she paid a total of \$6 for the apples. If she gave the clerk a ten dollar bill, I can subtract the total cost of \$6 from ten dollars to find how much change she received.

\$2 + \$2 + \$2 = \$6 (total cost of apples) \$10 - \$6 = \$4 (change received)

Rachel got \$4 back in change.

Example 4

Students should be able to explain why the algorithm works.

Example: 3892 + 1567

Student explanation for this problem:

- 1. Two ones plus seven ones is nine ones.
- 2. Nine tens plus six tens is 15 tens.
- 3. I am going to write down five tens and think of the10 tens as one more hundred. (*Denotes with a 1 above the hundreds column*)
- 4. Eight hundreds plus five hundreds plus the extra hundred from adding the tens is 14 hundreds.
- 5. I am going to write the four hundreds and think of the 10 hundreds as one more 1000. (*Denotes with a 1 above the thousands column*)
- 6. Three thousands plus one thousand plus the extra thousand from the hundreds is five thousand.

Activities at Home

- Before a car trip, ask your child to read the odometer. Write the number down. When you reach the new destination have your child read the odometer again and to subtract to find the distance traveled.
- Give your child and imaginary amount of money to spend at a store. Let them look through a catalog or ad to find items he/she can purchase with that amount of money. Have them arrange the items in order from most expensive to least expensive. Ask them to find the total amount of money they spent on their items.
- Try to always find a way to incorporate "real world" word problems.
- Try to incorporate your child finding perimeter of rooms in your home.



Grade 4 Unit 2 Multiplication and Division of Whole Numbers

Volume 1 Issue 2

References

Helpful Links:

http://www.adaptedmind. com/Fourth-Grade-Math-Worksheets-And-Exercises.html

https://www.topmarks.co. uk/maths-games/7-11years/multiplication-anddivision

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

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Concepts Students will Use and Understand

- Explain how a multiplication equation can be used to compare
- Multiply and divide to solve word problems that use multiplication to compare
- Solve multistep word problems using the four operations
- Interpret the meanings of remainders
- Represent problems using equations with a letter standing for the unknown quantity
- Determine if answers make sense using mental math, estimation, and mental math
- Find factor pairs for whole numbers 1-100
- Recognize a whole number as a multiple of each of its factors
- Decide whether a whole number (1-100) is a multiple of a given one-digit number
- Determine if a whole number (1-100) is prime or composite
- Create a number or shape pattern that follows a given rule
- Identify characteristics about a pattern that are not part of a rule
- Multiply a four-digit whole number by a one-digit whole number using strategies and properties of operations
- Multiply two, two-digit numbers using strategies and properties of operations
- Apply strategies to find whole number quotients and remainders with up to four-digit dividends and one-digit divisors
- Represent and explain multiplication and division using an equation, rectangular array, and/or area models
- Apply the area formulas for rectangles and rectilinear figures.

Vocabulary

- **area model:** a model for multiplication and/or division problems, in which the length and width of a rectangle represents the factors, or quotient and dividend
- **composite:** a whole number that can be divided evenly by numbers other than one and itself (0 and 1 are neither prime nor composite)
- **distributive property:** allows you to multiply a sum by multiplying each addend separately and then adding the products
- dividend: the number to be divided
- divisor: the number used to divide by
- equation: mathematical expression where one part is equal to another part
- expression: numbers and symbols with no equal sign
- factors: numbers you multiply together to get another number

- multiples: the result of multiplying a number by another number
- place value: value of a digit according to its place in a number
- **prime:** a whole number that can be divided evenly only by one or itself (0 and 1 are neither prime nor composite)
- **product:** the answer to a multiplication problem
- **quotient:** the answer to a division problem
- rectangular array: arrangement of objects into rows and columns that form a rectangle
- rectilinear: a polygon with all right angles
- remainder: the amount left over after division

Symbols

X multiplication

÷ division

= equals



A red scarf costs \$18. A blue scarf costs \$6. How many times as much does the red scarf cost compared to the blue scarf?



Example 2

There are 4 beans in a jar. Each day 3 beans are added. How many beans are in the jar for each ofthe first 5 days?DayOperationBeans

Day	Operation	Beans
0	$3 \times 0 + 4$	4
1	$3 \times 1 + 4$	7
2	$3 \times 2 + 4$	10
3	$3 \times 3 + 4$	13
4	$3 \times 4 + 4$	16
5	$3 \times 5 + 4$	19

Example 3

Your class is collecting bottled water for a service project. The goal is to collect 300 bottles of water. On the first day, Max brings in 3 packs with 6 bottles in each container. Sarah wheels in 6 packs with 6 bottles in each container. About how many bottles of water still need to be collected?

Student 1

First, I multiplied 3 and 6 which equals 18. Then I multiplied 6 and 6 which is 36. I know 18 plus 36 is about 50. I'm trying to get to 300. 50 plus another 50 is 100. Then I need 2 more hundreds. So we still need 250 bottles.

Student 2

First, I multiplied 3 and 6 which equals 18. Then I multiplied 6 and 6 which is 36. I know 18 is about 20 and 36 is about 40. 40 + 20 = 60. 300 - 60 = 240, so we need about 240 more bottles.

Example 4

What would an array area model of 74 x 38 look like?

	70	4
30	$70 \times 30 = 2,100$	$4 \times 30 = 120$
8	$70 \times 8 = 560$	$4 \times 8 = 32$

2,000 = 560 + 1,200 + 32 = 2,812

There are 592 students participating in Field Day. They are put into teams of 8 for the competition. How many teams are created?

Student 1	Student 2			Student 3
Student 1 592 divided by 8 There are 70 8's in 560 592 - 560 = 32 There are 4 8's in 32 70 + 4 = 74	Student 2 592 divided by 8 I know that 10 8's is 80 If I take out 50 8's that is 400 592 - 400 = 192 I can take out 20 more 8's which is 160 192 - 160 = 32 8 goes into 32 4 times I have none left I took out 50, then 20 more, then 4 more	592 -400 192 - 160 32 -32 0	50 20 4	Student 3 I want to get to 592 8 x 25 = 200 8 x 25 = 200 200 + 200 + 200 = 600 600 - 8 = 592 I had 75 groups of 8 and took one away, so there are 74 teams
	That's 74			

Example 6

Students can decompose rectilinear figures into different rectangles. Look at the example below:



area is 12 x 3 + 8 x 7 = 92 sq inches

Activities at Home

- Create a list of 5 items that you plan to purchase while at the supermarket. Have your child estimate the total amount.
- Roll five number cubes. Use four cubes to make a four-digit dividend, and use the fifth cube as the one-digit divisor. Repeat five times to make five different problems.
- Write 3 story problems that involve multiplication and 3 story problems that involve division. Use pennies, uncooked macaroni noodles, or other counters to represent each problem.
- Place a deck of cards face down (remove the face cards). Flip over two cards to create a two-digit number. List all of the factor pairs for the two-digit number. Repeat the activity 5 times.
- Skip count by 3s, 4s, 5s, 6s, etc. Discuss multiples of a number.
- Try to incorporate "real world" word problems often.



Grade 4 Unit 3 Equivalent Fractions

Volume 1 Issue 3

References

Helpful Links:

http://www.visualfraction s.com/

http://www.adaptedmind. com/p.php?tagId=892

http://www.mathplaygrou nd.com/index_fractions.ht ml

Dear Parents,

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Concepts Students will Use and Understand

- Fractions can be represented visually and in written form.
- Fractions with differing parts can be the same size.
- Fractions of the same whole can be compared.
- Fractions with the same amount of pieces can be compared using the size of their pieces.
- Fractions can be compared using benchmarks like 0, ½, and 1.
- Fraction relationships can be expressed using the symbols, >, <, or =.
- Use the four operations to solve multistep problems with whole numbers.

Vocabulary

- **common fraction:** a fraction in which the numerator and denominator are both integers and are separated by a horizontal or slanted line
- **denominator:** the bottom number in a fraction; the denominator indicates the total number of equal parts that make up the whole
- increment: the process of increasing in number, size, or quantity
- **numerator:** the top number in a fraction; the numerator represents a number of equal parts within the whole
- **proper fraction:** a fraction that is less than one, with the numerator less than the denominator
- unit fraction: a fraction with a numerator of one
- whole number: a number that has no fractional or decimal parts (1, 2, 3, etc.)

Symbols

½ - Fraction

>, <, =

Example 1 Equivalent Fractions with Area Models





Comparing Fractions Using the Benchmark Fraction of $\frac{1}{2}$



Example 4

Comparing Fractions on a Number Line



Example 5

Maria had 44 pencils. Six pencils fit into each of her pencil pouches. How many pouches did she fill? $44 \div 6 = p$; p = 7 r 2. Mary can fill 7 pouches completely.

- Divide a large pile of objects (cereal, potato chips, toy animals, blocks, etc.) equally into 4 piles to illustrate one-fourth. Recombine the group to divide into other fractions.
- Get out the measuring cups and spoons! Let your child explore and experience one-half cup or one-third teaspoon. Point out the differences in the sizes of the wholes!
- Fold a piece of paper into halves, and then into halves again with your child. Open it up to show the division of fourths. Fold the paper again to show eighths.
- Count the rooms in your house and make some fraction facts about them. One-half of the rooms have windows. One-third of them have pillows.
- While in the car, mark the passing of time with fractions. "We are one-third of the way there." "It will take us 20 minutes to get to the library." "In how many minutes will we be half-way there?"



Grade 4 Unit 4 Operations with Fractions

References

Helpful Links:

http://www.visualfraction s.com/

http://www.adaptedmind. com/p.php?tagId=892

http://www.mathplaygrou nd.com/index_fractions.ht ml

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Concepts Students will Use and Understand

- Fractions can be represented in multiple ways including visual and written form.
- Fractions can be decomposed in multiple ways into a sum of fractions with the same denominator.
- Fractional amounts can be added and/or subtracted.
- Mixed numbers can be added and/or subtracted.
- Mixed numbers and improper fractions can be used interchangeably because they are equivalent.
- Mixed numbers can be ordered by considering the whole number and the fraction.
- Proper fractions, improper fractions and mixed numbers can be added and/or subtracted.
- Fractions, like whole numbers can be unit intervals on a number line.
- Fractional amounts can be added and/or multiplied.
- If given a whole set, we can determine fractional amounts. If given a fractional amount we can determine the whole set.
- When multiplying fractions by a whole number, it is helpful to relate it to the repeated addition model of multiplying whole numbers.
- A visual model can help solve problems that involve multiplying a fraction by a whole number.
- Equations can be written to represent problems involving the multiplication of a fraction by a whole number.
- Multiplying a fraction by a whole number can also be thought of as a fractional proportion of a whole number. For example, $\frac{1}{4} \times 8$ can be interpreted as finding one-fourth of eight.
- Data can be measured and represented on line plots in units of whole numbers or fractions.
- Data can be collected and used to solve problems involving addition or subtraction of fractions.
- Use the four operations to solve multistep problems with whole numbers.

Vocabulary

- **common fraction:** a fraction in which the numerator and denominator are both integers and are separated by a horizontal or slanted line
- **denominator:** the bottom number in a fraction; the denominator indicates the total number of equal parts that make up the whole

- equivalent sets: two groups or sets that have an equal number of items
- **improper fraction:** a fraction is which the numerator is greater than the denominator (example: 5/4)
- increment: the process of increasing in number, size, or quantity
- mixed number: a number consisting of a whole number and a proper fraction
- numerator: the top number in a fraction; the numerator represents a number of equal parts within the whole
- **proper fraction:** a fraction that is less than one, with the numerator less than the denominator
- unit fraction: a fraction with a numerator of one
- whole number: a number that has no fractional or decimal parts (1, 2, 3, etc.)

Symbols

¹/₂ -Common Fraction

4/3 -Improper Fraction

5 1/2 -Mixed Number

Example 1

Compose (join) and Decompose (separate) Fractions of the Same Whole

Example: $\frac{2}{3} = \frac{1}{3} + \frac{1}{3}$

	-	-	-									
Example:	$1\frac{1}{4}$ -	$\frac{3}{4} =$?	\rightarrow	$\frac{4}{4} +$	$\frac{1}{4} =$	<u>5</u> 4	\rightarrow	$\frac{5}{4}$ –	$\frac{3}{4} =$	$\frac{2}{4}$ or	<u>1</u> 2

Example 2

Decompose a Fraction into a Sum of Fractions with the Same Denominator



Example 3

Add and Subtract Mixed Numbers with Like Denominators

Model the problem: $3\frac{3}{4} + 2\frac{1}{4}$



Multiplication of a Fraction by a Whole Number



Example 5

Represent and Interpret Data on a Line Plot

A student measured all of the objects in his desk. Record the lengths of each object on a line plot.



- Practice filling a measuring cup with water to show different mixed numbers. For example, pour 3 ½ cups of water into a bowl. Discuss the relevance of mixed numbers in a real-world context.
- Make a sandwich for each member of the family. Divide the sandwich into fourths. If you place $\frac{3}{4}$ of each sandwich on a plate, how many fourths are on the plate? (Example: $3 \times \frac{3}{4} = 9/4 = 2 \frac{1}{4}$ sandwich pieces).
- Measure various objects around your house to the nearest 1/8 of an inch. Create a line plot to display the data. Ask your child questions about the line plot. (Example: How many objects were longer than ½ inch?)
- While in the car, mark the passing of time with fractions. "We are one-third of the way there." "It will take us 20 minutes to get to the library." "In how many minutes will we be half-way there?"
- Practice finding solutions to everyday problems that occur. For example, while at the market, have students estimate the total cost of the items in your cart.



Grade 4 Unit 5 Fractions and Decimals

Volume 1 Issue 5

References

Helpful Links:

http://www.kidsmathgam esonline.com/numbers/de cimals.html (Comparing and Ordering Decimals Game)

http://www.mathplaygrou nd.com/index_fractions.ht ml (Fraction and Decimal Games)

http://www.abcya.com/fo urth_grade_computers.ht m#numbers-cat (Fraction and Decimal Games)

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Concepts Students will Use and Understand

- Express fractions with denominators of 10 and 100 as decimals
- Understand the relationship between decimals and the base ten system
- Understand decimal notation for fractions
- Use fractions with denominators of 10 and 100 interchangeably with decimals
- Express a fraction with a denominator 10 as an equivalent fraction with a denominator 100
- Add fractions with denominators of 10 and 100 (including adding tenths and hundredths)
 - Compare decimals to hundredths by reasoning their size
 - Understand that comparison of decimals is only valid when the two decimals refer to the same whole
 - Justify decimals comparisons using visual models
 - Solve problems involving measurement conversions
 - Solve multi-step word problems

Vocabulary

- decimal: a fraction written in special form; a part of the base-ten number system
- decimal fraction: a fraction whose denominator is a power of ten
- **decimal point:** a point used to separate the whole number part from the fractional part of a number
- **denominator:** the bottom number in a fraction; the denominator indicates the total number of equal parts that make up the whole
- increment: the process of increasing in number, size, or quantity
- **numerator:** the top number in a fraction; the numerator represents a number of equal parts within the whole
- unit fraction: a fraction with a numerator of one
- whole number: a number that has no fractional or decimal parts (1, 2, 3, etc.)

Symbols

3.5- Decimal Point

3/10- Decimal Fraction

Example 1

Locate decimals on a number line diagram:



Represent decimals and decimal fractions on a tenths and hunderdths grid:



Example 3

Compare decimals using models that are of the same-sized whole:





- Have your child select 1-2 numbers from a deck of cards. Place a decimal in front of the cards to create a decimal number (example 0.32 or 0.4). Give your child a hundredths grid and ask him or her to represent the number on the grid. Can you write the number in expanded form (example: 3/10 + 2/100)?
- Give your child a number line and ask him or her to label tenths on the number line from 0-3. Can your child identify decimal numbers such as 0.05, 0.54, 2.34, and 1.2 on the number line?
- Ask your child to create 3 decimal numbers using a deck of cards (example, 0.4, 2.5, and 0.37). Place the numbers in order from least to greatest. Have your child explain why this is the correct order based on concepts of place value.
- Investigate the importance of decimals in a real-world scenario! While at the market, discuss how decimals are used in listing the price of items and how decimals are used in providing change to customers at the register!
- While traveling, explore how the odometer on your car increases by tenths of a mile. How much is a tenth of a mile? How does a tenth of a mile compare to one mile?



Grade 4 Unit 6 Geometry

Volume 1 Issue 6

References

Helpful Links:

http://www.kidsmathgam esonline.com/geometry.ht ml (Geometry Games for Kids)

http://www.mathplay.com/Geometry-Math-Games.html (Geometry Math Play)

http://www.mathplaygrou nd.com/index_geometry.h tml (Geometry and Spatial

Reasoning Activities)

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Concepts Students will Use and Understand

- Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines
- Identify and classify angles and identify them in two-dimensional figures
- Distinguish between parallel and perpendicular lines and use them in geometric figures
- Identify differences and similarities among two dimensional figures based on the absence or presence of characteristics such as parallel or perpendicular lines and angles of a specified size
- Sort objects based on parallelism, perpendicularity, and angle types
- Recognize a right triangle as a category for classification
- Identify lines of symmetry and classify line-symmetric figures
- Draw lines of symmetry

Vocabulary

- angle: the amount of turn between two rays (or straight lines) that meet at a vertex
- **line of symmetry:** the imaginary line where a shape can be folded so that both halves are the same
- parallel lines: two lines in a plane that are equidistant and never meet
- parallelogram: a quadrilateral that has opposite sides that are parallel
- perpendicular lines: two lines in a plane that meet at a right angle
- polygon: a closed, plane shape that has straight sides that do not cross
- quadrilateral: a polygon with four sides
- rectangle: a polygon with four right angles
- rhombus: a polygon with four sides of equal length
- right triangle: a triangle that has exactly one right angle
- side: one of the lines that makes a polygon
- square: a polygon with four sides of equal length and four right angles
- **symmetry:** a shape that has two sides or two halves that are the same size, shape, and position
- trapezoid: a quadrilateral that contains at least one set of parallel lines
- vertex: the point where two lines meet (a corner)

Symbols		Example 1
right angle		Draw two different types of quadrilaterals that have two pairs of parallel sides.
acute angle	\angle	
obtuse angle	\searrow	Example 2 How many acute, obtuse, and right angles are in this shape?
straight angle	\longleftrightarrow	
segment		
line	←→	
ray		Example 3
parallel lines	11	Classify and sort shapes based on parallel lines, perpendicular lines, and angle types. At least one set At least one of parallel sides right angle
perpendicular lines	↓	

Identify the shape that has perpendicular and parallel sides and justify your selection.



Example 5

Draw all the lines of symmetry for the equilateral triangle.



- Quiz your child with shape riddles! For example, provide your child with the following riddle: I am a quadrilateral; I have two pairs of parallel sides; I have two pairs of perpendicular sides; my sides are equal in length; I have four right angles. What shape am I? (square)
- Look for shapes around your home and at the market. Does the shape have any parallel or perpendicular lines? What type of angles does it have? Is it symmetrical?
- Give your child some shape cut-outs (such as circles, triangles, parallelograms, squares, etc.). Allow your child to fold the paper shapes and investigate the number of lines of symmetry within each shape.
- Have your child draw various regular and irregular shapes and identify the types of angles in each shape. Are there any parallel or perpendicular lines? Justify your answer.



<u>Grade 4 Unit 7</u> Measurement

References

Helpful Links:

Math Playground

http://www.mathplaygrou nd.com/measuringangles. html (Measuring Angles with a Protractor)

Soft Schools

http://www.softschools.co m/measurement/games/ (Measurement Games)

Johnnie's Math Page (Angle Practice) <u>http://jmathpage.com/top</u> <u>ics/jmpheadgeometry.htm</u> <u>l</u>

Johnnie's Math Page (Measurement Practice) http://jmathpage.com/top ics/jmpheadmeasurement .html

Dear Parents,

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

- Investigate what it means to measure length, weight, liquid volume, time, and angles
- Understand how to use standardized tools to measure length, weight, liquid volume, time, and angles
- Understand how different units within a system (customary and metric) are related to each other
- Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz; L, ml; hr, min, sec.
- Solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals.
- Recognize angles as geometric shapes that are formed when two rays share a common endpoint, and understand concepts of angle measurement
- Measure angles in whole number degrees using a protractor
- Recognize angle measurement as additive and when an angle is decomposed into nonoverlapping parts, the angle measure of the whole is the sum of the angle measures of the parts.

Vocabulary

- Customary System: the system of weights and measures used in the U.S. The system includes units such as yards, feet, inches, gallons, pints, quarts, cups, pounds, and ounces
- **Metric System:** the system of weights and measures that is based on powers of ten. The system includes units such as gram, kilogram, liters, milliliters, meter, and kilometer
- acute angle: an angle that is less than 90 degrees
- right angle: an angle that is equal to 90 degrees
- **obtuse angle:** an angle that is greater than 90 degrees but less than 180 degrees
- one-degree: the measure of a plane angle that represents 1/360 of a full rotation

Symbols

Ì.
\leq
\searrow
\longleftrightarrow
⊷ ↔
~
1
+

Example 1

Students use conversion tables to express larger units in terms of smaller units within the same measurement system (customary system or metric system).

kg	g
1	1000
2	2000
3	3000

in	lb	oz
12	1	16
24	2	32
36	3	48

Example 2

Students use number line diagrams to calculate elapsed time.

At 7:00 a.m. Candace wakes up to go to school. It takes her 8 minutes to shower, 9 minutes to get dressed, and 17 minutes to eat breakfast. How many minutes does she have until the bus comes at 8:00 a.m.? Use the number line to help solve the problem.



Candace is finished at 7:34. If the bus comes at 8:00, I can count on to from 7:34 to 8:00 to find how many minutes it takes for the bus to arrive. From 7:34 to 7:35 is one minute. From 7:35 to 7:40 is 5 minutes and from 7:40 to 8:00 is 20 minutes. 1 minute + 5 minutes + 20 minutes = 26 minutes until the bus arrives.

Example 3

Students explore angles as a series of "one-degree turns."



A water sprinkler rotates one-degree at each interval. If the sprinkler rotates a total of 100 degrees, how many one-degree turns has the sprinkler made?

Example 4

Students measure and draw angles using a protractor.



Students investigate additive angles by decomposing angles into smaller parts.

If the two rays are perpendicular, what is the value of m? (25° + 20° + m° = 90°)



- Use index cards to create a set of cards that include various angle measures. Ask your child to use a protractor to identify the angles as acute, right, or obtuse. Use a protractor to find the measure of the angles.
- Relate angles to real-world scenarios. For example, discuss how angles are used in construction, opening and closing the door, hands on an analog clock, artwork, architecture, etc.
- Use toothpicks to design different shapes and angles. Give your child some shape and angle riddles to solve! For example, I am a shape with four sides of equal length. I have four right angles. What shape am I? (square)
- Have your child draw a picture that involves different types of angles. Measure the angles with a protractor.
- Investigate units of measure when cooking meals. Have your child show gallons, quarts, pints, and cups when mixing ingredients.
- How far is a mile? How long is a yard? Explore units of distance and length when traveling or watching sports (for example, how many yards did the football player run?)



Fourth Grade Unit 8 Review, Mastery, and Extend

Volume 7 Issue 1

Links for Parents to build

background knowledge to preview 5th Grade:

Helpful Links:

References

Dear Parents,

Fourth Grade is coming to an end! At this time, students are reviewing standards learned, mastering standards, and possibly previewing standards for fifth grade. The fourth grade focus was to:

- Addition and subtraction with the traditional algorithm
- Multiply and divide whole numbers
- Operations with fractions
- Angle measurement

Concepts students may preview for 5th Grade

- 5.NBT.1 Place value with decimals
- 5.NBT.2 Powers of 10 patterns
- 5.NBT.5 Fluently multiply multi-digit numbers with the standards algorithm up to a 3digit by 2-digit factor
- 5.NBT.6 Fluently divide up to 4-digit numbers by 2-digit divisors

Vocabulary

- Exponent: showing the number of times the base number is multiplied by itself
- **Quotient:** answer to a division problem
- Fluently: accurately and efficiently

of-ten-5-nbt-a-2 (5.NBT.5) https://learnzillion.co m/lesson_plans/8041use-the-standardalgorithm-formultiplication

(5.NBT.6) <u>https://learnzillion.co</u> <u>m/resources/72204-</u> <u>find-whole-number-</u> <u>quotients-with-up-to-</u> <u>4-digit-dividends-and-</u> <u>2-digit-divisors-5-nbt-</u> <u>b-6</u>

(5.NBT.1) https://learnzillion.co m/resources/72778recognize-the-value-

recognize-the-valueof-digits-in-a-multidigit-number-5-nbt-a-1

(5.NBT.2) <u>https://learnzillion.co</u> <u>m/resources/72620-</u> <u>explain-and-represent-</u> <u>patterns-when-</u> <u>multiplying-or-</u> <u>dividing-by-a-power-</u> of-ten-5-nbt-a-2



Example 2

 $2.5 \times 10^3 = 2.5 \times (10 \times 10 \times 10) = 2.5 \times 1,000 = 2,500$



Home Activities

- When grocery shopping, have your child read the cost of items with the correct place value.
- Practice addition, subtraction, multiplication and division facts
- Make up numbers, roll numbers with dice, or find numbers (on labels) and multiply or divide them
- Play online games such as: http://www.adaptedmind.com/gradelist.php?grade=5
- When driving, use street numbers to multiply and divide