

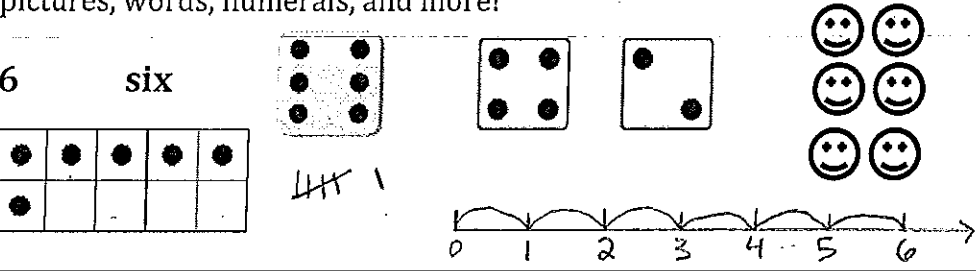
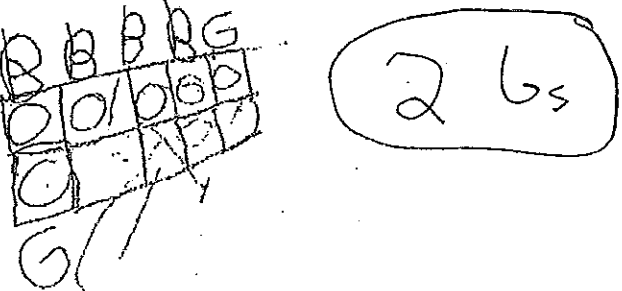
Math Instruction at Venable

Math learning for today's students can look quite different than the math learning of the adults in their lives! Most adults had classrooms that focused on memorizing skills and producing answers.

At Venable, we aim for a higher target. We believe that all students should be able to:

- Solve problems accurately, flexibly, and efficiently
- Communicate clearly using math language and representations
- Demonstrate skills and knowledge on performance assessments as well as standardized tests

What do these goals look like in the Kindergarten Classroom?

| | |
|---|---|
| Kindergarteners will: | Example of what this looks like in Kindergarten: |
| Use models to understand number concepts | <p>Models for numbers include: ten-frames, number lines, dice, dots, tallies, pictures, words, numerals, and more!</p>  |
| Use these concepts to learn important grade level math skills | <p>Problem: What number is one less than six?</p> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p>One way I think of 6 is 5 and 1 more—like on a ten-frame. So I know that 5 is one less than 6.</p> </div> |
| Solve novel problems and communicate clearly | <p>Problem: There are 4 boys playing legos. Some girls joined them. Now there are 6 children playing legos. How many girls joined the boys?</p>  |

Links to websites with ideas for bringing math activities into the home (both on- and off-line!):

- https://investigations.terc.edu/families/doing_math/books_and_resources/
- https://investigations.terc.edu/families/doing_math/Games_index.cfm
- <http://www.mathlearningcenter.org/resources/families>

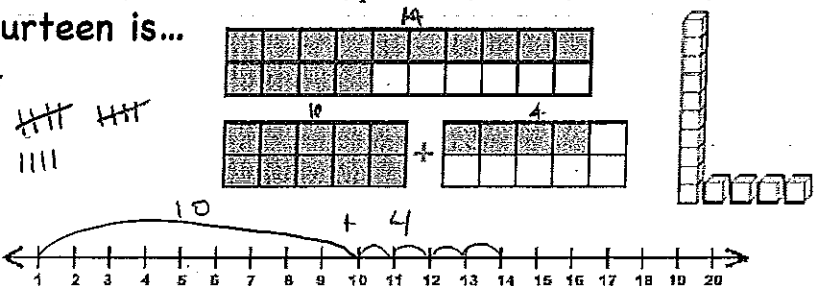
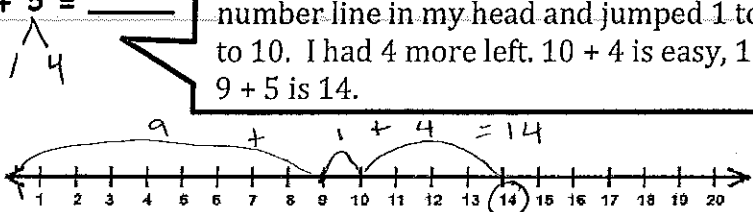
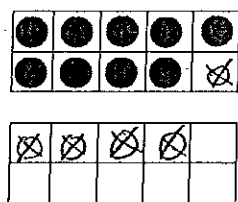
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What do these goals look like in the 1st Grade Classroom?

| | |
|---|--|
| 1 st graders will: | Example of what this looks like in 1 st Grade: |
| Use models to understand number concepts | <p>Models for numbers include: ten-frames, number lines, dice, dots, tallies, unifix cubes, hundreds chart, pictures, words, numerals, and more!</p> <p>Fourteen is... 14</p>  |
| Use these concepts to learn important grade level math skills | <p>Problem: $9 + 5 =$</p>  <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p>For 9s facts, I use Make 10. I thought of 9 on a number line in my head and jumped 1 to get to 10. I had 4 more left. $10 + 4$ is easy, 14. So $9 + 5$ is 14.</p> </div> |
| Solve novel problems and communicate clearly | <p>Problem: There are 14 cookies on a plate. Some cookies get eaten. Now there are 9 cookies on the plate. How many cookies were eaten?</p>  <p style="text-align: right;">$9 + 1 + 4 = 14$ 5 cookies eaten</p> |

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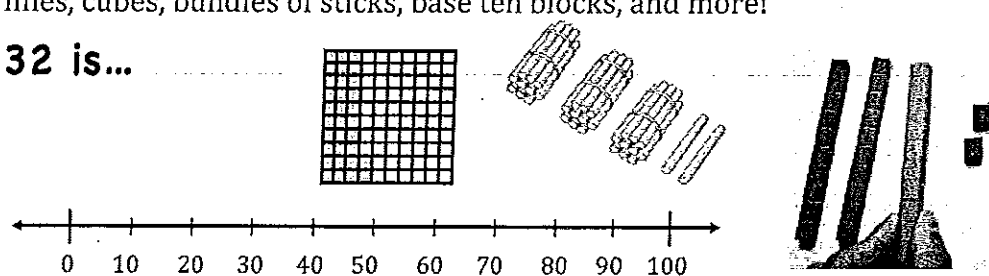
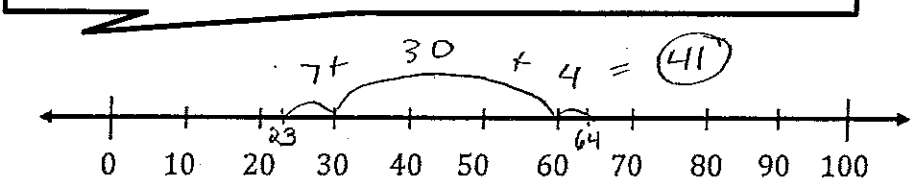
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What do these goals look like in the 2nd Grade Classroom?

| 2 nd graders will: | Example of what this looks like in 2 nd Grade: |
|---|---|
| Use models to understand number concepts | <p>Models for place value include: ten-frames, hundreds charts, number lines, cubes, bundles of sticks, base ten blocks, and more!</p> <p>32 is...</p>  |
| Use these concepts to learn important grade level math skills | <p>Problem: Solve $46 - 32$ in your head.</p> <p>Student 1: "I subtracted in parts by place value." $46 - 30 = 16$ $16 - 2 = 14$</p> <p>Student 2: "I added up to find the difference." $32 + 10 = 42$ $42 + 4 = 46$ and $10 + 4 = 14$</p> |
| Solve novel problems and communicate clearly | <p>Problem: Use the digits 4, 6, 3, and 2 to make two two-digit numbers. What is the greatest difference you can make?</p> <p>I thought in my head about putting the numbers on a number line. The greatest difference means they need to be as far away from each other as possible.</p>  |

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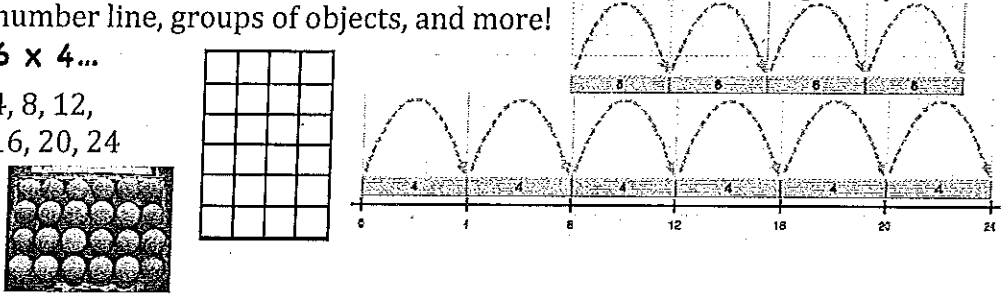
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What do these goals look like in the 3rd Grade Classroom?

| 3 rd graders will: | Example of what this looks like in 3 rd Grade: | | | | | | | | | |
|--|---|-----|----------|-----|--|--|--|-----|----------|-----|
| <p>Use models to understand number concepts</p> | <p>Models for multiplication and division include: skip-counting, arrays, number line, groups of objects, and more!</p> <p>$6 \times 4 \dots$ 4, 8, 12, 16, 20, 24</p>  | | | | | | | | | |
| <p>Use these concepts to learn important grade level math skills</p> | <p>Problem: Explain how you know the product of 6 and 4.</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p>I know 6×4 because 5 groups of 4 is 20 and one more group makes 24!</p> </div> | | | | | | | | | |
| <p>Solve novel problems and communicate clearly</p> | <p>Problem: Decide whether the following statement is true or false. Prove your thinking with numbers, pictures, or words.</p> <p style="text-align: center;">$6 \times 4 = (2 \times 6) + (2 \times 6)$</p> <p>True because:</p> <div style="display: flex; align-items: center; justify-content: center;"> <div style="margin-right: 10px;">$4 <$</div> <div style="border: 1px solid black; padding: 5px;"> <table style="border-collapse: collapse; text-align: center;"> <tr> <td style="padding: 0 5px;">2</td> <td style="padding: 0 5px;">\times</td> <td style="padding: 0 5px;">6</td> </tr> <tr> <td colspan="3" style="border-top: 1px solid black; height: 5px;"></td> </tr> <tr> <td style="padding: 0 5px;">2</td> <td style="padding: 0 5px;">\times</td> <td style="padding: 0 5px;">6</td> </tr> </table> </div> </div> | 2 | \times | 6 | | | | 2 | \times | 6 |
| 2 | \times | 6 | | | | | | | | |
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| 2 | \times | 6 | | | | | | | | |

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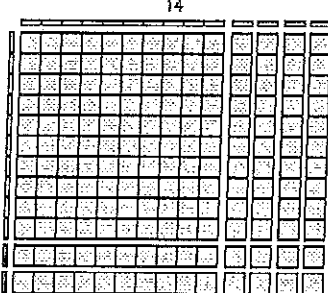
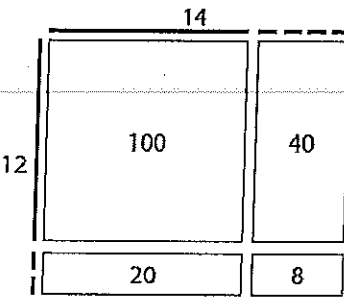
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What do these goals look like in the 4th Grade Classroom?

| | | |
|---|---|---|
| 4 th graders will: | Example of what this looks like in 4 th Grade: | |
| Use models to understand number concepts | <p>Model for multi-digit multiplication and division: arrays</p> <p>12 x 14 looks like...</p> |  |
| Use these concepts to learn important grade level math skills | <p>Problem: Use the array to prove how the multiplication algorithm works.</p>  | <p>12 x 14 = 168</p> $ \begin{array}{r} 10 \times 10 = 100 \\ 10 \times 2 = 20 \\ 10 \times 4 = 40 \\ 2 \times 4 = 8 \\ \hline 100 + 60 + 8 = 168 \end{array} $ $ \begin{array}{r} 12 \\ \times 14 \\ \hline 48 \\ + 120 \\ \hline 168 \end{array} $ |
| Solve novel problems and communicate clearly | <p>Problem: There are 20 4th grade students in the cafeteria. Each student eats 29 blueberries. How many total blueberries are eaten?</p> <div style="border: 1px solid black; padding: 5px; display: inline-block; margin-bottom: 10px;"> <p>I thought if each student ate 30 blueberries, then it would be 30 x 20 which is 600. So I just needed to do one less for each student. That's 20. So I subtracted 20 to get 580 blueberries.</p> </div> $20 \times 29 = ?$ $20 \times 30 = 600$ $600 - 20 = 580$ | |

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