Variations to 10 Minute Math 4th grade
Can be cut apart and put on index cards

Number

Calendar Math

Step 1 Pose the problem. Who can think of a way to make 24?
Option: Introduce constraints
Step 2 List student responses.
Step 3 Choose a "favorite expression" for the day.
Possible constraints include:
You can't use any number that is a multiple of 2.
You can't use addition or subtraction.
You must use more than one operation.
You can't use 0.
You must use one negative number.
You must start with 100. (See website for more options)

Number

Calendar Math variation...

Looking for Patterns – Encourage students to find expressions that they can alter systematically to find more expressions.

Developing Class "Rules"
Relationships, notation, order of operation, divisibility rules, and properties will start to become apparent to students and new ideas about number become part of the culture of the classroom.
These are recorded on the class rule chart and maintained over the year.

Number

Calendar Math variation...

Today's Date on the Calculator
Students work individually or in pairs to find ways to make the date, using their calculators. Make sure they record their expressions on a piece of paper. They can choose their favorite solution and write it on the board.
This is a good way for students to explore new keys on the calculator.

Variations and 10 Minute Math ideas from Ten-Minute Math, Cornelia Tierney, Susan Jo Russell, 2001

Number

Calendar Math variation...

What Day of the Calendar Year Is It?

Challenge students to figure out what day of the year it is. That is, "If there are 365 days in a year, and January 1 is day number 1, what number would today be?"
You may generate a list of important information that students will need to solve this problem.

28 or 29 days	30 days	31 days		Is this year a leap year?
February	September	January	August	
	April	March	October	
	June	May	December	
	November	July		

Number

Calendar Math variation...

What Day of the School Year Is It?

Students could figure out the number that tells what day of the school year "today" is. Remind them when the first day of school was and that will be day number 1.
Students will need to decide what to do about school holidays, vacations, and snow days. They can also figure out how many days are left in the school year.
Encourage students to determine what fraction of the school year has passed and what fraction is left, example 80/180. What familiar fraction is that closest to? About how far through the year are we?

Number

Calendar Math variation...

Making More Expressions

Students could develop expressions that represent the month and the year. "Today's" date might then read something like this:

(3 x 2) + 3	(0 x 12) + 12	(1,000 x 2) + 5
September	12	2005

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Number

Counting Around the Class

Step 1 Choose a number to count by. It should relate to something the students have been working on.
Step 2 Ask students to predict the target number. Encourage students to talk about it without actually figuring it out.
Step 3 Count around the class by your chosen number. You might want to record on the board as students say them.
Step 4 Pause in the middle of the count to look back. How many students have we counted so far? How do you know?
Step 5 Extend the problem. Which of your predictions were reasonable? Which were possible? Which were impossible? What if we had 28 students instead of 32? Then what would the ending number be? What if we counted by a different number (double or half what you had originally)?

Number

Counting Around the Class variation...

Multiplication Practice

Count around the class by single-digit numbers to provide practice with multiplication.

When students first begin to count by numbers other than 1, they are usually more comfortable with 2, 5, and 10, which have very regular patterns. Soon they can begin to count by more difficult single-digit numbers: 3,4,6 and (later) 7, 8, and 9.

Number

Counting Around the Class variation...

While learning about money or our base ten system of numeration, students can count by "landmark" numbers as 20, 25, 50, 100, and 1,000.

Fluency in moving among landmark numbers is especially valuable in mental computation. Counting by multiples of 10 and 100 (e.g., by 30, by 40 or by 600 will support students' growing familiarity with the base ten system of numeration.

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Number

Counting Around the Class variation...

Making Connections

When you choose harder numbers to count by, pick those that are related in some way to numbers students are very familiar with. For example, once students are comfortable counting by 25, have them count by 75. Ask students how knowing the 25's will help them count by 75. If students are fluent with 3's try counting by 6 or by 30. If students are fluent with counting with 5's, 10's and 20's, start working on 15.
If they are comfortable counting by 15, ask them to count by 150 or 1500.

Number

Counting Around the Class variation...

Large Numbers

Introduce counting by large numbers, such as 2,000 or 5,000 or 1,500 or 10,000.

Write the numbers or ask a student volunteer to write them as they are said.

Number

Counting Around the Class variation...

What Could We Count By?

Specify a target number such as 100, or 50, or 1,000, or 24. Ask students to find a number they could count by so that someone in the class would say the number you have specified.

Encourage them to share their strategies for figuring this out.

Count around the class by the suggested numbers to see if they work.

Variations and 10 Minute Math ideas from Ten-Minute Math, Cornelia Tierney, Susan Jo Russell, 2001

Number

Counting Around the Class variation...

Don't Start with 0

For some instances of counting around the class, start the count with a multiple other than 0.

For example, students might count by 10 or 25, but you would set the starting number at 50, 100, 1,000, or 525.

Number

Counting Around the Class variation...

Counting Backwards

Starting with a given number, count backwards around the class. Choose numbers with patterns that are already familiar to students. For example, start at 400 and count backwards by 2, 5, 10, or 25. As students become more comfortable with this variation, try counting by more difficult numbers.
Or play a modified version of What Could We Count By? Give students a starting number (such as 100 or 1,000) and ask them to find a number they could count by, backwards, that would land them exactly on 0 (or so that someone will say a particular number during the count).

Number

Counting Around the Class variation...

Skip Counting on the Calculator
Materials: Calculator for each student

On some days everyone or at least a few students might use calculators to skip count while you are counting around the class. On most calculators, the equals key provides built in constant function, allowing you to skip count easily.

For example: 0 + 2 5 = = = =
You will see on your screen 25, 50, 75, 100

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Number

Guess My Number

Step 1 Choose a mystery number.

Step 2 Give students clues. Use clues that describe number characteristics and relationships, such as factors, multiples, the number of digits, and odd and even.

Step 3 Student work in pairs to find numbers that fit the clues. Provide a 100 or 300 chart and scraps of paper or numeral cards for students to use to record numbers they think might fit the clues.

Step 4 Record all suggested solutions. To get responses from every student, you may want to ask students to record their solutions on scraps of paper and hold them up on a given signal. Some teachers provide numeral cards that students can hold up. Record solutions. Students may challenge any that they think don't fit all the clues. Challengers must give the reasons for their challenges.

Step 5 Invite students to ask further questions. If more than one solution fits all the clues, students must ask yes or no questions to try to eliminate some of the possibilities, until only one solution remains. Encourage students to ask questions that might eliminate more than one of the proposed solutions.

Number

Guess My Number variation...

New Number Characteristics

During the year, vary this game to include mathematical terms that have come up in your mathematics class. For example, clues might speak of square numbers, prime numbers, odd and even, factors, multiples, doubling, tripling, halving, less than and more than concepts, as well as the number of digits involved.

Number

Guess My Number variation...

Large Numbers

Begin with numbers under 100, but gradually expand the range of numbers that you include in your clues to larger numbers with which your students have been working. For example:

It is a multiple of 50.
It has three digits.
Two of its digits are the same.
It is not a multiple of 100.

Number

Guess My Number variation...

Don't Share Solutions Until the End

As students become more practiced in formulating questions to eliminate possible solutions, you may want to skip step 4, "Record all suggested solutions." Students then ask yes or no questions in a whole-class discussion, but privately eliminate numbers on their own list of solutions.
When students have no more questions, they volunteer their solutions and explain why they think their answer is correct.

Number

Guess My Number variation...

Calculator Guess My Number
Materials: calculator

Present clues that provide opportunities for computation using a calculator.

For example:
It is larger than 35 x 20
It is smaller than 1,800 ÷ 2
One of its factors is 25.
None of its digits is 7.

Number

Estimation and Number Sense

Step 1 Present a problem. Write a computation problem on the chalkboard or overhead. For example: 9+25+11
Step 2 Allow less than a minute to think about the problem. Students should come up with the best estimate they can. They do not write anything down or use a calculator.
Step 3 Cover the problem and ask students to discuss what they know. What did you notice about the numbers in this problem? Did you estimate an answer? How did you make your estimate?
Encourage more than/less than statements.
Step 4 Uncover the problem and continue the discussion. What do you notice now?

Number

Estimation and Number Sense variation...

Number Talks with Clusters

Step 1 Present a problem one at a time for the students to solve mentally. Choose clusters of numbers and operations that will move the students forward in an understanding you are working. For example: 3 x 19, 6 x 19, and 9 x 19 (helps student use tens or see the strategy of finding doubles and halves)
Step 2 Students should show they are ready by holding up their thumb.
Step 3 Call on volunteers to give answers and record.
Step 4 Call on students to explain how they solved the problem and explain their strategy

Number

Estimation and Number Sense variation...

Large Numbers

Present problems that require the students to "think from left to right" and to round numbers to "nice numbers" in order to come up with a good estimate. For example: 130 + 243 + 492

697 3, 891 - 403 2,769 ÷ 2
x 3

Present problems in both vertical and horizontal formats. If the vertical format triggers a rote procedure encourage students to look at the numbers as a whole and to think about the largest part of the numbers first.

Data and Probability

Likely or Unlikely?

Prepare some statements ahead of time or students can write likely/unlikely statements at home, as an entry task or during 10-min. math. Each statement should be written on a strip of paper to be taped to a posted chart.

Step 1 Start a chart with two headings, *Likely* and *Unlikely*.
Step 2 Read, one at a time, statements of events that are likely or unlikely to occur.
Step 3 Students decide on whether each event is likely or unlikely.

Add to the chart as the year progresses.

Data and Probability

Likely or Unlikely? variation...

Adding More Categories

Certain or impossible, very unlikely and very likely

Certain or impossible can be difficult conversations and students at this age can get in endless arguments over this. It is important that they hear different vocabulary being used. As a class an agreed upon definition would be helpful.

Data and Probability

Likely or Unlikely? variation...

Changing Likely to Unlikely

Students choose one statement from your list and change it in such a way that it would move to the opposite list.

Data and Probability

Likely or Unlikely? variation...

More or Less Likely?
Introduce the element of comparison with statements using *more likely* or *less likely*. For example:

It is more likely that it will rain tomorrow than it will snow.

It is less likely that I will see a mouse on the way home than I will see a dog.

As you or the students suggest such statements, discuss them. Does everyone agree with them?

Data and Probability

What is Likely?

Step 1 Fill a container with objects of two colors. Use markedly different proportions in the beginning for a while.
Step 2 Students predict which color will occur most often if they draw out 10 objects. Ask students to make their predictions. "What is likely to happen if we pull out 10 objects?" Will we get more yellows or reds?" "Will we get a lot more of one color than the other?" "About how many of each will we get?"
Step 3 Students draw 10 objects, replacing them after each draw. Ask a student, with eyes closed, to draw out one object. Record its color on the board before the student puts the object back. Nine more students do the same. Use tallies to record.

Step 4 Discuss what happened. "Is this about what you expected? Why or why not?" With a 9:1 ratio of the two colors, students won't always draw out a sample that is exactly 9 of one color and 1 of the other. Ask students whether their results are likely or unlikely given what they can see in the container. "What result would be unlikely or surprising?"
Step 5 Try it again. "Do you think it's likely that we'll get mostly reds again? Why? "About how many do you think we'll get?" Draw objects, tally their colors, and discuss in the same way.

Data and Probability

What is Likely? variation...

Different Color Mixes

Try a 3:1 ratio, filling the container with 3 of one color for every 1 of the other color. Also try an equal amount of the two colors.

Different Objects

Try using different objects with the same proportion of colors. Does a change like this affect the outcome?

The Whole Class Picks

See what happens when each student draws one object (and replaces it). Before you start ask, "IF all of us pick an object, about how many reds do you think we'll get?" "Is it more likely you'll pick a red or a yellow?"

Data and Probability

What is Likely? variation...

Students Fill the Container

Ask students to determine the proportions of each color to put in the container. Set a goal. For example: How can we fill the container so that it's *very likely* we'll get mostly reds when we draw 10?

How can we fill the container so that it's *unlikely* we'll get more than one red?

How can we fill the container so that we'll get close to the same number of reds and yellows when we draw 10?

After students decide how to fill the container, proceed with the usual drawing to test their predictions.

Data and Probability

What is Likely? variation...

Three Colors

Put an equal number of two colors (say, red and yellow) in the container, and mix in many more or many fewer of a third color (blue).

"If 10 people pick, about how many of each color do you think we will get? Do you think we'll get the same number of red and yellow, or do you think we will get more of one than the other?"

Data and Probability

What is Likely? variation...

Using Percents
When predicting what is likely, ask students to state their predictions as percents. For example, "I think it will be about 25% yellow and 75% red."
They then will express the actual results as percents, and discuss in step 4 what percents would be unlikely or surprising.

Number

Fact Practice

Counting Around the Class
Calendar Math
The Product Game
Length and Perimeter
Number Talks – use practice pages as starters
Array Card Games (students make their own cards)
Looking for patterns on the 0 – 99 chart or the multiplication chart.
Algebra Scales

Geometry and Measurement

Length and Perimeter

Step 1 Specify a distance for the turtle to go. For example, "Using the repeat command, make the turtle go 35 turtle steps."
Step 2 Students write commands to move the turtle that distance. Working in pairs, students spend 2 or 3 minutes writing a list of Geo-Logo repeat commands that would send the turtle the specified distance. For example, repeat 5 [fd 7], repeat 7 [fd 5], repeat 35 [fd 1], or repeat 35 [fd 1]
Step 3 List all of the different responses. Ask students to explain how they know each command works. Ask, "Have you found all the possibilities for this particular distance? How do you know? Could forward 3 work? What about forward 9?"

Geometry and Measurement

Length and Perimeter variation...

Perimeters of Regular Polygons

Present problems that either provide the perimeter of a shape and ask students to find the length of a side, or give the length of a side and ask students to determine the perimeter.

For example:
Repeat 4 [fd ? rt 90] When finished the turtle had drawn a closed shape with a perimeter of 40 turtle steps. What shape did it make? What is the missing number?
Repeat 3 [fd 35 rt 120] What is the perimeter of this triangle?

Geometry and Measurement

Length and Perimeter variation...

Perimeters of Rectangles

Present problems involving rectangles whose sides are not all equal. For example:
The turtle made a rectangle using the following command:
Repeat 2 [fd 20 rt 90 fd 10 rt 90] What did the rectangle look like? What is its perimeter?

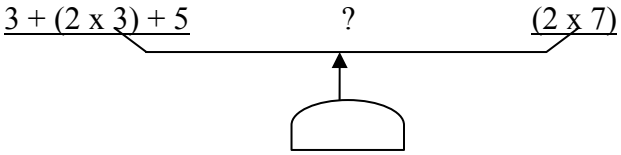
The turtle made a rectangle with ah perimeter of 50. It made the shape with this command:
Repeat 2 [fd 12 rt 90 fd ? rt 90]
What is the missing number for the forward command?

Algebraic Sense

Algebra Scales

Create problems displayed on a scale. Have the students tell if the scale will balance (equation) or tilt (inequality). If it does not balance, students should identify which side will tilt down and state a reason for the answer.

For example is this an equation (=) or an inequality (≠):



Algebraic Sense

Algebra Scales variation...

Write numbers in place of the variables to balance the scale and create an equation.

For example: