SUMMARY

In this lesson, students use mental math strategies such as using friendly numbers and skip counting by tens to add and subtract without pencil and paper.

COMMON CORE STANDARD(S)

2.OA.A.2  Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

1.NBT.C.5  Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.

1.NBT.C.6  Subtract multiples of 10 in the range 10–90 from multiples of 10 in the range 10–90 (positive or zero differences), 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.

DURATION

Two 45-minute classroom periods
Engage and Explore, Explain, Elaborate page 1—one 45-minute classroom period
Elaborate page 2, Evaluate—second 45-minute classroom period

ENGAGE AND EXPLORE

Students have learned how to add and subtract within 100 using diagrams, timelines, manipulatives, and, most recently, written algorithms. The goal of the warm-up activity is to have students start thinking about which addition and subtraction problems are easier than others and to have them identify friendly numbers.
They can begin the activity by using diagrams or writing to solve some of the given problems. Next, you can challenge them by asking them how they would try to solve the problem if they did not have anything to write, draw, or make models with. Students may come up with some interesting ideas that may be a direction toward what they will be learning in this lesson. Primarily, they should notice that some numbers are easier to add and subtract than others and they may use this to their advantage. After students have completed the activity, have an open discussion about which problems they found easier to solve and why.

You can give them a variety of expressions:

<table>
<thead>
<tr>
<th>Addition</th>
<th>Addition</th>
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<th>Addition</th>
<th>Addition</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 + 10</td>
<td>4 + 9</td>
<td>4 + 6</td>
<td>13 + 15</td>
<td>13 + 17</td>
<td>13 + 19</td>
</tr>
<tr>
<td>24 + 30</td>
<td>40 + 50</td>
<td>60 + 17</td>
<td>52 + 10</td>
<td>34 + 9</td>
<td>52 + 26</td>
</tr>
<tr>
<td>9 – 7</td>
<td>11 – 7</td>
<td>17 – 9</td>
<td>16 – 6</td>
<td>23 – 13</td>
<td>52 – 5</td>
</tr>
<tr>
<td>72 – 10</td>
<td>68 – 40</td>
<td>50 – 40</td>
<td>50 – 42</td>
<td>50 – 38</td>
<td>52 – 38</td>
</tr>
</tbody>
</table>

**EXPLAIN**

**WATCH THE GENERATION GENIUS MENTAL MATH WITHIN 100 VIDEO AS A GROUP**
Facilitate a conversation using the Discussion Questions.

**ELABORATE**

Direct students to use their new understanding to complete the practice problem worksheets. Page 1 contains bare mathematical problems to solidify understanding of the process. Page 2 contains application problems for students to apply the process to solve real-world problems.

**EVALUATE**

Have students gather in groups of 2 or 4 to compare and discuss their answers to the problems. Allow students enough time to communicate with their peers about their process and their thinking. Encourage students to use correct mathematical language when discussing their process. Have each group choose two questions they want more information about, or they want to discuss as a class.

When groups are ready, take questions from students. Encourage groups to answer questions brought up by other groups.

Students can play the online Kahoot! quiz game located below the video. It provides downloadable scores at the end of the quiz game. Alternatively, you can use the paper quiz, or the exit ticket questions. All these resources are located below the video in the assessment section.