Wilson County Schools

4th Grade Community Resource Framework

Mathematics

2017-2018

Parental Involvement

Parent Roadmap for 4th Grade
Common Core Math Grade Level View

Questions to Ask When Helping Your Child with Math Homework

Keep in mind that homework in elementary schools is designed as practice. If your child is having problems, please let the classroom teacher know. When helping your child with his/her math homework,you don't have to know all the answers! Instead, we encourage you to ask probing questions so your child can work through the challenges independently.

What is the problem you're working on?
What do the directions say?
What do you already know that can help you solve the problem?
What have you done so far and where are you stuck?
Where can we find help in your notes?
Are there manipulatives, pictures, or models that would help?
Can you explain what you did in class today?
Did your teacher show examples that you could use?
Can you go onto another problem & come back to this one later?
Can you mark this problem so you can ask the teacher for an explanation tomorrow?

Numbers in Base Tens (NBT)
22%-27% of EOG

Vocabulary

Addend: a number that is added to another in an addition problem (Example: in 2 + 3 = 5, 2 and 3 are addends)

Algorithm: a step-by-step process for solving a problem

Approximate: to find a result that is close to the exact answer

Area model: a replica or figure used to represent area

Array: an arrangement of objects in equal

Standards Included

4.NBT.1- Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. *For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division*.

4.NBT.2- Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.

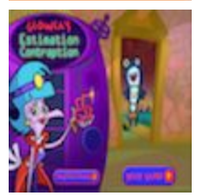
4.NBT.3- Use place value understanding to round

Parent Activities

- Create a number (up to 6 digits), discuss the value of each digit in the number created.
- Look for 4-, 5-, and 6- digit numbers in the real world. Ask your child to round the numbers to the nearest 10,100, 1,000, 10,000, or 100,000. Ask your child to explain how he/she determines the rounded numbers.
- Locate numbers in catalogs or newspapers, then practice rounding them to the nearest tens and hundreds
- Say a number and ask your child to create a number greater than or less than the number you said.

Online Activities

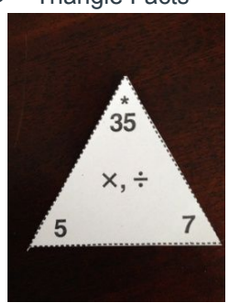
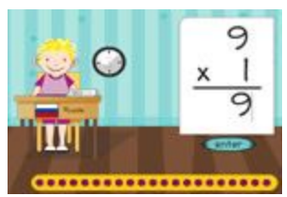
- Math Goodies
- Fluency Games
- Understand Place Value: Multiplying by a Power of 10
- Understanding Place Value: Dividing by a Power of 10
- Write Numbers in Expanded Form
- Locate Benchmark Numbers on a Number Line

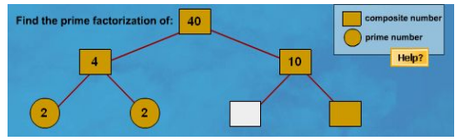
rows and columns **Base Ten: a way to express numbers using a place value based on 10, where each place has a value 10 times the place to its right** **Compare: to determine whether two or more numbers or quantities are greater than, less than, or equal to one another** **Compose: to join numbers to create tens, hundreds, or thousands; to join or put together parts to create a whole** **Decompose: to break apart of break down into smaller parts** **Difference: the answer to a subtraction problem (in 8 – 3 = 5, 5 is the difference)** **Digit- one of the symbols 0,1,2,3,4,5,6,7,8, and 9 used to write numbers** **Distributive Property- multiplying a number by a sum is the same as multiplying the number by each addend of the sum and then adding the products, such as 2 x (3+4)= (2 x 3) + (2 x 4)** **Dividend- the number to be divided in a division problem** **Divisible- when a number can be divided by another number with no remainder, such as 12 is divisible by 3** **Divisor- the number by which another number is divided** **Equation: a number sentence that uses the equal sign to show that two amount have**	multi-digit whole numbers to any place. **4.NBT.4**- Fluently add and subtract multi-digit whole numbers using the standard algorithm. **4.NBT.5**- Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. **4.NBT.6**- Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	• Practice skip counting by 100 both forward and backward. • Have your child add and subtract numbers up to 4 digits with regrouping. Have your child explain why regrouping is needed and the process of how to regroup. • Have your child divide items into equal groups.	• Rounding rules • 4th grade Math games • Hundreds Rounding Chart • Parent Toolkit - How You Can Help • Parent Toolkit - Math Resources • Kahn Academy • Place Value Strips • Place Value Blocks • Rapid Rounding Game •  •  • Engage NY •  • 

equivalent value **Estimate: an answer tht is close to the exact answer** **Expanded form- a way to write numbers that show the value of each digit** **Factor: a number that is multiples by another number to find a product** **Greater than- the symbol used to compare two numbers when the greater number is on the left such as 21 >13, 21 is greater than 13** **Inverse Operations: operations that undo each other (opposite operations) for example multiplication and division or addition and subtraction** **Less than- the symbol used to compare two numbers when the lesser number is on the left, such as 14 <29, 14 is less than 29** **Multiple: the product of a given number and any whole number** **Number sentence- a mathematical sentence that uses numbers and symbols** **Numeral- a symbol that represents a number** **Operation: an arithmetic procedure used to solve a mathematical problem, such as addition, subtraction, multiplication, or division** **Place value: the location of a digit in a number** **Product: the answer to a multiplication**			

problem **Quotient- the answer to a division problem** **Regroup: to rename a number** **Reasonable- logical or sensible** **Remainder- the number left over after dividing into equal groups** **Round: to estimate a numbe rot the nearest ten, hundred, thousand, etc.** **Standard form- a number written with one digit for each place value** **Sum: the answer to an addition problem (Example: in 2 + 3 = 5, 5 is the sum)** **Value: the value of a digit based on its place value** **Whole number- the set of counting numbers and zero: 0, 1, 2, 3, 4, 5, 6, 7…...**			

Operations and Algebraic Thinking (OA) **12%-17% of EOG**			
Vocabulary **Additive Comparison: a comparison of two quantities stating that one quantity is a given amount more (or less) than the other quantity (for example: 15 is 5 more than 10, or 7 is 6 less than 13)**	**Standards Included** **4.OA.1** -Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication	**Parent Activities** • Discuss the cost of a week's worth of groceries for your home. Have your child create an equation for how much it would cost for 4 weeks. • Select multiplication or division facts to	**Online Activities**

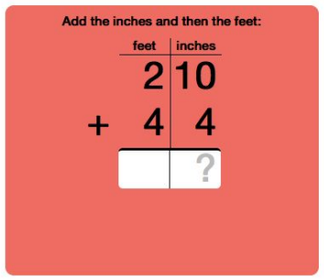
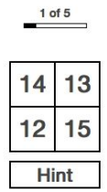
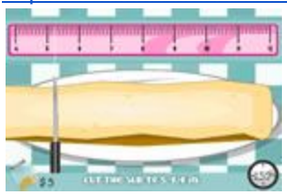
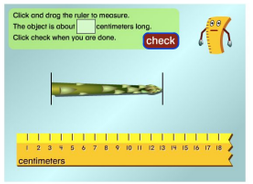
Composite number: a whole number that has more than two whole-number factors **Division: to make equal groups** **Equation: a mathematical statement containing an equal sign, to show that two expressions are equal** **Extend: to increase in length** **Factor: a number that is multiplied by another number to get a product** **Multiplication: an operation on two numbers to find their product (It can be thought of as repeated addition.)** **Multiplicative Comparison: a comparison of two quantities stating that one quantity is a multiple of the other quantity (for example: 35 i s7 times as many as 5)** **Pattern: a regularly repeated arrangement of numbers, letters, shapes, or some representation that are related by a rule** **Prime number: a whole number greater than 1 with exactly only two factors 1 and itself** **Product: the result of multiplication** **Quotient: the number, not including the remainder, that results from dividing** **Rule: relationship shared by all terms in a pattern** **Term: one of the numbers in a sequence or pattern**	equations. **4.OA.2** - Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison. **4.OA.3**- Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. **4.OA.4**- Find all factor pairs for a whole number in the range 1-100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1-100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1-100 is prime or composite. **4.OA.5**- Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. *For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way*.	illustrate or write a word problem. • Hunt for multiple sets of objects in the home. Use repeated addition and multiplication to find the totals. • Roll 2 number cubes to determine the factors. Make an array to find the product. • Act out division problems with counters. For example, Brad has 12 rabbits. He puts the same number of rabbits into each of 4 cages. How many rabbits does Brad put in each cage? • Roll 2 number cubes and write the fact families. For example, for rolls of 4 and 6, write: 4 X 6 = 24, 6 X 4 = 24, 24 ÷ 6 = 4, 24 ÷ 4 = 6. • Ask your student to find the missing factor. For example, 5 X what number = 35? • Looking at a recipe, have your child write an equation to increase or decrease the amount of food the recipe makes. • Have your child estimate the time for a trip and compare the actual time to the estimate. • Triangle Facts  • Math War	  Best Friend Math Word Problem Game   

			 The product game Concentration Rounding Master Not a Factor Game Video

Measurement and Data (MD)

12%-17% of EOG

Vocabulary	Standards Included	Parent Activities	Online Activities
analog clock: a clock with a minute hand and an hour hand **area: the number of square units needed to cover a surface without gaps or overlaps** **attribute: a characteristic or property of a shape or thing** **capacity: a measure of the amount of liquid a container will hold**	**4.MD.1** Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. **4.MD.2** Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing	• Work with your child to associate times with events (go to school at 7:30 am, bedtime 8:30 pm, lunch at 11:30 am) • Ask your child questions about time. For example, “It is 3:45. It takes 35 minutes to get home. What time will it be when we get home?” • Read labels on milk, juice, and water containers. Discuss how many liters and/or milliliters the containers hold. • Gather several different canned items and have your child calculate the total mass of all	

centimeter (cm): a metric unit used to measure length (the width of the smallest part of your fingernail) **compose: to join numbers to create tens, hundreds, thousands, etc.; to join or put together parts to create a whole** **cup: a customary unit for measuring capacity** **customary: the measurement system used most often in the United States** **decompose: to break into smaller parts** **digital clock: clock that shows time in number** **gram (g): a metric unit used to measure mass (example: a paper clip)** **gallon (g): a customary unit tused to measure capacity** **key: part of a map, picture, or diagram that shows what the symbols mean** **kilogram (kg): metric unit used to measure mass (1,000 grams= 1 kilogram)** **kilometers (km)- a metric unit used to measure length (a little more than ½ a mile)** **liquid volume: amout of liquid in a container** **line plot: graph that shows data on a number line with Xs** **liter (L): metric unit used to measure capacity** **mass: measure of the amount of matter in an**	measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. **4.MD.3** Apply the area and perimeter formulas for rectangles in real world and mathematical problems. *For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.* **4.MD.4** Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.* **4.MD.5** Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement **4.MD.6** Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure. **4.MD.7** Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.	the cans in grams. • The grocery store is a great place to estimate measurements. This can be done with fruits (grams/kilograms) or vegetables. Use the scales to see the actual masses. • Make family graphs of information (shoe sizes, heights, arm spans). You are your child write questions that can be answered by the graphs. • Have your child use a ruler to measure the heights of different items in your home. Record the heights to the nearest quarter inch. Then ask questions such as, “how many items are between 2 and 5 inches tall?” • Help your child find the area of the tops of different items in your home (coffee table, kitchen table, end table) by covering them with square sticky notes. • Help your child measure the length and width of his/her bedroom to the nearest foot. Calculate the area, in square feet, by multiplying the dimension. • Talk to your child about situations that might require finding perimeter, such as building a fence or framing a picture.	**Funny Numbers**   Metric Mapping  http://mrnussbaum.com/sal/  Understanding the rotation of a circle Understanding area  Grid Paper

object **meter: a metric unit used to measure length (think of the height of a door from the door knob to the floor)** **metric: a measurement system used throughout the world based on multiples of 10** **mile (mi): a customary unit used to measure length or distance** **milliliter (mL): metric unit used to measure capacity** **ounce (oz): a customary unit used to measure weight (16oz = 1 lb)** **perimeter: distance around a closed figure** **pint (pt): a customary unit used to measure capacity (2 cups= 1 pint)** **polygon: closed figure made of line segments** **pound (lb): a customary unit used to measure weight** **quart (qt): a customary unit used to measure capacity (2 pints = 1 quart, 4 cups= 1 quart)** **scale: tool used to measure weight or mass; a number line that marks at fixed intervals used in graphing** **standard units: units of measure that are accepted as a standard** **time interval: amount of time that passes between two events (seconds, minutes, hours, days, weeks, etc.)**			 Using Compatible numbers Compose and decompose angles

yard (yd): a customary unit for measuring length or distance (3ft=1yd)			

Number and Operations- Fractions (NF)

27%-32% of EOG

Vocabulary

common denominator: a denominator that is the same in two or more fractions

compose: joining numbers to create a new new number

decompose: to break apart a number into smaller parts

denominator: the bottom number in a fraction; the total number of equal parts

equivalent fraction: two or more fractions that are equal

fraction: number that names a part of a whole or part of a group

fraction bar: horizontal line that separates the numerator from the denominator in a fraction hundredth: one of 100 equal parts (the second place to the right of a decimal)

inequality: a number sentence showing that two quantities are not equal using < or >

Standards Included

4.NF.A.1 Explain why a fraction *a*/*b* is equivalent to a fraction (*n* × *a*)/(*n* × *b*) by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.

4.NF.A.2 Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

4.NF.B.3 Understand a fraction *a*/*b* with *a* > 1 as a sum of fractions 1/*b*.

4.NF.B.4 Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.

4.NF.C.5 Express a fraction with denominator 10

Parent Activities

- Use foods that are already divided or scored (chocolate bars, graham crackers, pizzas, pies) and discuss with your child how 4/8 can also be considered ½ a bar.
- Represent fractions using pizza and a pizza cutter. Cutting into halves, fourths, eighths.
- Ask your child questions such as would you rather have 2/4 or ⅔ of a candy bar?
- Give your child a ⅓ measuring cup. Allow them to fill it with water and pour it into a 1 cup measuring cup. Talk about how many ⅓ would fit into 1 cup. Continue with ¼.
- Have your child sort candy and describe it in fractional parts. For example, I have 23 pieces of candy and 5 of pieces are starbursts, so 5/23 of the candy is starbursts.
- Discuss fractions as part of what you do in day to day life.
- Give your child $1 in dimes and a $1 in pennies. Discuss how this is represented in decimals and how 3 dimes and 30 pennies are equivalent in value.
- Allow your child to help count change and represent it as a decimal.
- Let your child explore equivalent fractions with

Online Activities

Fraction Video

Equivalent Fractions Triplets

Equivalent Fraction Bingo

Introduction to Fractions

Comparing Fractions

Converting Fractions to Mixed Numbers

Read and Write Decimals

Enrichment Activities

Fraction Flash Cards

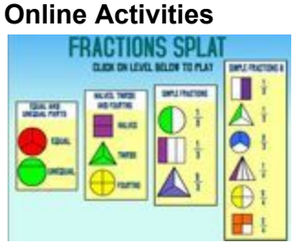
Fraction Workshop

Sand Dollar Exchange

Measurement Workshop

mixed number: a number made up of a whole number and a fraction **numerator: the top number in a fraction; how many equal parts are being considered** **partition: to divide or seperate a whole into parts** **tenth: one of 10 equal parts (the first place to the right of the decimal point)** **unit fraction: a fraction with a numerator of 1, such as ⅓, ⅛, ½**	as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.2*For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.* **4.NF.C.6** Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.* **4.NF.C.7** Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model.	dry measuring cups. Allow them to help you when using a recipe to cook.	Identify Fractions Bowling for Fractions Concentration  

Geometry (G)
12%-17% of EOG

Vocabulary	Standards Included	Parent Activities	Online Activities
acute angle: an angle less than 90 degrees **acute triangle: a triangle with 3 acute angles** **attribute: characteristic or property of a shape or thing**	**4.G.A.1** Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. **4.G.A.2** Classify two-dimensional figures based on the presence or absence of parallel or	• Look at the alphabet to determine which letters have a line of symmetry. • Cut items from a magazine and trace over acute angles, obtuse angles, right angles, parallel lines, and perpendicular lines. • Have your child combine shapes to create things.	

hexagon: polygon with six sided and six angles **intersecting lines: two lines that cross at exactly one point** **line of symmetry: a line that divides an object creating a mirrored visual on both sides** **line segment: a part of a line with two endpoints** **obtuse angle: an angle that is more than 90 degrees but less than 180 degrees** **obtuse triangle: a triangle with one obtuse angle** **octagon: polygon with eight sides and eight angles** **parallel lines: two lines that never intersect** **parallelogram: quadrilateral with opposite sides that are parallel and congruent** **pentagon: polygon with five sides and five angles** **perpendicular lines: two lines that intersect creating a right angle** **polygon: closed figure made of line segments** **quadrilateral: polygon with four sides and four angles** **ray: a part of a line that has one endpoint and extends forever in the other direction** **rhombus: parallelogram whose four sides are**	perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles. **4.G.A.3** Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.	• Look for shapes in your community. It is amazing how geometry is all around us! Take pictures and create a shape book.	Shape identification Angles game Interactive 3D shapes Study Jam- Types of Lines   Partition a Shape into equal shares Write unit fraction as a number Describe a fraction as equal shares of a whole Virtual Geoboard

congruent and whose opposite angles are congruent **right angle: an angle that measures 90 degrees** **right triangle: a triangle with one right angle** **symmetry: having a mirror image across a dividing line** **trapezoid: quadrilateral with one pair of parallel sides** **triangle: polygon with 3 sides** **vertex/vertices: point where two rays meet, where two sides of a polygon meet, or where the edges of a polyhedron meet; the top point of a cone or pyramid**			

EOG Practice

Released Form
Free practice online and downloadable
Houghton Mifflin
Vocabulary Practice

K-5 WEBSITE RESOURCES

Math at Home
www.mathplayground.com
XL Math Practice
Online Math Games
Math Activities online
Online Manipulatives
Math Activities
Math Challenges for the Family
Math Zone
Common Core for Parents with students with disabilities

TABLE 2. Common multiplication and division situations.[7]

	Unknown Product	Group Size Unknown ("How many in each group?" Division)	Number of Groups Unknown ("How many groups?" Division)
	$3 \times 6 = ?$	$3 \times ? = 18$, and $18 \div 3 = ?$	$? \times 6 = 18$, and $18 \div 6 = ?$
Equal Groups	There are 3 bags with 6 plums in each bag. How many plums are there in all? *Measurement example.* You need 3 lengths of string, each 6 inches long. How much string will you need altogether?	If 18 plums are shared equally into 3 bags, then how many plums will be in each bag? *Measurement example.* You have 18 inches of string, which you will cut into 3 equal pieces. How long will each piece of string be?	If 18 plums are to be packed 6 to a bag, then how many bags are needed? *Measurement example.* You have 18 inches of string, which you will cut into pieces that are 6 inches long. How many pieces of string will you have?
Arrays,[4] Area[5]	There are 3 rows of apples with 6 apples in each row. How many apples are there? *Area example.* What is the area of a 3 cm by 6 cm rectangle?	If 18 apples are arranged into 3 equal rows, how many apples will be in each row? *Area example.* A rectangle has area 18 square centimeters. If one side is 3 cm long, how long is a side next to it?	If 18 apples are arranged into equal rows of 6 apples, how many rows will there be? *Area example.* A rectangle has area 18 square centimeters. If one side is 6 cm long, how long is a side next to it?
Compare	A blue hat costs $6. A red hat costs 3 times as much as the blue hat. How much does the red hat cost? *Measurement example.* A rubber band is 6 cm long. How long will the rubber band be when it is stretched to be 3 times as long?	A red hat costs $18 and that is 3 times as much as a blue hat costs. How much does a blue hat cost? *Measurement example.* A rubber band is stretched to be 18 cm long and that is 3 times as long as it was at first. How long was the rubber band at first?	A red hat costs $18 and a blue hat costs $6. How many times as much does the red hat cost as the blue hat? *Measurement example.* A rubber band was 6 cm long at first. Now it is stretched to be 18 cm long. How many times as long is the rubber band now as it was at first?
General	$a \times b = ?$	$a \times ? = p$, and $p \div a = ?$	$? \times b = p$, and $p \div b = ?$

[4]The language in the array examples shows the easiest form of array problems. A harder form is to use the terms rows and columns: The apples in the grocery window are in 3 rows and 6 columns. How many apples are in there? Both forms are valuable.
[5]Area involves arrays of squares that have been pushed together so that there are no gaps or overlaps, so array problems include these especially important measurement situations.

Math Videos