3.NBT.1

Domain: NUMBER AND OPERATIONS IN BASE TEN				
Cluster: Use place value understanding and properties of operations to perform multi-digit arithmetic				
Standards: Use place value understanding to round whole numbers to nearest 10 or 100.				
Essential Questions Endu	ring Understandings Activities, Inv	estigation, and Student Experiences		
How do digits help us to round numbers? How does place value help us round numbers?	Numbers can be approximated. There are situations that require exact answers and situations that allow for approximate answers.	Use rounding rules to round number to the nearest 10 or 100. Underline the digit being rounded; circle the digit to the right. If the circle digit is 0, 1, 2, 3, 4 the underlined digit stays the same; if the circled digit is 5, 6, 7, 8, 9 the digit goes up 1. All digits the right of the underlined digit becomes a O and all numbers before the underlined digit comes over to the other side. Examples: 20 ; $= 40$; $= 500$; $i @ Z = 800$; $1, B7 = I, 500$		
Content Statements Show how to use place value to round a number to the nearest IO or 1 00. Show how certain digits determine how a number should be		Sing a about rounding chant the army song tune 1,2 round down 3,4 round down1234 round down 5,6 round up 7,8 round up 5678 round up and 9 also.Draw a mountain on the board. I put a Oat the left and right base of the mountain and 5 at the top of the mountain. I then write the numbers 1 - 4 up the left side of the mountain and 6 - 9 on the right side of the mountain.		
Numbers enable us to use place value of digits to comprehend rounding Assessments		<pre></pre>		

Explain how you use place value to round to the nearest 10 or 100?	
Round these numbers to the nearest 1 O?	
23 87=	

/.

the nearest ten.

765=54= Equipment Needed: 765=54= 100 chart Round these numbers to nearest 100? number line 367=876= highlighters 3,472=432= white boards Open Ended: place value chart Mark has 56 marbles and Sally has 82 marbles. Estimate about how many marbles they have in all? Give three numbers that round to 50 when rounded to Single Sand Sally has 82 marbles

Teacher Resources:

http://www.homeschoo Imath.net/worksheets/rounding.php http://www.k-5mathteach in gresources.com/3 rd-grade-num ber-activities.htm I www.superteacherworksheets.com/rounding.htm I http://www.mrnussbaum.com/rounding.htm **Everyday Math** Chapter **!-(Solving problems with dollars and cents)** Chapter 2 -(**Partial- sums algorithm; Subtraction algorithms**) Chapter 7 -(Estimating costs) Chapter 9 -(Buying at the stock-up sale)

3.<u>NBT.21</u>

Domain: NUMBER AND OPERATIONS IN BASE TEN

Cluster: Use place value understanding and properties of operations to perform multi-digit arithmetic Standards: Fluently add and subtract within 1000 using strategies and algorithms based on place value,

if States you have get a second a second as a second second get my method and region with the grant terms and the state of a second second

M eti d'Altre eti met	Richards Dashe stadlings	Automation of the second state of the second of the second state o	
			Understand place value, the

properties of operation, and the relationship between addition and subtraction in order to add and subtract.	operations and 6 tens 3 ones -+ 5 tens 13 ones Take away I ten, 7 ones.	Doubl Differe	ing tence	Add 6	3 7	
• Apply understanding of place value in multi-digit numbers in order to add and		5 13	l			
subtract using the properties of	3 Digit Addition Split					

httn://www.k-Smathteachin11resources.com/sunnort-files/3-di11it-

emphasize the

relationship between addition and subtraction.	
• Fluently add and subtract whole numbers within 1000.	
Assessments	

Create and solve various addition and subtraction number stories.

George has \$422. He purchases a \$99 MP3 player. How much money does George have left?

Joyce receives three checks for her birthday. The value of the checks are \$50, \$125, and \$219. How much money did Joyce receive in all?

Equipment Needed:

100 chart

number line

highlighters

white boards

place value chart

3.<u>NBT.21</u>

addition-split.pdf

Model addition and subtraction using base ten materials

Teacher Resources:

www.superteacher.com

http://www.k-5mathteachingresources.com/support-files/3digit-addition-split.pdf

http://www.softschools.com/math/games/addition subtraction n mix practice.isp

Everyday Math <u>Chapter 1</u>-(Tools for mathematics; **Finding differences**; **Calculator routines; Money; Solving problems with dollars** <u>and cents; Length of day project</u>)

3.<u>NBT.21</u>

<u>Chapter 2</u> -(Fact families; Extension of addition and subtraction facts; "What's my rule?"; Parts and total number stories; Change number stories; Comparison
number stories; Partial sums algorithm; Subtraction
Chapter 3 -(Pattern-block toss experiment)
Chapter 4 -(Multiplication fact power and
shortcuts) <u>Chapter 7</u> -(Number models with
parentheses)
Chapter 9 - (Exploring arrays, area, and fractions; Buying
at the stock-up sale; Broken calculator division; Lattice
multiplication; Products of two-digit numbers Parts 1 &
2; Positive and negative numbers)
Projects- National high and low temperatures

-...[\] Domain: NUMBER AND OPERATIONS IN BASE TEN

3.<u>NBT.31</u>

Cluster: Use place value understanding and properties of operations to perform multi-digit arithmetic

Standards: Multiply one-digit whole numbers by multiples of 10 in the range 10-90 (e.g., 9 x 80, 5 x 60) using strategies based on place value and properties of operations.

A Water, The plan or dependence to the part of a said part of every set of the part fact of additional at a side one with



Essential Questions Enduring Understandings

How can applying knowledge of place value and properties of operations assist in

• Basic multiplication facts, as well as place-value patterns, can be used to find

multiplying one digit whole numbers by multiples of 1 0?	products of one digit whole numbers by multiples of 10.	Activities, Investigation, and Student Experiences Write on the board a number (70)- Underline the whole numbers than multiply the whole numbers and then count the zeroes after the underlined and add that many O's to your product.
Content Statements		 What is 10 x 10 (record) What is 10 x 1 (record)
Apply knowledge of	1	• What is 10 x 100 (record)
place value and		Repeat for another number (60).
propellies of		• What iSQO X.2_
operations when multiplying one digit		• What is QO X io
whole numbers by		• What is QO x .2_00
multiples of 10.		Explain we can replace 10 x 10 by 100, as multiplying by 10 and then 10 again is the same as multiplying by 100.
Assessments	·	Have a function machine that makes numbers 10 times bigger. Write the numbers that come out:
	Pedro has 8 goodie bags for his party and each goodie bag	C=:> ^{10 times} ? bigger ? C=:>
	c=:> [] 90 c=:>	$_{?}$ C:::::> Multiples of Ten Multiply \diamond C=:> C=:> C=:>
	50 C=:>	
What is 9 x 80?	c=:> 20	
What is 70 x 3? What is _ x4=120?	Write the numbers that go in:	c=:> c=:> c=:> c:::=:>
What is $50 \text{ x}_{-} = 200?$	_? C=:>	

http://www. k-5 mathteach in gresou rces .com/3 rd-grade-n umber-activities. htm I

has 20 pieces of candy. How many pieces of candy are there \ldots (

altogether?

3.<u>NBT.31</u>

Equipment Needed:

Teacher Resources:

Counters Whiteboards 100 chart Mental Math



number-activities.html

http://www.aaamath.com/grade3.htm

l#topic88 www.multiplication.com

www.pppst.com

www.adaptedmind.com

Everyday Math

<u>Chapter 7</u> - (Extended facts multiplication and division; Estimating costs; Extended facts: products of ten) <u>Chapter 9</u>- (Multiply and divide with multiples of 10,100 & 1000; Using mental math to multiply; Explore arrays, area, & fractions; Products of two-dieit numbers, Parts 1 & 2)

http://www.k-Smathteachingresources.com/3 rd-grade

3.MD.1

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Domain: MEASUREMENT AND DATA

Cluster: Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects

Standards: Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.2., by representin2 the problem on a number line dia2ram.

Essential Questions

analog and digital clocks.

How do you tell time to the nearest minute?

Use a number line to solve addition and subtraction word problems that pertain to time intervals.

How can a number line be used to solve problems that relate to time intervals?

Content Statements

Some attributes of objects are measurable and can be quantified using unit amounts. Mathematics content and practices can be applied to solve problems.

Assessments

Find the elapsed time:

Start Time: 10:00 AM End Time: 2:55 PM

Start Time: 4:00 PM End Time: 8:30 PM

Enduring Understandings Tell and write time to the nearest minute using

Contraction of the	An de Min e, herreitig dien, deil Mersh af Regeniererer
	0.00

Ŷ 1111111111111111111111 ► 6:30 6:15 7:00 7:1 7:30 7:45 k:00 F Grady Mathematics + Departured Content p in 21 Use mini clocks to represent time to the nearest hour and minute. (!)00 ... 000 ...

Example Temps wakes up at 6.00 arm. It takes her 1 minutes to above, 1.0 minutes to get desced, and 10 minutes to ear breakfast. What time will due be analy for

5 15 IS

Activities, Investigation, and Student Experiences 5pm. It lasted 2 hours and 10 minutes.

✓•(3.MD.1

What time did the game end? Illustrate various times to the minute on an analo

g clock.

Draw hands on the clock below to show 7:20 A.M.



Equipment Needed:

Mini clocks

Blank clock worksheets Number line

Teacher Resources:

http://www.superteacherworksheets.com/time.htm I

http://www.kidsnumbers.com/clock-work.nhn

http://mathlearnnc.sharpschool.com/UserFiles/Servers/Server 4507209/File/l nstructional%20Resources/G3Meas.pdf

Game Time! By: Stuart J. Murphy

(Recommendation) As you read the story, have the students set their clocks to match the times given in the story.

3.<u>MD.1</u>,

Everyday Math <u>Chapter 1-(Tools for mathematics; Length of day</u> project) Chapter 3-(Exploring perimeter and area) <u>Chapter 5-(Very large numbers; Sunrise and sunset</u> graphs) <u>Chapter 11-(Length of day project revisited;</u> Project-Length of Day)

3.<u>MD.21</u>

Domain: MEASUREMENT AND DATA

Cluster: Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects

Standards: Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (1). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e. ., b usin drawin s such as a beaker with a measurement scale to re resent the roblem.

Essential Questions Enduring Understandings Activities, Investigation, and Student Experiences What are tools of Use appropriate tools to Students identify things that weigh about one gram. They measurement and how are measure and estimate liquid record their findings with words and pictures. (Students can they used to measure and volumes in litters only and repeat this for 5 grams and 10 grams.) This activity helps estimate liquid volume and masses of objects in grams develop gram benchmarks. One large paperclip weighs about masses? and kilograms. one gram. A box of large paperclips (100) weighs about 100

grams to 10 boxes would weigh one kilogr	am. Use a strategy such as	
How are strategies helpful	Use a strategy such as	
in solving addition,	estimate liquid volumes and masses of	volumes.
subtraction, multiplication, or division	objects.	drawing to solve one-step word problems
containing masses or volumes?		pertaining to masses or volumes.
	Certain strategies like drawings can be	Fill an empty container with water to show
Content Statements Various tools of	applied to solving word problems that	what the volume of one liter looks like.
measurement are utilized to measure and	involves masses or	Fill various sized containers to measure

volume.

Use spring scales or a balance to weigh an object's mass. Show how many paper clips on one side of the scale are equivalent to the mass of one D-cell battery.



3.<u>MD.2</u>

Assessments

Sally has 7 stuffed animals. Each stuffed animal weighs 25 grams. How much do all of her stuffed animals weigh?

Billy has a bucket of water with 38 liters in it? While he was walking, 26 liters of water poured out. How many liters does he have left?

Equipment Needed:

Empty containers

Spring scale

Paper clips

- ----

D-cell battery

Teacher Resources:

ent.html

httQ://www.funbrain.com/measure/

Everyday Math <u>Chapter</u> 9-(Exploring arrays, equilateral triangles, and strength of paper) <u>Chapter</u> 10-(Weight; Exploring weight and volume; Capacity; Calculator memory)

httQ ://www.gameguarium.com/measurem

., (**1** 3.<u>MD.31</u>

Domain: MEASUREMENT AND DATA

Cluster: Represent and interpret data .

Standards: 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 scale bar graphs. For

example, draw a bar graph which each square in the bar graph might represent 5 pets.

Essential Questions Enduring Understandings Activities, Investigation, and Student Experiences How can a scale be used to

• Read and solve problems Based on the outcomes of a given experiment, (coin toss, make a bar graph and solve using a variety of scale spinner results, survey of favorite class food or pets) students one and two-step intervals for picture and bar can record the results of the experiment or survey in a bar graph problems? graphs. or picture graph.

Students can answer two-step problems based on this bar graph, How to determine how such as, how many fewer students like birds and dogs than cats? much a symbol in a picture graph represents? Students can design their bar graph in correct increments. Content Statements

A scale can be used to Students can assign an increment to represent each picture, based on how many results they have. (ex. ./5' = 5) make a bar graph.

Determine how much a *Bar graphs*. Used horizontally or vertically, bar graphs (also called bar charts) compare discrete quantities

expressed by symbol in a picture graph rectangular bars of uniform width. The heights (or lengths) are represents. proportional to the quantities they represent. The bars are constructed within perpendicular axes that intersect at a

~

Assessments common reference point, usually zero. The axes are labeled.

,, (2 MID 2	1		Key C	10 students
3. <u>MD.3</u>	1			
	Sports Played by 3 rd Graders	1		
		baseball	This pictograph displays	s data. e asked what sports they played Look
	•	football	Sid Sidde Stadents Wei	e usited what sports dieg played. Door
		soccer	at the bar graph to	o answer the following questions.
		hockey	1. How students like	e soccer and hockey?

2. How many more students like soccer and hockey than basketball?

Equipment Needed:

Bar graph worksheets

Picture graph worksheets

Chart paper

Crayons, markers, etc.

Spinner

coins

Teacher Resources:

www.superteacherworksheets.com www .Softschools.com www .gameaguarium.com

Everyday Math <u>Chapter 1- (Analyze and displaying data; Money;</u> Length of day project) <u>Chapter 4-(Coin toss experiment)</u>

Chapter 5-(Reading, writing and ordering numbers) Cha ter 10-(Mean and median; Calculatin the mean;

Every pictograph has a title pictures or symbols labels and a key

3	M	D	3	1	
2				1	

Frequency distribution) <u>Chapter 11-(Length of day project revisited;</u> Project 2- Watermelon feast and seed spitting contest)

3.<u>MD.41</u>

Domain: MEASUREMENT AND DATA

Cluster: Represent and interpret data

Standards: Generate measurement data by measuring lengths using rulers marked with halves and fourth of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units- whole numbers, halves, or quarters.

Essential Questions	Enduring Understandings	Activities, Investigation, and Student Experiences
How to measure to a fraction of an inch?	Fractions of an inch give measurements that are closer	Use a ruler to measure to the nearest half inch and quarter inch.
How can rulers be used to measure lengths that	to the actual length of objects than whole inches.	measure various objects to the nearest half and quarter inch.
are marked with halves and fourths of an inch?	Rulers can be used to measure lengths marked with halves and fourths of an inch and record the data on a line plot	Set up a center with objects to measure. (ribbon cut into various length, crayons, connecting cubes, etc) Provide students with a clipboard and worksheet labeled with each item to measure.

-, {

Content Statements Measuring to a fraction of an inch gives measurements that are closer to the real length of an object than using inches. A ruler that is marked with halves and fourths of an inch can be more accurate.		After measurements are recorded, students will construct a line plot to show their data. Following these links for further activities: Measuring Paths Path 1 Path 2 Path 3
---	--	---

Assessments

record each measurement into a line plot.



1. Measure the length of the crayon to the nearest inch.

Measuring Strips Line Plot

Use this link as an assessment to measure various strips and

Equipment Needed:

3.<u>MD.41</u>

(•

http://www.funbrain.com/cgi

Worksheets

Various objects to be measured Clipboard

Strip of different lengths. bin/meas.cgi? Al =s&A2=0&A3=0&INSTRUCTS=1 www

.superteacherworksheets.com

http://www.k-Smathteachingresources.com/data-and measurement-activities.html

3.<u>MD.51</u>

Domain: MEASUREMENT AND DATA

Cluster: Geometric measurement: understand concepts of area and relate area to multiplication and addition

Standards: Recognize area as an attribute of plane figures and understand concepts of area measurement.

Essential Questions Enduring Understandings Activities, Investigation, and Student Experiences • How can area be • The

amount inside a shape is Using color square tiles, students will cover the area of their measured using square its area, and area can be math book to introduce the concept of area, where one tile units? found using square units. equals one square unit.

Using graph paper, students will design a figure of 15 square

Using and counting square units the area of an object can be found.	



1. Find the area of this figure. Write your answer in square units.

units. Have students make a 3x5 array to equal 15 units.

Students can use a Geoboard to construct a given number of square units.

Follow the links for additional activities: Exploring Area Area on the Geoboard



www.suuerteachenvorksheets.com
Rubberbands Graph paper
Color square tiles Math book
httu://www.k-Smathteachingresources.com/data-and
measurement-activities.html
Everyday Math
<u>Chapter 3-(Exploring perimeter and area; Area; Number</u>
models for area)
<u>Chapter 9</u> -(Exploring arrays, area, and fractions;
Multiplication algorithm; Exploring arrays, equilateral
triangles, and strength of paper; Products of two-digit
numbers Parts 1 & 2)

Teacher Resources:

3.<u>MD.61</u>

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Domain: MEASUREMENT AND DATA

Cluster: Geometric measurement: understand concepts of area and relate area to multiplication and addition

Standards: Measure areas by counting unit squares (square cm, square m, or square in, square ft, and improvised unit).

Essential Questions

Content Statements

How can understanding unit squares help	The knowledge of unit squares simplifies	Assessments
1n	the measuring in square cm, square m,	
measuring in square	square m,	
cm, square m, square in, square ft?	square ft?	

⁻Lull! <u>11 L.</u> - L - f • • -

1 J:.1_i . f. 1Tf1T'1 I i

Н'

Enduring Understandings •Unit squares

can be used to measure areas in square cm, square m, square m, square ft, etc.

> Activities, Investigation, and Student es.com/data-and Experiences Rectangular Area Cards measurement-activities.html http://www.k-5mathteachingresourc

Students will use the area cards to find the area in sq. cm., sq. m., sq. in, sq. ft. and

improvised units.

each unit. Use different sized graph paper to represent

1. Measure figure A in square inches. 2. Measure figure B in square centimeters.

3. Measure figure C in square meters.

4. Measure figure D in square feet.

Teacher Resources:

Equipment Needed:

Graph paper 3.<u>MD.61</u> Worksheets

Color square tiles Paperclips

measurement-activities.h tml

www.superteacherworksheet.com

www.mathplayground.com

Everyday Math Chapter 3-(Exploring perimeter and area; Area; Number models for area) Chapter 4-(Exploring arrays and facts; Estimating distances with a map scale) Chapter 9-(Positive and negative numbers)

http://www.k-Sma th teachingresources.com/ data-and

3.<u>MD.71</u>

Domain: MEASUREMENT AND DATA

Cluster: Geometric measurement: understand concepts of area and relate area to multiplication and addition

Standards: Relate area to the operations of multiplication and addition.			
Essential Questions	Enduring Understandings	Activities, Investigation, and Student Experiences	
How can tiling a rectangle and multiplying its side lengths give the same end result?How can the sum of non-overlapping figures be the area of a figure?	 Tiling a rectangle and multiplying its side lengths will result in the same outcome. The area of rectangles can be associated to everyday life situations. The area of a figure is the sum of its non-overlapping 	 The shortcut, multiplying the nuber of squares in one row by the number of rows can lead them to the formula for the area of a rectangle. Have students practice this skill by mentally multiplying set questions. (ex. Jorge is carpeting a room that is shaped like a square. One wall of the room is 6 yards long. How many square yards of carpet will Jorge need? Have students use graph paper to solve the problem or use mental math to multiply 6x6. 	
Content Statements	parts.		
Multiplying the side lengths of a rectangle will give you the same answer as tiling the entire figure. The sum of non overlapping figures be		Designing a Flower Bed Area of Irregular Figures	
the area of a figure. Assessments		_	



Write hvo multiplication sentences to find the area of the figure above.

Shade in each array to show your multiplication sentences.

Draw your two decomposed figures.

3.<u>MD.71</u>

Equipment Needed:	Teacher Resources:
Graph paper Worksheets Color square tiles	http://www.ncpublicschools.org/docs/acre/standards/com mo_n-core-tools/unpacking/math/3rd.pdf www.elcerritowire.com
	Everyday Math <u>Chapter 3-(Exploring perimeter and area; Area;</u> Number models for area) <u>Chapter 4-(Multiplication arrays; Exploring arrays</u> and facts; Estimating disfances with a scale map) <u>Chapter 6-(Measuring angles</u>) <u>Chapter 9-(Exploring arrays, areas, and fractions;</u> <u>Multiplication algorithm; Exploring arrays,</u> equilateral triangles, and strength of paper; Products

of hvo-digit numbers, Parts 1 & 2; Positive and
negative numbers)

3.<u>MD.81</u>

Domain: MEASUREMENT AND DATA

Cluster: Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures

Standards: Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

Essential Questions Enduring Understandings Activities, Investigation, and Student Experiences

How can the perimeter of objects be found and widths of polygons. by adding?

How can recognizing the patterns that exist when finding the sum of the lengths and widths of polygons help find the perimeter of an object?

Content Statements

Addition can be used to find the perimeter of an object.

There are various patterns that can be used to find the sum of the lengths and

The perimeter of objects can be found by adding, and by recognizing the patterns that exist when finding the sum of the lengths

Perimeter with Color Tiles Designing a Rabbit Enclosure The Perimeter Stays the Same The Area Stays the Same

Students use geoboards, tiles, and graph paper to find all the possible rectangles that have a given perimeter (e.g.,

find the rectangles with a perimeter of 14 cm.) They record all the possibilities using dot or graph paper, compile

the possibilities into an organized list or a table, and determine whether they have all the possible rectangles.

Given a perimeter and a length or width, students use objects or pictures to find the missing length or width. They justify and communicate their solutions using words, diagrams, pictures, numbers, and an interactive whiteboard.

Measuring Perimeter

Perimeter on the Geoboard

Then lengths of two sides of the rectangle are given. How can you find the lengths of the other two sides?	dot or graph paper, compile the possibilities into an organized list or a table, and determine whether they have all the possible rectangles. Students then investigate the perimeter of the rectangles with an area of 12.
How do you use the lengths to find the perimeter? The length of each straw is 1 unit. Work with your partner and use your straws to make a shape that has a perimeter of 12 units. Record the shape you made and its perimeter on grid paper.	Area Length Width Perimeter 12 sq. in. I in. 12 in. 26 in. 12sq.in. 2 in. 6 in. 16 in. 12sq.in 3 in. 4 in. 14 in. 12 sq. in 4 in. 3 in. 14 in. 12sq.in 6 in. 2 in. 16 in. 12 sq. in 12 in. I in. 26 in.
Erica has 25 markers. There are red, yellow, and blue markers. Erica has 4 more red markers than blue markers. She has the same number of blue markers as yellow markers. How many red markers does Erica have? Equipment Needed:	Teacher Resources:

Geo boards			
Graph paper	Everyday Math		
Snan cubes	<u>Chapter</u> 3- (Perimeter; Exploring perimeter and area;		
Shap cubes	Number models for area)		
Color square tiles	<u>Chapter 4- (Multiplication arrays)</u>		
http://www.k-Smathteachingresources.com/ data-and	<u>Chapter 5-</u> (Exploring estimates and polygons) <u>Chapter 6-</u>		
measurement-activities.htm 1	Chanter 9- (Exploring arrays, areas, and fractions)		
	(F		


r 3.NF.1

Domain: NUMBER AND OPERATIONS -FRACTIONS

Cluster: Develop understanding of fractions as numbers

Standards: Understand a fraction *lib* as the quantity formed by 1 part when a whole partitioned into *b* equal parts; understand a fraction alb as the uanti formed b a arts of size lib.

Essential Questions Enduring Understandings Activities, Investigation, and Student Experiences

How can fractional parts be related to a	
whole?	

How can a region be

both. The WHOLE is **always** divided into EQUAL parts. Understa_{Look} at the examples. fractional p the size (A region

into eq different



When we talk about fractions, we talk about PARTS ofa WHOLE. Sometimes we have wholes and fractional parts

divided into equal parts?



OR 2

4 2

25



7 10

Content Statements

Fractional parts are related to a whole and a region can be divided into equal parts.



		Game Game Grid ion Kits he Geoboard	
		 '.":olor Tiles :3fa Groun ns ofa Groun d Alouds: Picture Pie Task Card <u>Invitation to Fractions</u> ons by Jerry Pallotta <u>-5mathteachinQresources.com/3re</u> 11 	<u>1-grade-number</u>
	Equipment Needed: Teacher Resources:		1
0 0			3.NF.1 I
Number	line		
Grids			
Fraction	bars		
Fraction	circles		
Tile			
Geomet	ric figures		
Index Ca	ards- to label the fractions		

http://www.superteacherworksheets.com/fraction-cont.ht ml_http://www.gameguarium.com/fractions.html	Everyday Math
http://iamit.com.au/fraction-games.htm	Chapter 5 - (Model decimals with base-ten blocks; Tenths and hundredths of a meter; Application rainfall) Chapter 8 - (Naming parts with fractions; Number line posters for

3.<u>NF.21</u>

Domain: NUMBER AND OPERATIONS -FRACTIONS

Cluster: Develop understanding of fractions as numbers

Standards: Understand a fraction as a number on the number line; represent fractions on a number line

diagram. Essential Questions Enduring Understandings Activities, Investigation, and Student Experiences

How can a number line help represent fractional parts?• Relate dividing a sh into equal parts, w the equal parts are between theContent Statements• Relate dividing a sh into equal parts, w the equal parts are between the	• Relate dividing a shape into equal parts, where the equal parts are between two	Draw a number line cutting the number line into equal parts from 0-1. Write in the fractional parts the number line.Example:
A number line can help represent fractional pai1s.	whole numbers and representing this relationship on a number line.	IIIIIIII 01/8 2/8 3/8 4/8 5/8 6/8 7/8 8/8 Or 1

Assessments	
Label the missing fractional parts?	
IIIIII .	
1/8 b 3/8 4/8 _y 6/8 7/8 n Break the number line in 4 equal parts.	

3.<u>NF.21</u>

01	
Equipment Needed:	Teacher Resources:

Number line

Grids

Fraction bars Fraction circles Tiles

Geometric figures

http://www.superteacherworksheets.com/fractions.html	http://www.mrnussbaum.com/tonl'.fraction.htm
http://math.about.com/od/worksheets/a/fractions.htm	http://www.k-Smathteachingresources.com/3rd-grade number-activities.html
http://www.helpin�ithmath.com/bl'. subject/fractions/f ^r a worksheets charts.htm	http://www.math-salamanders.com

A

Everyday Math <u>Chapter 3</u> - (Measuring with a ruler) <u>Chapter 8</u> - (Number line posters for fractions; Equivalent fractions; Comparing fractions; Fractions greater than ONE; Fractions and number stories) Chapter 9 - (Using mental math to multiply)

3.<u>NF.31</u>

Domain: NUMBER AND OPERATIONS -FRACTIONS

Cluster: Develop understanding of fractions as numbers

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

Essential Questions	Enduring Understandings
How can different fractions name the same number?	The same fractional amount can be represented by an infinite set of different but equivalent
How can fractions be compared and evaluated	fractions.
usin <, >, or =? Content Statements	Recognize that fractions are equivalent to whole numbers.
Different fractions name the same	
number.	Compare two fractions using
Fractions can be compared and evaluated using symbols.	<, >, or = and validate the conclusions.
Assessments	

Use the picture to compare the fractions. How can you tell which fraction is greater?

Activities, Investigation, and Student Experiences

Equivalent fractions represent the same part of **a whole.** For example, ifwe cut a pie exactly down the middle, into two equally sized pieces, one piece is the same as one halfofthe pie. And if another pie (the same size) is cut into 4 equal pieces, then two pieces of that pie represent the same amount of pie that 1/2 did. So we can say that 1/2 is equivalent (or equal) to 2/4.



This website enables you to manipulate different types of equivalent fraction bars (Recommendation: View the website prior to using hands on manipulatives)

3.<u>NF.31</u>

1/8 and 1/6 or 1/6 or 1/3 htt12://www.math12laxground.com/Fraction bars.html Which fraction is greater? Explain why? 2/4 or 1/3 Order these fractions from least to greatest. ½, 3/8, ½	Compare these fractions using<,>, or ⁼ ?	http://www. schoo ltu be. com/v ideo/c85 9 b5 0cbed 1 44efb96d/Compar i ng-and Ordering-Fractions
Mhich fraction is greater? Explain why? 2/4 or 1/3 Order these fractions from least to greatest. ½, 3/8, ½	1/8 and 1/6 or 1/6 or 1/3	
Which fraction is greater? Explain why? 2/4 or 1/3 Order these fractions from least to greatest. 4/4, 3/8, 1/2		htt12://www.math12laxground.com/Fraction bars.html
2/4 or 1/3 Order these fractions from least to greatest. 1/4, 3/8, 1/2	Which fraction is greater? Explain why?	
Order these fractions from least to greatest. 1/4, 3/8, 1/2	2/4 or 1/3	
¹ /4, 3 /8, ¹ /2	Order these fractions from least to greatest.	
	1/4, 3/8 , 1/2	

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	htt12://www.mathsisfun.com/numbers/fraction-number-line.h
	htt12://www.k-5mathteachingresources.com/3rd-grade-number-activities.html
Equipment Needed:	Teacher Resources:

Number line Grids

	Everyday Math
Fraction bars Fraction circles Tiles	Chapter 8 - (Number line poster for fractions; Equivalent
	fractions; Fractions in number stories)
http://jamit.com.au/fraction-games.htm	Chapter 9 -(Exploring arrays, area, and fractions; Buying at the
	stock-up sale)
htt 12: //www.k-5 mathteaching resources.com/3 rd-grade-number-activities.html	Chapter 10-(Volume)
	Chapter 11 -(Spinner experiments)

htt12://www.mathglaxground.com/Fraction bars.html

htt12://www.mathsisfun.com/numbers/f^raction-number-line.html

3.0A.1

Domain: OPERATIONS AND ALGEBRAIC THINKING

Cluster: Represent and solve problems involving multiplication and division • *i*

Standards: Interpret products of whole numbers, e.g., interpret 5 D 7 as the total number of objects in 5 groups of7 objects each. For example, describe a context in which a total number of ob_jects can be expressed as 5 x 7



Essential Questions Enduring Understandings $\, \bullet \,_{How}$ are

addition • Multiplication can be and multiplication used to compare the size related? of two groups.

• How can multiplication be used to compare? Activities, Investigation, and Student Experiences





how — how many how — We can solve many in each it by adding. groups ... group

There are **five** groups, and each group has **two** elephants.

$$5 \times 2 = 10$$





groups, rams in each.

5



Illustrate 6 x9 in an array Write a multiplication fact whose product is 24. Draw a picture to show 7 x 6

Provide students with an array or pictures of groups. Ask them to write a multiplication sentence associated with it.

<u>3.0A.1</u>¹

x rams = rams

- - + + + - - -

n use counters to model multiplication

concepts

• Use arrays to model multiplication facts • Use a number line to skip-count multiplication factors • Illustrate a number story for multiplication problem • Solve problems using related multiplication facts • Given a multiplication fact show repeated addition

<u>3.0A.11</u>

12 David's collection of baseball hats is shown below.

$\begin{array}{l} Cu)) \ Cu)) \ Cu)) \ Cu)) \ (rn) \\ Cu)) \ Cu)) \ Cu)) \ Cu)) \ CU)) \ (v) \\ Cu)) \ Cu)) \ Cu)) \ Cu)) \ (u2) \ (\{j)) \end{array}$

Wt1ich expression can be used to find the number of base collection?

A 3+5 B3x5

C 3+3+3

D Sx5x5

13 Anita bakes the cookies. shown in the diagram below.





Which expression can be used to find the number of cook

A ii+ 4

Equipment Needed: Teacher Resources: •

3.0A.1

(1

Counters	www <u>.multiplication.com</u>
• Number cards	http://www.math-lesson-plans.com/Di vis i on.htm 1
• Dot array papers	http://www.eduplace.com/math/mw/models/overview /3 8 I.html'
• Flashcards	http://www.k-5mathteachingresources.com/3
• Connecting Cubes	rd-grade-number activities.html
	http://www.k-5 mathteachingresources.corn/3
	rd-grade-number activities.html
	Array Picture Cards
	Everyday Math
	<u>Chapter</u> 4 - (Multiples of equal groups; Multiplication arrays: Equal shares and equal groups: Exploring alTays
	and facts)
	<u>Chapter</u> 7 - (Patterns in products; Fact power)
	Chapter 9 - (Using mental math the multiply)

3.0A.21

Domain: OPERA TIO NS AND ALGEBRAIC THINKING

Cluster: Represent and solve problems involving multiplication and division

Standards: Interpret whole-number quotients of whole numbers, e.g., interpret 56 D 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. For example, describe a context in which a number of shares or a number of groups can be expressed as 56 + 8

Essential Questions Enduring Understandings Activities, Investigation, and Student Experiences + How can

sharing be •Division can be

used to divide interpreted as sharing _{Example:} equally? equally. Jim purchased 5 packa

• Division is related to

• How can sharing Subtraction and - equally be written multiplication. as an expression?

Content Statements

5 groups of 3. 5 x 3 = 15. Describe another situation where there would be 5 groups of 3 or 5 x 3. ---- This slandard focuses on two dist incl models of division: partition models ;md measurement (repeated

sub1rac1ion) models.

Parlilion models focus on the queslion, "How many in each group'/" A con1cx1 for

parlilion models would be: will go in each bag'! **a a a**

• Division can be thought of as sharing equally.

• Sharing equally can be used as an expression.

Assessments

bags, how many cookies

What division fact does this picture show?

••••

Draw a picture to represent 15 divided by 5.

Mcasurement (repeated subtraction) models forns on the question, 'How many groups can you make?" A context for measurement models would be: There are 12 cookies on the counter. Ifyo11 pnl 3 cookies in each bag, how

There are 12 cookies on lhe counler. If you are sharing lhe cookies equally among lhree



What division fact does this picture show?



Draw a picture to represent 15 divided by 5.

There are 12 candles. Each cake has 3 candles. How many cakes are there? Equipment Needed:

Teacher Resources:

<u>3.0A.2</u>1

www.multiplication.com

htt11://www.math-lesson-11Ians.com/Division.html

h tt11 ://www .ed u 11Iace.co m/math/mw /models/ overview /3 8 I.html'

Everyday Math Chanter **4-(Equal shares & equal 2roups; Division ties to**

• Counters

-

- Number cards Dot array papers Flashcards
- Connecting Cubes Base Ten Blocks

Domain: OPERA TIO NS AND ALGEBRAIC THINKING

Cluster: Represent and solve problems involving multiplication and division

<u>3.0A.31</u>

Standards: Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

Essential Questions

Multiplication and

• How can arrays and equal groups be used to solve multiplication and division problems?

• How can drawings assist in solving multiplication and division word problems?

Content Statements

• Arrays and equal groups can be used to solve multiplication and division problems.

• Drawings can assist in solving multiplication and division word problems. division can be used to solve word problems involving equal groups.

Experiences Possible Activities:

Multiplication Word Problems Equal Rows in a Marching Band Sharing Marbles Equally <u>www.k-5mathteachingresources.com</u> **Possible Read Alouds:(see** task cards in right hand column)

- I 00 Hungry Ants
- Six Dinner Sid
- Amanda Beans' Amazing Dream
- The Doorbell Rang
- Each Orange had Eight Slices

http://www.greece.k12.ny.us/district.cfm? subpage=30872

i, and Student

Assessments

1. Choose one of the following numbers 12, 24, or 36.

Suppose that this number of musicians in a marching band were getting ready for a parade. How many different ways could the musicians in the marching band arrange themselves into equal rows?

Record your thinking using arrays, numbers or words.

- 2. Pablo bought 2 red notebooks, 3 green notebooks, and 3 blue note books.
 - First how many notebooks did Pablo buy in all?
 - Second if each notebook cost 5 dollars, what was the total cost?

Equipment Needed: Teacher Resources:

- Counters
- Number cards Dot array papers Flashcards
- Connecting Cubes Base Ten Blocks

www.arcademi cskill builder.com

www.k-5mathteachingresources.com

http://pbskids.org/go/video/?category=Cyberchase&pid=H Y0xgGHeboU352alxUkH338hCBer4dl w



<u>3.0A.31</u>

Everyday Math

<u>Chapter 4</u> - (Multiplies of equal groups; Multiplication arrays; Equal shares and equal groups; Division ties to multiplication)

<u>Chapter 7</u> - (**Fact power;** Number models with parentheses; Estimating costs; Extended facts: products of ten) <u>Chapter 8</u> - (**Equivalent Fractions**)

<u>Chapter 9</u> - (Multiply and divide with multiples of 10,100 & 1000; Using mental math to multiply; Exploring arrays, area, & fractions; Multiplication algorithm; Buying at the stock up sale; Factors of a whole number; Sharing money; Broken calculator division; Products of two-digit numbers, Part 1 & 2) <u>Chapter 10</u> - (Exploring weight and volume; Calculator memory)

<u>3.0A.41</u>

Domain: OPERATIONS AND ALGEBRAIC THINKING

Cluster: Represent and solve problems involving multiplication and division

Standards: Determine the unknown whole number in a multiplication or division equation relating three whole numbers.

For example, determine the unknown n $6 \times 6 = 36$

Essential Questions

• How can knowledge of multiplication facts be used to determine the unknown number?

• How can multiplication and division facts be used to determine an unknown number that makes <u>an equation true?</u>

Content Statements • Multiplication

facts can be used to determine an unknown number.

Multiplication and division facts can be used to determine the unknown
Enduring Understandings
Known multiplication facts can be used

to determine the unknown fact in a multiplication or division problem.

Activities, Investigation, and Student

Experiences Missing Numbers

(Multiplication) What is the Missing Number? (Division)

com/3rd-grade num	ber-activities.html

eachingresources.

<u>3.0A.4</u>1

number to make the equation true.		
Assessments		
5 = ? 25		



14 Ms. Bamrlck wrote the number sentence below on the board. 4x

__=0

What number belongs on the line to make the number sentence correct? A $\ensuremath{\text{0}}$

B 1

C 2

D 4

1 5 R,,j wrote the number sentences below.

15 x D = 15

What number belongs in the boxes to make both m1rnber sentences

correct? A 0

B 1

C 8

D 15

18 Janice writes the number sentence below.

25 X _ = 25

What number belongs on the line to make the number sentence

correct? A 0

B 1

C 25

D 50

Tanimant Maadad.

Taaahan Dagaunaaga

• Counters	www.multiplication.com
• Number cards	http://www.math-lesson-plans.com/Division.html
• Dot array papers	
• Flashcards	http://www.eduplace.com/math/mw/models/overview/
Connecting Cubes	<u>3 8 I.html'</u>
• Base Ten Blocks	Everyday Math <u>Chapter 4</u> - (Multiples of equal groups; Multiplication arrays; Equal shares and equal groups; Division ties to multiplication; Multiplication and division fact families) <u>Chapter 7</u> - (Patterns in products; Multiplication facts survey, Fact power; Number models with parentheses) Chaoter 9 - (Products of two-digit numbers, Part 2)



3.0A.51

Domain: OPERATIONS AND ALGEBRAIC THINKING

Cluster: Understand properties of multiplication and the relationship between multiplication and division

Standards: Apply properties of operations as strategies to multiply and divide. Examples: If $6 \times 2 = 24$ is known, then 4×6 = 24 is also known. (Commutative property of multiplication.) $3 \times 5 \times 2$ can be found by $3 \times 5 = 15$, then $15 \times 2 = 30$, or by 5 x 2 = 10, then 3 x 10 = 30. (Associative property of multiplication.) Knowing that $8 \times 5 = 40$ and $8 \times 2 = 16$, one can find 8×7 as $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$. (Distributive 1>roperty.)

Essential Questions	Enduring Understandings Activities, Investigation, and Student Experiences	
• How can we use the properties of operations to multiple and divide?	• Properties of operations (commutative, associative and distributive) can be	Each child receives to number cards and multiplies the number. After they multiply the numbers they switch the numbers in order to show that it doesn't matter which number comes first they are going to have the same product. (Commutative
	used as strategies to multiply and divide.	IT * ^{x E} orG[;TI

Content Statements Properties of

operations can be used to multiply and divide. Students can build arrays







<u>3.0A.51</u>

8x =7x8 2 x 6 x = 36 Write the multiplication sentence for the array: 000000 000000 000000	Each student gets an index card with a multiplication sentence on it. They break apart the multiplication sentence into factors they know. When they get their products they then add to solve the multiplication sentence. (Distributive Property of Multiplication) 7x6 5x6=30
000000	$7 \times 3=21$ $7 \times 3=21$ $7 \times 3=21$ $12 + 21$ $30=42 + 21=42$
Equipment Needed:	Students can build an array and break the array apart to figure out the product.

		www.multiplication.com
• Counters		www.softschools.com
• Number conde • Dot error nonero • Elesh	cards	www.arcademicskillbuilder.com
3.	.0A.51	http://www.aaamath.com/pro 7 4 b-propertiesmul
		t.html_http://www.math-play.com
		Everyday Math <u>Chapter 4</u> - (Multiples of equal groups; Multiplication arrays; Multiplication fact power and shortcuts; Multiplication and division fact families; Baseball multiplication) <u>whapter 7</u> - (Multiplication facts survey; Fact power) <u>Chapter 8</u> - (Equivalent fractions) <u>Chapter 9</u> - (Using mental math the multiply; Multiplication algorithm; Factors of a whole number; Products of two-digit numbers, Parts 1 & 2)

Cluster: Understand properties of multiplication and the relationship between
multiplication and division

Standards: Understand division as a unknown-factor problem. For example, find 32 + 8 by finding the number that makes 32 when multiplied by 8.

Essential Questions Enduring Understandings Activities, Investigation, and Student Experiences • How can we use •

Multiplication and Each child gets an index card with three numbers. They use the fact families to division have an inverse three numbers to write a multiplication story. Then they write a show the relationship. division story. After they have their stories they draw a picture

relationship or diagram to represent stories and answer. 14, 32, 8

multiplication and Michael had 4 goodie bags for his friends. Each goodie bag had division? 8 pieces of candy in them. How many pieces of candy were altogether?

Michael had 32 pieces of candy and 4 friends. He wanted to

Content Statements divide the candle equally. How many pieces of candy would • A fact family shows each of Michael's friends get?

 $(f_{j}) (!J_{j})$

Ŷ

how multiplication

between

and division are related.

Each child gets a fact family triangle and then they write the 4 number sentences tha ith the three numbers in the fact family.

Write the fact family for the three digits: 7, 42, 6 15, 3, 5

How are multiplication and division related?

Assessments

, -

Steve had 4 pizzas. Each pizza had 7 pieces of pepperoni on

top. How many pieces of pepperoni were altogether? Each child gets a cut out of a house. They write the three numbers in the fact family in the attic and the number sentences

	<u>3.0A.61</u>
Given these three numbers write a division story and then draw a picture of diagram to represent your story.	in the house. They can get blank houses with just the numbers in the attic and they can write the 4 number sentences that correlate or vice versa.
	/ 6, 4, 24 ""
	$6 \times 4 = 24 4 \times 6 = 42 24 + 6 = 4 24 + 4 = 6$
Equipment Needed:	Teacher Resources:

• Counters	www.nationallibraryofvirtualmanipulatives
• Number cards	www.ezschool.com
• Dot array papers	
• Flashcards	www .mathwire.com
Connecting Cubes	www.superteacherworksheets.com
Base Ten Blocks	
	Everyday Math
	<u>Chapter 4</u> - (Equal shares and equal groups; Division ties
	to multiplication; Multiplication and division fact
	families) Chapter 7 - (Fact power; Extended facts:
	multiplication and division)
	<u>Chapter 9 - (Multiply and divide with multiples of 10,</u>
	100, and 1000)

<u>3.0A.71</u>

Domain: OPERATIONS AND ALGEBRAIC THINKING		
Cluster: Multiply and divide within 100		
Standards: Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 x 5 = 40, one knows 40 D 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.		
Essential Questions	Enduring Understandings	Activities, Investigation, and Student Experiences

 How can multiplication and division strategies be used to solve problems? How can memorization of multiplication facts be used to solve multiplication and division problems? Content Statements Students will apply properties of operations to multiply and divide fluently and 	 Multiplication and division strategies can be used to solve multiplication and division problems effectively. Memorization of multiplication facts can be used to facilitate solving multiplication and division problems. 	 Play the game "Who Has." Each player gets a card with the saying "I have , Who has ? Example: I have 1,000, Who has 2 x 1,000 I Have Who Has? (Follow the link for the game pieces). Working in small groups each group gets a spinner and divides the number it lands on by 10. Whoever fills up 20 pieces on the board wins. Division Spin (divide by I 0) (Follow the link for the game pieces). httg://www.k-5mathteachingresources.com/3rd-grade-number activities.html (Games that can be played to enhance fluency for multiplying and dividing within a 100). Each student gets a set of dice and rolls the two dice. Whatever two digits that come up they multiply the digits together. Then they write the related division sentence. Teach multiplication strategies for certain numbers: Any number multiplied by 2 is double that number. Any number multiplied by 4 is doubling it twice. Any number multiplied by 8 is doubling it 3 times. Any number multiplied by 0 is always 0
accurately. Assessments		

Mr. Roberts has 3 planters. He plants 10 daisies in each planter. How many daisies did he plant in all? There are 7 students in the class and 14 erasers. If the erasers are divided equally among the students, how many does each student get? Solve the problem and then write the related multiplication or division sentence: 8x6 42 -;-7 3x6 45 -;-9	Any number multiplied by 1 is the same digit. Any number multiplied by 10 is the product of the number times 1 and place a zero at the end.
Equipment Needed:	Teacher Resources:
 Counters Number cards Dot array papers Flashcards Connecting Cubes Base Ten Blocks 	http://www.k-5mathteachingresources.com/3rd-grade n um her-activities.htmlwww.mulltiplication.comwww.arcademicskillbuilder.comEveryday MathChapter 4 - (Multiples of equal groups; Multiplication arrays; Equal shares and equal groups; Division ties to multiplication; Multiplication fact power and shortcuts; Multiplication and division fact families; Baseball multiplication; Exploring arrays and facts) Chapter 5 - (Application- the US Census; Exploring estimates and polygons; Tenth and hundredths; Sunrise/sunset line graphs) Chapter 7 - (Patterns in products; Multiplication facts survey, Fact power; Number models with parentheses;

<u>3.0A.71</u>

Scoring in Basketball- Application; Extended
facts: multiplication and division)
Chapter 9 - (Buying at the stock-up sale; Factors of a whole
numbers; Sharing money; Lattice multiplication; Products
of two-digit numbers, Part_2)
<u>Chapter 10</u> - (Exploring weight and volume; The mean
and median)
Chapter 11 - (Length of day project revisited)