

Math Festival Stations Correlation

to the COMMON CORE Standards in Mathematics

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Math Festival: Number

K, 1, 2, 3, 4, 5, 6

Balance Scales

Grade Span

Materials used with this activity:

- Balance Scales (wooden cubes for unit weights)
- Task Cards in Sheet Protectors
- Thin White Board Markers
- Cloths or White Board Erasers
- 12 Clear plastic boxes, filled with different "stuff," weighing different amounts of cubes

Comments:

This activity is meant to "define" the concept of estimation in the minds of young students, where each box weighs a different amount, but based upon the experience weighing one box, the student will have a frame of reference for guessing the next box, even though it contains different "stuff."

Standard(s) for Mathematical Practice

- Reason abstractly and quantitatively.
- Use appropriate tools strategically.
- Attend to precision.

Related K, 1, 2, 3, 4, 5, 6, 7, or 8th grade Standards:

CC: Counting & Cardinality OA: Operations & Algebraic Thinking NBT: Number & Operations in Base Ten
 MD: Measurement & Data G: Geometry NF: Number & Operations—Fractions NS: The Number System
 EE: Expressions & Equations SP: Statistics & Probability RP: Ratio & Proportion Relationships F: Functions

K.CC.4 Understand the relationship between numbers and quantities; connect counting to cardinality.

K.CC.5 Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects. Compare numbers.

K.MD.2 Directly compare two objects with a measurable attribute in common, to see which object has "more of?"/"less of" the attribute, and describe the difference.

1-G 1.1 compare the length, weight and volume of two or more objects using direct comparison or a non-standard unit


2-N 6.1 recognize when an estimate is reasonable in measurements

2-G 1. Students understand that measurement is accomplished by identifying a unit of measure, iterating (repeating) that unit and comparing it to the item to be measured.

2-R 3. Students note connections between one problem and another.

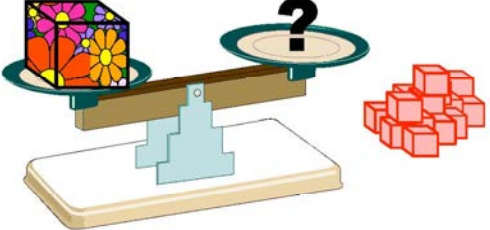
3.MD.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.

3-R 3.1 evaluate the reasonableness of the solution in the context of the original situation

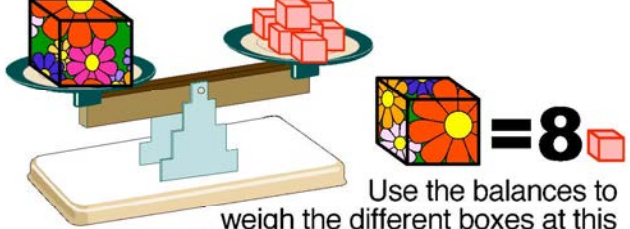


Balance Scales

A BALANCE SCALE can tell us how much things weigh. For example:
 How many small cubes does the BIG cube weigh?



Put one small cube at a time onto the other side until the scale balances. Now count. That's how many small cubes the big cube weighs.



Use the balances to weigh the different boxes at this table. Always **ESTIMATE** first **BEFORE** you weigh!

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Math Festival Stations Correlation

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Math Festival: Number 1, 2, 3, 4, 5, 6, 7, 8

Broken Calculator

Grade Span

Materials used with this activity:

- Task Cards in Sheet Protectors
- Calculators (broken*)
- Thick White Board Markers
- Cloths or White Board Erasers

Comments:

The Math Festival calculators for this station ONLY have 1, 0, +, =, and C keys that work! The calculators in this station were intentionally broken by gluing all the "unusable" keys down. In a classroom this can be accomplished by asking students to make believe that only the 1, 0, +, =, and C keys work.

Standard(s) for Mathematical Practice

- 1) Make sense of problems and persevere in solving them.
- 7) Look for and make use of structure.

Related K, 1, 2, 3, 4, 5, 6, 7, or 8th grade Standards:

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1.OA.7 Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false.

1.NBT.4 Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to 2.NBT.1 Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases: 100 can be thought of as a bundle of ten tens; called a 'hundred,' and the numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).

2.NBT.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.



2.NBT.4 Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.

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

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.

5.NBT.1 Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.

5.NBT.2 Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.

Broken Calculator

The calculators at this table are BROKEN!

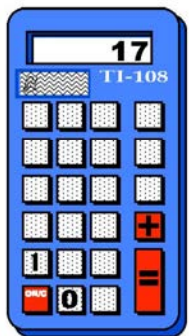
Only the **1**, **0**, **+**, **=** keys still work, but you can still get **ANY NUMBER** to show!

To get the **NUMBER 17** in the display you would press these keys in order: **1**, **0**, **+**, **1**

=, **=**, **=**, **=**, **=**, **=**, **=**

You try it.

(REMEMBER to press the **=** key to clear the calculator first!)



HINT: The **=** key remembers the last number and the **+** key you press. Every time you press the **=** it will add it again automatically!

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Math Festival: Number 1, 2, 3, 4, 5, 6, 7, 8

Calendar Calculations **Grade Span**

Materials used with this activity:

- Task Cards in Sheet Protectors
- Thick White Board Markers
- Cloths or White Board Erasers

Comments:

These are basically real-world problems involving calendar much like students in 1st through 8th grade would need to confront in their own lives at one time or another.

Standard(s) for Mathematical Practice

- 7) Look for and make use of structure.
- 4) Model with mathematics.
- 7) Look for and make use of structure.

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K.CC.2 Count forward beginning from a given number within the known sequence (instead of having to begin at 1).

1.MD.4 Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

1.OA.2 Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

2.MD.6 Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.

2.NBT.2 Count within 1000; skip-count by 2s, 5s, 10s, and 100s. CA

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 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.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.

7.NS.3 Solve real-world and mathematical problems involving the four operations with rational numbers.



Calendar Calculations

Calendars tell us important dates! Often you need math **AND** a calendar to figure out a date. For example:

*If the cafeteria serves pizza every-other Friday, and they served pizza on **May 20**, what date will they serve pizza **NEXT**?*

MAY 2005						
SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	1	2	3	4

Try the Calendar Calculations at this table.

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NUMBER FESTIVAL

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Math Festival: Number 1, 2, 3, 4, 5, 6, 7, 8

Chip Number Puzzles Grade Span

Materials used with this activity:

- Task Cards in Sheet Protectors
- Chip number pieces (six baskets)

Comments:

While the first few puzzles are easy enough for 1st graders, the hardest tasks at this table are deceptively difficult and a real challenge to the brightest middle school students and adults!

Standard(s) for Mathematical Practice

- 1) Make sense of problems and persevere in solving them.
- 2) Reason abstractly and quantitatively.
- 7) Look for and make use of structure.

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1.OA.1 Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

1.OA.2 Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

2.NBT.7.1 Use estimation strategies to make reasonable estimates in problem solving. CA

2.OA.2 Fluently add and subtract within 20 using mental strategies. By the end of Grade 2, know from memory all sums of two one-digit numbers. Work with equal groups of objects to gain foundations for multiplication.

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

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.

6.EE.3 Apply the properties of operations to generate equivalent expressions.

8.EE.8 Analyze and solve simultaneous linear equations. Solve systems of two linear equations in two or more variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. Solve real-world and mathematical problems leading to linear equations in two or more variables.



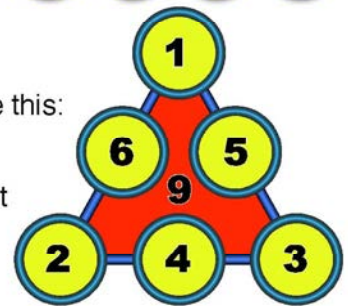
Chip Number Puzzles

In each **CHIP NUMBER PUZZLE** you must place the numbers at the bottom of each puzzle so that each **STRAIGHT LINE** of numbers adds up to a **THE SAME SUM**.

For example: Place the CHIPS shown below in this puzzle's six circles so that each STRAIGHT line of numbers adds up to **9**.



Like this:



Try the different Chip Number Puzzles at this table.

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NUMBER FESTIVAL

Math Festival Stations Correlation

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Math Festival: Number K, 1, 2, 3, 4, 5, 6, 7, 8

Count How Many

Grade Span

Materials used with this activity:

- Task Cards in Sheet Protectors
- Thick White Board Markers
- Cloths or White Board Erasers

Comments:

A true integration of number and geometry skills. This station requires careful visualization and systematic counting strategies.

Standard(s) for Mathematical Practice

- 1) Make sense of problems and persevere in solving them.
- 6) Attend to precision.
- 7) Look for and make use of structure.

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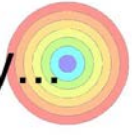

K.CC.5 Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects. Compare numbers.

2.G.2 Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.

2.G.1 Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces (sizes are compared directly or visually, not compared by measuring). Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

5.G.3 Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.

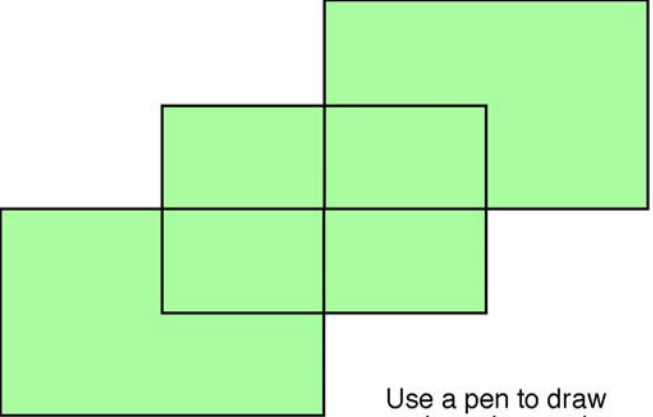
5.G.4 Classify two-dimensional figures in a hierarchy based on properties.



Count How Many...

Many shapes can be hidden inside one design. Find and count all of a certain shape inside each design.

For example: How many **RECTANGLES** can you count in this design?



Use a pen to draw and number each shape as you find it.

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Math Festival: Number K, 1, 2, 3, 4, 5, 6, 7, 8

Counting Game

Grade Span

Materials used with this activity:

- Task Cards in Sheet Protectors
- Thick White Board Markers
- Cloths or White Board Erasers

Comments:

This is a simple number game with few rules but requiring a sophisticated strategy to win. It is based on the classic game of NIM. It has many variations and its winning strategy is essentially algebraic in nature.

Standard(s) for Mathematical Practice

- 1) Make sense of problems and persevere in solving them.
- 2) Reason abstractly and quantitatively.
- 7) Look for and make use of structure.

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3.OA.9 Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations.

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.

8.F.3 Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.

The Counting Game



The **COUNTING GAME** is simple and **FUN!** You and your partner take turns crossing out numbers, in order, starting with **1**. When it's your turn, you must cross out **one, two, or three MORE numbers**. Whoever crosses out the **LAST NUMBER** is the winner. For example:

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20

This is the **WINNING NUMBER!**

ORANGE wins this game because he or she was the player **TO CROSS OUT THE NUMBER 20!**

Some of the Counting Games **END WITH A DIFFERENT WINNING NUMBER**. Be Careful!

Math Festival Stations Correlation

to the COMMON CORE Standards in Mathematics

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Math Festival: Number

K, 1, 2, 3

Dots for Numbers

Grade Span

Materials used with this activity:

Task Cards

6 to 10 sets of regular dominoes

Not in baskets; instead spread out on the table, all face up

Comments:

This is one of the easiest of all the Numbers stations. It is great for number representation and visual discrimination skills.

Standard(s) for Mathematical Practice

I removed all the doubles and O's to make the tasks just a bit harder.

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K.CC.3 Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).

K.CC.4 Understand the relationship between numbers and quantities; connect counting to cardinality.

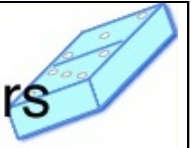
K.CC.5 Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects. Compare numbers.

K.OA.3 Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation.

2.OA.3 Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.



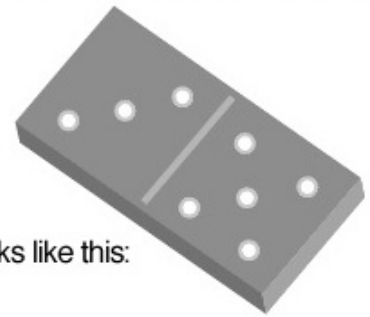
Dots for Numbers



Numbers don't always look the same.
Sometimes **dots** can stand for **numbers**.



Find the tile that has the correct numbers of dots.



It looks like this:

9/21/13 © Paul Giganti, Jr. NUMBER FESTIVAL Activity Card # 1

Math Festival Stations Correlation

to the COMMON CORE Standards in Mathematics

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Math Festival: Number

K, 1, 2, 3, 4

Fill This Space

Grade Span

Materials used with this activity:

Task Cards in Sheet Protectors

Cuisenaire Rods (multiple sets)

Comments:

Though Cuisenaire Rods™ were originally designed to help primary students understand the base-ten system, when combined with a geometric shape, creates a multi-grades problem solving situation that combines number and spatial skills. Many tasks at this station have multiple answers. Creativity is encouraged.

Standard(s) for Mathematical Practice

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K.CC.5 Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects. Compare numbers.

K.OA.1 Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.

K.OA.2 Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.

K.OA.3 Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., $5 = 2 + 3$ and $5 = 4 + 1$).



K.OA.4 For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.

1.MD.2 Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.

2.G.1 Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces (sizes are compared directly or visually, not compared by measuring). Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

2.NBT.7 Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.


3.G.2 Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole.



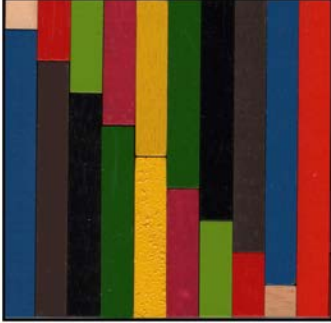
Fill This Shape

Fill in the shapes using the **COLORED RODS**.
Use **ONLY** the **NUMBER** of rods asked for.
For example:

Fill this shape with **EXACTLY 19 rods**.



Here is **ONE** way you can fill this shape with **EXACTLY 19 rods**.



There is often more than one correct way to fill the shape!

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Math Festival Stations Correlation

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Math Festival: Number

K, 1, 2, 3, 4, 5, 6

Finish My Number

Grade Span

Materials used with this activity:

- Task Cards in Sheet Protectors
- Thick White Board Markers
- Cloths or White Board Erasers

Comments:

One of the easier NUMBER stations. Good for primary basic numeral identification. However, hardest tasks require upper elementary students to use computational skills in combination with logical thinking and problem solving.

Standard(s) for Mathematical Practice

- 2) Reason abstractly and quantitatively.
- 7) Look for and make use of structure.

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K.CC.3 Write numbers from 0 to 20. Represent a number of objects with a written numeral 0–20 (with 0 representing a count of no objects).

2.G.1 Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces (sizes are compared directly or visually, not compared by measuring). Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

2.NBT.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

3.OA.9 Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations.

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.

6.EE.2 Write, read, and evaluate expressions in which letters stand for numbers. Write expressions that record operations with numbers and with letters standing for numbers. Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations.

6.EE.5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

Mathematics Festival Program

Finish My Number

I'll bet you know your numbers so well that you can **FINISH DRAWING** a number even when it is **NOT ALL THERE!**

For example: What number am I?

5

Look under this door to see if you guessed what number I am.

Try finishing the other NUMBERS at this table.

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Math Festival: Number 2, 3, 4, 5, 6, 7, 8

Fraction Strips Grade Span

Materials used with this activity:

- Task Cards in Sheet Protectors
- Fraction Strips* (commercial or cut-out)(6 baskets)
- *Magnetized fraction pieces placed on strips of flexible sheet magnet help students do problems.

Comments:

Addition, subtraction, multiplication, and division of fractions problems, both simple and complex, can be solved using the fraction strips. There is no need for knowledge of complex fraction algorithms needed here; logical thinking and hands-on materials get the same results as fraction computations!

Standard(s) for Mathematical Practice

- 2) Reason abstractly and quantitatively.
- 4) Model with mathematics.
- 6) Attend to precision.

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1.G.3 Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter of. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.

2.G.3 Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

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


4.NF.1 Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ 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.3 Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model.

5.NF.1 Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.

5.NF.7 Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients; Interpret division of a whole number by a unit fraction, and compute such quotients; solve real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions. e.a.. bv using visual fraction models and equations to

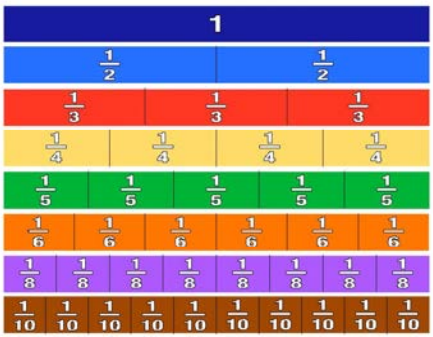
6.NS.1 Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. Compute fluently with multi-digit numbers and find common factors and multiples.



Fraction Strips

You can use **FRACTION STRIPS** to solve fraction problems - even hard ones!

These are the **FRACTION STRIPS**:



Here is a problem:

$$\frac{1}{6} + \frac{1}{6} + \frac{1}{6} = ?$$

- Start with the **ONE Whole** strip.
- Find and line up the $\frac{1}{6} + \frac{1}{6} + \frac{1}{6}$ strips **ON TOP** of the **ONE Whole**.
- Find the largest fraction strip (or two or more) of the largest fraction that **EXACTLY** covers your fractions.

$\frac{1}{2}$ is the ANSWER $\rightarrow \frac{1}{6} + \frac{1}{6} + \frac{1}{6} = \frac{1}{2}$

That's how you do it! Try the other problems at this table.

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Math Festival Stations Correlation

to the COMMON CORE Standards in Mathematics

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Math Festival: Number K, 1, 2, 3, 4, 5, 6, 7, 8

Guess How Many

Grade Span

Materials used with this activity:

- 3 to 5 large jars or plastic containers, each with a different material, as wooden cubes, marbles, etc.
- sticky note pads (to write estimates on)
- pencils
- poster paper for each jar to put sticky notes onto

Comments:

My favorite "jar" is a clean fish aquarium (10 gallons or less) without lids. Put the "stuff" into the aquarium and let students stick their hands in and rearrange BUT without taking anything OUT OF the aquarium. Stuff should not be easy to count; use bigger objects for younger students, smaller objects for older students.

Standard(s) for Mathematical Practice

- 2) Reason abstractly and quantitatively.
- 3) Construct viable arguments and critique the reasoning of others.
- 7) Look for and make use of structure.

Related K, 1, 2, 3, 4, 5, 6, 7, or 8th grade Standards:

CC: Counting & Cardinality OA: Operations & Algebraic Thinking NBT: Number & Operations in Base Ten
MD: Measurement & Data G: Geometry NF: Number & Operations—Fractions NS: The Number System
EE: Expressions & Equations SP: Statistics & Probability RP: Ratio & Proportion Relationships F: Functions

K.CC.5 Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects. Compare numbers.

2.NBT.7.1 Use estimation strategies to make reasonable estimates in problem solving. CA

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.

7.EE.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.



Guess How Many!

ESTIMATION is a powerful skill that lets you get **CLOSE** to a real answer by using mathematics to make a good **GUESS!**

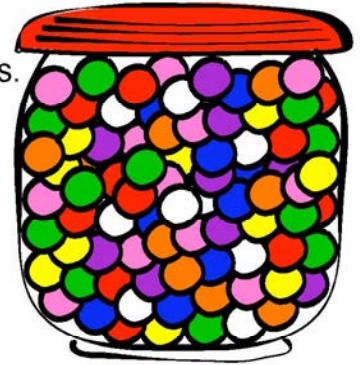
For example:

Here are two giant jars.

One is full of CUBES.



One is full of BALLS.



Look at them carefully, then **ESTIMATE** how many are inside each jar! You can use any math you want, but you **can't open the jars**.

Write your estimate on a slip of paper with your name. Put it in the box in front of that jar.

If your estimate is the **CLOSEST** to the real number of objects in a jar, you'll win a prize!

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NUMBER FESTIVAL

Math Festival Stations Correlation

to the COMMON CORE Standards in Mathematics

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Math Festival: Number

K, 1, 2, 3

How Many Snails?

Grade Span

Materials used with this activity:

- Task Cards in Sheet Protectors
- Thick White Board Markers
- Cloths or White Board Erasers

Comments:

The task cards were made by cutting up a counting book's pages, then placing them in sheet protectors taped together for a book's typical two-page spread. An especially good use of counting books with broken spines—recycle!

Standard(s) for Mathematical Practice

- 1) Make sense of problems and persevere in solving them.
- 2) Reason abstractly and quantitatively.
- 6) Attend to precision.

Related K, 1, 2, 3, 4, 5, 6, 7, or 8th grade Standards:

CC: Counting & Cardinality OA: Operations & Algebraic Thinking NBT: Number & Operations in Base Ten
MD: Measurement & Data G: Geometry NF: Number & Operations—Fractions NS: The Number System
EE: Expressions & Equations SP: Statistics & Probability RP: Ratio & Proportion Relationships F: Functions

K.CC.5 Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects. Compare numbers.

K.MD.3 Classify objects into given categories; count the numbers of objects in each category and sort the categories by counts less than or equal to 10.

1.G.1 Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.

1.MD.4 Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

2.G.1 Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces (sizes are compared directly or visually, not compared by measuring). Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

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



How Many Snails...

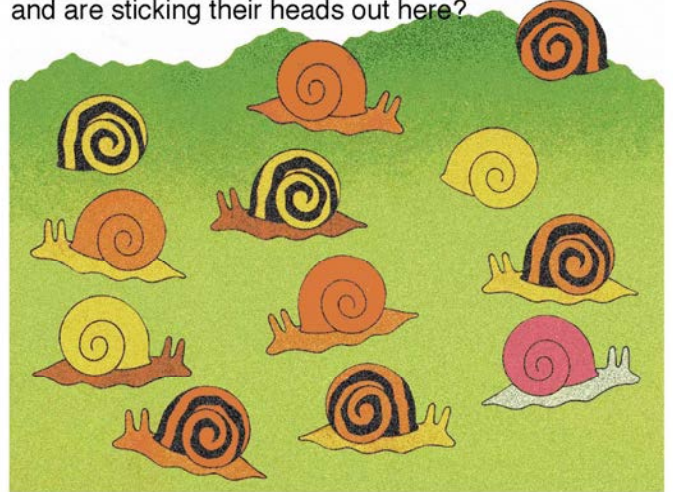


Counting Questions

Counting is a simple, but important, math skill. There are things to count all around us and we all count everyday!

Good questions can tell us **what we need to COUNT**.

For example: How many **SNAILS*** have striped shells and are sticking their heads out here?



Use your finger or a pen to number each shape as you count.

*This activity is based on two books by Paul Giganti: *How Many Snails*, and *Each Orange Had Eight Slices* (Greenwillow press).

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NUMBER FESTIVAL

Math Festival Stations Correlation

to the COMMON CORE Standards in Mathematics

© Paul Giganti, Jr., 2001

Math Festival: Number

K, 1, 2, 3, 4, 5, 6

In A Minute

Grade Span

Materials used with this activity:

Task Cards in Sheet Protectors

Thin White Board Markers

Cloths or White Board Erasers

Minute Timers* (like egg timers)

*Students LOVE using LAKESHORE™ 8" tall timers!

Comments:

While most suited to K–3 Math Standards, older students love the challenge of going up against the "clock" in the 12 challenges at this table.

Standard(s) for Mathematical Practice

6) Attend to precision.

Related K, 1, 2, 3, 4, 5, 6, 7, or 8th grade Standards:

CC: Counting & Cardinality OA: Operations & Algebraic Thinking NBT: Number & Operations in Base Ten
MD: Measurement & Data G: Geometry NF: Number & Operations—Fractions NS: The Number System
EE: Expressions & Equations SP: Statistics & Probability RP: Ratio & Proportion Relationships F: Functions

K.CC.1 Count to 100 by ones and by tens.

K.CC.5 Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects. Compare numbers.

K.CC.6 Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies with up to 10 objects.

1.OA.1 Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

2.NBT.2 Count within 1000; skip-count by 2s, 5s, 10s, and 100s. CA

3.MD.1 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.g., by representing the problem on a number line diagram.



In a Minute



A minute doesn't seem like a long time, but it's amazing what you can do in one minute!

For example: How many times can you write your name in **IN A MINUTE?**

Paul Giganti Jr.

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Try the many **IN A MINUTE** tasks at this table.



Have your partner **use the timer to tell you when to start and when to stop.** Then time your partner at the same task.

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NUMBER FESTIVAL

Math Festival Stations Correlation

to the COMMON CORE Standards in Mathematics

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Math Festival: Number

K, 1, 2, 3, 4, 5, 6

Math & Literature

Grade Span

Materials used with this activity:

Children's Books with Math Themes (about 20)

for ages 5 through 10 years

Comments:

Children's books with math themes are an ideal combination promoting both reading and math and integrating these two important subjects. This station runs itself; students choose a book and read to themselves or another student. This is an especially nice station for Family Math Nights. The list of books is available on the CD.

Standard(s) for Mathematical Practice

- 1) Make sense of problems and persevere in solving them.
- 4) Model with mathematics.

Related K, 1, 2, 3, 4, 5, 6, 7, or 8th grade Standards:

CC: Counting & Cardinality OA: Operations & Algebraic Thinking NBT: Number & Operations in Base Ten
MD: Measurement & Data G: Geometry NF: Number & Operations—Fractions NS: The Number System
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There are MANY related CACSSM Standards that go with this Math Festival, station but each depends on the book chosen and the math concepts within.



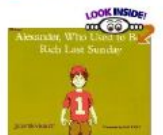
Math & Literature

Did you know that MATH is not just found in your math textbook? You can also find math in many children's books!

In *the Greedy Triangle*, you'll learn how a triangle "morphs" into all sorts of new geometric shapes:



In *Alexander, Who Used to Be Rich Last Sunday*, you'll learn how NOT to lose your allowance:



In *Each Orange Had 8 Slices*, you'll see that MULTIPLICATION is every where you look in the real world:



...And many more! Have a seat at this table and discover all the math you can find in the wonderful children's **books with MATH inside**.

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ALGEBRA FESTIVAL

Activity Card # 1

Math Festival Stations Correlation

to the COMMON CORE Standards in Mathematics

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Math Festival: Number 2, 3, 4, 5, 6, 7, 8

McMenu Math Grade Span

Materials used with this activity:

- Task Cards in Sheet Protectors
- Thin White Board Markers
- Cloths or White Board Erasers
- Menus in Sheet Protectors

Comments:

This station is all about situational problem solving with money. Any child familiar with fast-food menus and ordering—especially if they have to pay—will instantly relate to this station. Many stations relate to making choices for the best price-for-value and package deals for friends and family meals.

Standard(s) for Mathematical Practice

- 1) Make sense of problems and persevere in solving them.
- 4) Model with mathematics.
- 6) Attend to precision.

Related K, 1, 2, 3, 4, 5, 6, 7, or 8th grade Standards:

CC: Counting & Cardinality OA: Operations & Algebraic Thinking NBT: Number & Operations in Base Ten
 MD: Measurement & Data G: Geometry NF: Number & Operations—Fractions NS: The Number System
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2.MD.8 Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately.

2.NBT.7.1 Use estimation strategies to make reasonable estimates in problem solving. CA

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

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 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.NBT.3 Use place value understanding to round multi-digit whole numbers to any place.

4.NBT.4 Fluently add and subtract multi-digit whole numbers using the standard algorithm.

5.NBT.3 Read, write, and compare decimals to thousandths. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.


5.NBT.4 Use place value understanding to round decimals to any place.

6.RP.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations; make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios: solve unit rate problems including those involving unit pricing and constant speed: find a percent of a



Mathematics
Festival
Program

McMenu Math



You've ordered off a fast-food menu, but at this table, you have to **DO the MATH!**

Take an order:

Jose would like:

- One McBurger
- One small drink
- One small fries

Maria would like:

- One McCheeseBurger
- One medium drink

McMenu Math order form

REGULAR MENU	#	Rest.	#	Rest.	#	Rest.	#	Rest.	#	Rest.
McKiddie Burger										
McBurger										
McCheeseburger										
McChicken Sandwich										
McHuge Burger										
McChicken Caesar Salad										
French Fries										
Soft Drinks										
Milk Shake										
TOTAL										

SUPER VALUE MEALS*	#	Rest.	#	Rest.	#	Rest.	#	Rest.	#	Rest.
McKiddie Meal Deal (with toy!)										
McDoubleBurger Meal Deal										
McCheeseburger Meal Deal (two)										
McHuge Burger Meal Deal										
McChicken Sandwich Meal Deal										
TOTAL										

*Includes Medium Fries and Medium Drink
 *Includes 40 to McMonster Size your meal with Large Fries & Large Drink \$4.99

Then use a McMenu order form and a calculator or paper and pencil to compute the **TOTAL** cost of their order.

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Math Festival Stations Correlation

to the COMMON CORE Standards in Mathematics

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Math Festival: Number K, 1, 2, 3, 4, 5, 6, 7, 8

Money \$ Math

Grade Span

Materials used with this activity:

- Task Cards in Sheet Protectors
- Thick White Board Markers
- Cloths or White Board Erasers
- Plastic Pennies, Nickels, Dimes, and Quarters*
- *6 baskets

Comments:

Students can use plastic coins as manipulatives and/or write and solve calculations with pens. Easiest problems are appropriate for Kindergarteners; hardest problems yield best to solutions using equations, table making, and algebraic thinking. Hardest money problems are VERY hard!

Standard(s) for Mathematical Practice

- 1) Make sense of problems and persevere in solving them.
- 2) Reason abstractly and quantitatively.
- 4) Model with mathematics.

Related K, 1, 2, 3, 4, 5, 6, 7, or 8th grade Standards:

CC: Counting & Cardinality OA: Operations & Algebraic Thinking NBT: Number & Operations in Base Ten
MD: Measurement & Data G: Geometry NF: Number & Operations—Fractions NS: The Number System
EE: Expressions & Equations SP: Statistics & Probability RP: Ratio & Proportion Relationships F: Functions

2.MD.8 Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately.

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

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

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 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.

5.NBT.7 Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

5.OA.2 Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.

6.RP.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations; make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios: solve unit rate problems including those involving unit pricing and constant speed: find a percent of a

6.NS.3 Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

6.EE.5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.



Money \$ Math



Everybody needs **MONEY**! At this table you can **USE MONEY** to solve math problems.

For example:

How much money do you have if you have



ANSWER: 41¢

Use the  coins to solve the money problems at this table.

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NUMBER FESTIVAL

Math Festival Stations Correlation

to the COMMON CORE Standards in Mathematics

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Math Festival: Number 2, 3, 4, 5, 6, 7, 8

More or Less Game Grade Span

Materials used with this activity:

- Task Cards in Sheet Protectors
- Number Chart relating to each Task Problem
- Cloths or White Board Erasers

Comments:

Teaches a pair of students working as partners how to play the classic game of Number Guess— where the only answers to the question, "Is your number X?" are the answers, "My number is less than the number X." or "My number is greater than the number X." Number charts of 1–12 through 1–200 determine the difficulty of a task.

Standard(s) for Mathematical Practice

- 1) Make sense of problems and persevere in solving them.
- 2) Reason abstractly and quantitatively.
- 7) Look for and make use of structure.

Related K, 1, 2, 3, 4, 5, 6, 7, or 8th grade Standards:


CC: Counting & Cardinality OA: Operations & Algebraic Thinking NBT: Number & Operations in Base Ten
 MD: Measurement & Data G: Geometry NF: Number & Operations—Fractions NS: The Number System
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1.NBT.3 Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols $>$, $=$, and $<$.

2.NBT.4 Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using $>$, $=$, and $<$ symbols to record the results of comparisons.

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.

6.EE.8 Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.



Mathematics
Festival
Program

◀ or ▶

The *More or Less* Game

You and your partner can play a **number guessing game** together. It uses the words **MORE** or **LESS** as clues. For example:

If your **secret number was 16**, you would start by saying to your partner, "My number is between **1** and **30**. Make a guess!"

If you partner asks, "Is your number **7**?"

You would say, "My number is **more** than **7**. Guess again."


If you partner then asks, "Is your number **18**?"

You would say, "My number is **less** than **18**. Guess again."

If you partner then asks, "Is your number **14**?"

You would say, "My number is **more** than **14**. Guess again." ... and so on ... until your partner correctly guesses your number. Then your partner finds a **new secret number**, and it's **your turn to guess!**

Use the **number charts** to keep track of your guesses!



Use this chart for numbers 1–30

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NUMBER FESTIVAL

Math Festival Stations Correlation

to the COMMON CORE Standards in Mathematics

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Math Festival: Number 1, 2, 3, 4, 5, 6, 7, 8

Multiple Rectangles

Grade Span

Materials used with this activity:

Task Cards in Sheet Protectors

Six baskets of MultiLink Cubes

Comments:

Students use Multilink cubes to form as many possible rectangles from the SAME number of cubes. Finding all the possible rectangles requires knowledge of composite numbers, multiples, factors, and in some cases, prime numbers.

Standard(s) for Mathematical Practice

- 2) Reason abstractly and quantitatively.
- 4) Model with mathematics.
- 7) Look for and make use of structure.

Related K, 1, 2, 3, 4, 5, 6, 7, or 8th grade Standards:

CC: Counting & Cardinality **OA:** Operations & Algebraic Thinking **NBT:** Number & Operations in Base Ten
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EE: Expressions & Equations **SP:** Statistics & Probability **RP:** Ratio & Proportion Relationships **F:** Functions

1.G.2 Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.

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

3.MD.8 Solve real-world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

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.

5.OA.2.1 Express a whole number in the range 2–50 as a product of its prime factors.



Multiple Rectangles

The **SAME NUMBER** of cubes can often make **different RECTANGLES**.

For example: All of these **RECTANGLES** are made out of **16 CUBES**:



At this station use the Multi-Link Cubes to explore numbers and rectangles!

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NUMBER FESTIVAL

Activity Page # 1

Math Festival Stations Correlation

to the COMMON CORE Standards in Mathematics

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Math Festival: Number

1, 2, 3, 4, 5

Number Chart Hunt

Grade Span

Materials used with this activity:

- Task Cards in Sheet Protectors
- Number Chart relating to each Task Problem
- Thick White Board Markers
- Cloths or White Board Erasers

Comments:

Clues to "secret" numbers range from easy, "My number is more than 29 and less than 31." to multiple sophisticated mathematical clues. This is a number guessing game that goes WAY beyond "more" or "less." A sound knowledge of multiples is required!

One student guesses while the other gives clues.

Standard(s) for Mathematical Practice

- 2) Reason abstractly and quantitatively.
- 7) Look for and make use of structure.

Related K, 1, 2, 3, 4, 5, 6, 7, or 8th grade Standards:

CC: Counting & Cardinality OA: Operations & Algebraic Thinking NBT: Number & Operations in Base Ten
 MD: Measurement & Data G: Geometry NF: Number & Operations—Fractions NS: The Number System
 EE: Expressions & Equations SP: Statistics & Probability RP: Ratio & Proportion Relationships F: Functions

1.NBT.1 Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.

1.NBT.3 Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols $>$, $=$, and $<$.

1.OA.8 Determine the unknown whole number in an addition or subtraction equation relating three whole numbers.

2.MD.5 Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.


2.NBT.7.1 Use estimation strategies to make reasonable estimates in problem solving. CA

2.OA.1 Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

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

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.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.



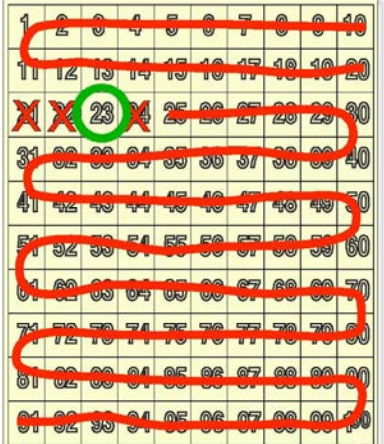
Number Chart Hunt

Use a Number Chart and a set of clues to find the **mystery number** in each problem.

For example:

- MY NUMBER IS **MORE THAN 20** BUT **LESS THAN 25!**
- MY NUMBER IS **NOT AN EVEN** NUMBER!
- MY NUMBER IS **NOT A MULTIPLE OF 3!**

WHAT'S MY NUMBER?



HUNDRED CHART

Be careful; there are three **different** kinds of Numbers Chart Hunts at this table!

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NUMBER FESTIVAL

Math Festival Stations Correlation

to the COMMON CORE Standards in Mathematics

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Math Festival: Number 1, 2, 3, 4, 5, 6, 7, 8

Number Tile Sentences **Grade Span**

Materials used with this activity:

Task Cards in Sheet Protectors

Four baskets of number tiles: digits 1 through 9

Comments:

Number Tile Sentence tasks are calculations and equations where students place the number tiles, 1–9, in the right places to make that problem correct. The number tiles to use in each problem are specified, and several of the tasks have more than one answer.

Standard(s) for Mathematical Practice

- 1) Make sense of problems and persevere in solving them.
- 2) Reason abstractly and quantitatively.
- 7) Look for and make use of structure.

Related K, 1, 2, 3, 4, 5, 6, 7, or 8th grade Standards:

CC: Counting & Cardinality OA: Operations & Algebraic Thinking NBT: Number & Operations in Base Ten
 MD: Measurement & Data G: Geometry NF: Number & Operations—Fractions NS: The Number System
 EE: Expressions & Equations SP: Statistics & Probability RP: Ratio & Proportion Relationships F: Functions

1.OA.4 Understand subtraction as an unknown-addend problem. Add and subtract within 20.

1.OA.7 Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false.

1.OA.8 Determine the unknown whole number in an addition or subtraction equation relating three whole numbers.

2.OA.1 Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

3.OA.4 Determine the unknown whole number in a multiplication or division equation relating three whole numbers.

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.

6.EE.5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

7.EE.2 Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

8.EE.2 Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.



Number Tile Sentences



Use the **Number Tiles** to make the number sentences true. For example:

Using **ONLY** the **Number Tiles**...



... to make this number sentence true...



... you must place the **Number Tiles** like this:



There MAY be more than one correct answer!

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NUMBER FESTIVAL

Activity Page # 1

Math Festival Stations Correlation

to the COMMON CORE Standards in Mathematics

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Math Festival: Number K, 1, 2, 3, 4, 5, 6

Pattern Block Fractions Grade Span

Materials used with this activity:

Task Cards in Sheet Protectors

Pattern Blocks

Comments:


This is a hands-on fraction activity that require no writing of answers; answers are computed and shown using only the Pattern Blocks at the table. Basic fraction concepts are illustrated utilizing the link between the area of the different Pattern Block pieces and their fractional equivalents.

Standard(s) for Mathematical Practice

- 2) Reason abstractly and quantitatively.
- 4) Model with mathematics.
- 7) Look for and make use of structure.

Related K, 1, 2, 3, 4, 5, 6, 7, or 8th grade Standards:


CC: Counting & Cardinality OA: Operations & Algebraic Thinking NBT: Number & Operations in Base Ten
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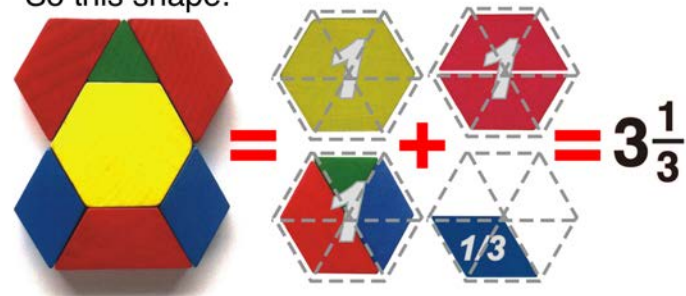
Pattern Block Fractions

We use **FRACTIONS** when we talk about **equal parts of a WHOLE**.

If a **YELLOW Pattern Block** is **1 WHOLE** then



So this shape:



Solve the fraction problems using only Pattern Blocks.

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3.G.2 Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole.

3.MD.6 Measure areas by counting unit squares (square cm, square m, square in, square ft., and improvised units).

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

3.NF.3 Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. 4.NF.1 Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ 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.1 Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ 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.3 Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model.

5.NF.3 Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

6.NS.1 Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. Compute fluently with multi-digit numbers and find common factors and multiples.

7.G.6 Solve real world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

Math Festival Stations Correlation

to the COMMON CORE Standards in Mathematics

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Math Festival: Number

K, 1, 2, 3

Ten Black Dots Art

Grade Span

Materials used with this activity:

- Task Cards in Sheet Protectors
- made from cut up pages from Ten Black Dots
- White Paper
- Black Sticky Dots (from office supply stores)
- Crayons

Comments:

A Classic primary-grade activity where students create their own new page using a children's book's pages as inspiration. This station makes use of readily available (and removable) 1/2 black dots that are very cheap and come in a package with enough dots for a whole class.

Standard(s) for Mathematical Practice

- 4) Model with mathematics.

Related K, 1, 2, 3, 4, 5, 6, 7, or 8th grade Standards:

CC: Counting & Cardinality OA: Operations & Algebraic Thinking NBT: Number & Operations in Base Ten
MD: Measurement & Data G: Geometry NF: Number & Operations—Fractions NS: The Number System
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K.CC.4 Understand the relationship between numbers and quantities; connect counting to cardinality.


K.CC.5 Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects. Compare numbers.

Mathematics Festival Program

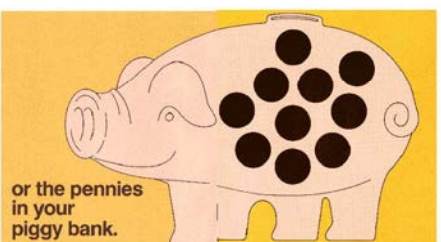
Ten Black Dots... 10

What can you do with ten black dots?


10 is a very important number. With 10 black dots you can make a work of art! Here is what author Donald Crews created with ten black dots*:



Ten dots make ten toy soldiers' heads...



or the pennies in your piggy bank.



What picture can you make with **your** ten black dots?

*This activity is based on the book, *Ten Black Dots*, by Donald Crews; (Greenwillow press).
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Math Festival Stations Correlation

to the COMMON CORE Standards in Mathematics

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Math Festival: Number

1, 2, 3, 4, 5

Venn Diagrams

Grade Span

Materials used with this activity:

- Task Cards in Sheet Protectors
- with a sheet of magnet slid between the task cards.
- Magnetic Number Pieces*, 0–30 (several of each #)
- *number stickers on 1" square magnet sheet pieces

Comments:

Venn diagrams are labeled sets (rectangles) that challenge students knowledge of the many ways numbers are (and are not) related to each other. Beginning with simple odd and even sets, moving to > or < than sets — all the way to prime and square numbers. Three overlapping rectangle sets, each with its own rule, is HARD!

Standard(s) for Mathematical Practice

- 2) Reason abstractly and quantitatively.
- 4) Model with mathematics.
- 7) Look for and make use of structure.

Related K, 1, 2, 3, 4, 5, 6, 7, or 8th grade Standards:

CC: Counting & Cardinality OA: Operations & Algebraic Thinking NBT: Number & Operations in Base Ten
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1.MD.4 Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.


2.NBT.4 Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.

3.OA.9 Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations.

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.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.

5.OA.3 Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.



VENN Diagrams

A VENN Diagram is a **MATH-PICTURE** that compares two or more sets of things!

For example:

*The numbers inside the red are **EVEN!***

EVEN Numbers

2, 6, 4, 16, 18, 12, 10, 30, 14, 8, 40, 20, 45

MULTIPLES of 5

5, 15, 25, 35, 45

*The numbers inside the green are **MULTIPLES of 5***

*The numbers inside the red AND the green are **both EVEN and a MULTIPLE of 5***

Try the different VENN Diagrams at this table.

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NUMBER FESTIVAL

Math Festival Stations Correlation

to the COMMON CORE Standards in Mathematics

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Math Festival: Number

1, 2, 3, 4, 5

What Time Is It?

Grade Span

Materials used with this activity:

Task Cards in Sheet Protectors

Small Plastic Geared Clocks (8)

Comments:

Not only is telling time an important life-skill, but solving problems related to telling and computing time sequences are equally important to a functioning society. Clocks and telling time help us organize our lives and promote productivity. This station tests those life-skills in all age students. It's about time!

Standard(s) for Mathematical Practice

- 1) Make sense of problems and persevere in solving them.
- 5) Use appropriate tools strategically.
- 6) Attend to precision.

Related K, 1, 2, 3, 4, 5, 6, 7, or 8th grade Standards:

CC: Counting & Cardinality OA: Operations & Algebraic Thinking NBT: Number & Operations in Base Ten
MD: Measurement & Data G: Geometry NF: Number & Operations—Fractions NS: The Number System
EE: Expressions & Equations SP: Statistics & Probability RP: Ratio & Proportion Relationships F: Functions

1.MD.3 Tell and write time in hours and half-hours using analog and digital clocks.

2.MD.7 Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m. Know relationships of time (e.g., minutes in an hour, days in a month, weeks in a year). CA

3.MD.1 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.g., by representing the problem on a number line diagram.

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 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.

5.MD.1 Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real-world problems.



What Time Is It?



Clocks tell us more than just the TIME!
They tell us when to do things in our lives!

For example: Can you set the HANDS on your clock to **LUNCH TIME**?

This clock is set to the time I eat lunch.
Not all people eat lunch at the SAME time so you might set your clock differently.



Sometimes you have to **do some MATH** to set your clock correctly!

Try the many **What Time Is It?** tasks.

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NUMBER FESTIVAL

Math Festival Stations Correlation

to the COMMON CORE Standards in Mathematics

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Math Festival: Number

K, 1, 2, 3, 4, 5, 6

What's Missing?

Grade Span

Materials used with this activity:

- Task Cards in Sheet Protectors
- Thick White Board Markers
- Cloths or White Board Erasers

Comments:

Number tables represent how our number system is organized and how numbers relate to each other. The simplest addition table can help young students see pattern in numbers. The most difficult number tables can challenge middle school students to test their knowledge of prime, composite, and negative numbers.

Standard(s) for Mathematical Practice

- 2) Reason abstractly and quantitatively.
- 7) Look for and make use of structure.
- 8) Look for and express regularity in repeated reasoning.

Related K, 1, 2, 3, 4, 5, 6, 7, or 8th grade Standards:

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 EE: Expressions & Equations SP: Statistics & Probability RP: Ratio & Proportion Relationships F: Functions

1.NBT.4 Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to

1.OA.1 Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

2.NBT.2 Count within 1000; skip-count by 2s, 5s, 10s, and 100s. CA


2.OA.1 Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

3.OA.9 Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations.

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.

5.OA.2.1 Express a whole number in the range 2–50 as a product of its prime factors.

6.NS.5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.



What's Missing?

The **MATH TABLES** here have **NUMBERS MISSING!** We need your help. For example:

+	1	2	3	4
1	2	3	?	5
2	3	4	5	?
3	4	?	6	7

Your job is to write in the **MISSING NUMBERS!**

+	1	2	3	4
1	2	3	4	5
2	3	4	5	6
3	4	5	6	7

Try to fill in what's missing in the different number tables.

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