G2-M4-Lesson 1

1. Complete each more or less statement.
   a. 1 less than 46 is 45.
   b. 48 is 10 more than 38.
   c. 63 is 10 less than 73.
   d. 39 is 1 less than 40.

   I can use place value language to explain the change. 1 more and 10 more are the same as adding. 1 less and 10 less are the same as subtracting.

2. Complete each pattern, and write the rule.
   a. 33, 34, 35, 36, 37
      Rule: 1 more
   b. 43, 33, 23, 13, 3
      Rule: 10 less
   c. 43, 42, 41, 40, 39
      Rule: 1 less

   I study the numbers and look for the more or less pattern. I know 34 is 1 more than 33, so the rule is 1 more.

   40 is 1 less than 41, so the rule is 1 less.

3. Label each statement as true or false.
   a. 1 more than 43 is the same as 1 less than 45. True
   b. 10 less than 28 is the same as 1 more than 16. False

4. Below is a chart of fruit in Gloria’s basket.

   Use the following to complete the chart.
   - Gloria has 1 more banana than the number of apples.
   - Gloria has 10 fewer oranges than the number of pears.

   I can use what I know about number patterns to complete the chart. 1 more than 19 is 20, so there are 20 bananas. 10 fewer than 21 is 11, so there are 11 oranges.

<table>
<thead>
<tr>
<th>Fruit</th>
<th>Number of Fruit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apples</td>
<td>19</td>
</tr>
<tr>
<td>Pears</td>
<td>21</td>
</tr>
<tr>
<td>Bananas</td>
<td>20</td>
</tr>
<tr>
<td>Oranges</td>
<td>11</td>
</tr>
</tbody>
</table>
G2-M4-Lesson 2

1. Solve using place value strategies. Use the arrow way, number bonds, or mental math, and record your answers.
   a. \(48 + 30 = 78\)
      \[
      \begin{array}{c}
      40 + 8 \\
      \hline
      70 + 8 = 78
      \end{array}
      \]
   b. \(27 + 20 = 47\)
      \[
      27 + 20 = 47
      \]

2. Find each sum. Then use >, <, or = to compare.
   a. \(43 + 20 = 30 + 53\)
      20 more than 43 is 63, and 30 more than 53 is 83, so 63 is less than 83.
   b. \(29 + 40 + 19 = 20\) more than 43 is 63, and 30 more than 53 is 83, so 63 is less than 83.

3. Solve using place value strategies.
   a. \(35 - 20 = 15\)
      I can draw or solve in my head using place value thinking.
      3 tens 5 ones - 2 tens is 1 ten 5 ones, so 35 - 20 = 15.
   b. \(46 - 20 = 26\)

4. Complete each more than or less than statement.
   a. 30 less than 78 is 48.
   b. 45 more than 30 is 75.
   c. 20 less than 68 is 48.
   d. 40 more than 22 is 62.

20 less than what number is 48? I can count on to solve! 48, 58, 68. 20 less than 68 is 48.

To solve, I just add like units! 45 more than 30 is the same as 45 + 30.
40 + 30 = 70, and 70 + 5 = 75.

5. There were 53 papers in the bin after math class. There were 20 papers in the bin before math class. How many papers were added during math class? Use the arrow way to show your simplifying strategy.

\[
\begin{align*}
20 & \rightarrow 30 \\
{} & +10 \\
30 & \rightarrow 40 \\
{} & +10 \\
40 & \rightarrow 50 \\
{} & +3 \\
53 & \rightarrow 53
\end{align*}
\]

I can start at 20 and count on by tens to 50, and then just add 3 ones to get to 53.

33 papers were added to the bin during math class.
G2-M4-Lesson 3

1. Solve using the arrow way.
   a. 48 + 30 = 78
      \[48 \rightarrow 30 \rightarrow 78\]
      48 + 31 = 79
      \[48 \rightarrow 30 \rightarrow 1 \rightarrow 79\]
      48 + 29 = 77
      \[48 \rightarrow 30 \rightarrow 1 \rightarrow 77\]
   b. 57 - 40 = 17
      \[57 \rightarrow 40 \rightarrow 17\]
      57 - 41 = 16
      \[57 \rightarrow 40 \rightarrow 1 \rightarrow 16\]
      57 - 39 = 18
      \[57 \rightarrow 40 \rightarrow 1 \rightarrow 18\]

The first problem, 57 - 40, helps me solve the last problem, 57 - 39. Subtracting 40 is easy, but that’s 1 more than I’m supposed to take away, so I have to add 1 back, which means the answer is 18.
2. Solve using the arrow way, number bonds, or mental math.

\[ 43 + 20 = 63 \]

\[
\begin{array}{c}
\downarrow \\
40 \ 3
\end{array}
\]

I can solve mentally, in my head! 20 more than 43 is 63. A number bond is another way I can show how I add like units.
1. Solve. Draw and label a tape diagram to subtract 10, 20, 30, 40, etc.

\[ 23 - 9 = 24 - 10 = 14 \]

It is easier to subtract a multiple of 10. 9 is very close to 10; it just needs 1 more. I can add 1 to both numbers to make it easier to subtract, and the difference will not change. A tape diagram helps me show my strategy.

2. Solve. Draw a number bond to add 10, 20, 30, 40, etc.

\[ 38 + 53 = 40 + 51 = 91 \]

It is easier to add a multiple of 10. 38 is very close to a 10, it just needs 2 more. I can break apart 53 into 2 and 51 to get the 2 out. 38 plus 2 is 40. Now I just add what is left; 40 plus 51 is 91.

I can also show this with a tape diagram! This helps me see that if I take 2 from 53 and give it to 38, I get 40 + 51.
1. There are 38 fewer green apples in the orchard than red apples. There are 62 green apples in the orchard. How many red apples are there?

I use the RDW process to solve. After reading, I think about what I can draw that will help me solve. A tape diagram helps me see the parts that I know. I know there are 38 fewer green apples than red, so that means there are more red apples, 38 more. I add to find the number of red apples.

\[ 62 + 38 = 100 \]
\[ \frac{60}{2} \]
\[ 38 + 2 = 40 \]
\[ 60 + 40 = 100 \]
There are 100 red apples.

2. Oscar has two baskets of toys. The red basket has 27 toys. The yellow basket has 29 more toys than the red basket.

a. How many toys are in the yellow basket?

The yellow basket has 29 more than the red basket. I add to find 29 more than 27. I can use the make ten strategy here, too!

\[ 27 + 29 = 56 \]
\[ \frac{26}{1} \]
\[ 29 + 1 = 30 \]
\[ 26 + 30 = 56 \]
The yellow basket has 56 toys.
b. Oscar gave 18 toys from the yellow basket to his younger brother. How many toys are left in the yellow basket?

\[
\begin{align*}
56 - 18 &= 38 \\
36 - 20 &= 16 \\
36 + 2 &= 38
\end{align*}
\]

There are 38 toys left in the yellow basket.
G2-M4-Lesson 6

1. Solve the following problems using your place value chart and place value disks. Compose a ten, if needed. Think about which ones you can solve mentally, too!

34 + 25 = 59

I can solve this one mentally! I just add like units. 3 tens and 2 tens is 5 tens. 4 ones and 5 ones is 9 ones. Altogether that makes 5 tens 9 ones, or 59.

34 + 28 = 62

I can use my chart and place value disks to solve this problem.

So, 34 + 28 = 62.
2. Solve using a place value chart.

Marty used 28 toothpicks for his art project, and 37 were left in the box. How many toothpicks were there in all?

\[ \begin{array}{c|c|c}
10 & 10 & 28 \\
10 & 10 & 37 \\
\hline
65 \\
\end{array} \]

I have more than 10 ones. I can compose a ten!

I made a ten!

10 ones is 1 ten!

\[ 28 + 37 = 65 \]

There were 65 toothpicks in all.
G2-M4-Lesson 7

1. Solve the following problems using the vertical form, your place value chart, and place value disks. Bundle a ten, if needed. Think about which ones you can solve mentally, too!

a. \[ 33 + 7 = 40 \]
   I can solve this one mentally! I know 3 ones plus 7 ones is 1 ten, and 30 plus 10 is 40.

b. \[ 36 + 57 = 93 \]
   I can use my chart and place value disks to solve.

   I can write it in vertical form as I model it with my place value disks.

   \[
   \begin{align*}
   &\phantom{+}3 \, \underline{6} \\
   + &\phantom{+}5 \, \underline{7} \\
   \hline
   &\underline{9} \, \underline{3}
   \end{align*}
   \]

   I have 13 ones, or 1 ten 3 ones. I show the ten, using new groups below, on the line below the tens place.

   Now I just add the tens! 3 tens plus 5 tens is 8 tens, and 1 more ten is 9 tens. So 36 plus 57 is 93.
2. Add the bottom numbers to find the missing number above it.

\[
\begin{array}{c}
19 \\
+ 35 \\
\hline
54
\end{array}
\]

I can solve using my place value disks and vertical form or the make ten strategy!

\[19 + 35 = 54\]
\[
\begin{array}{c}
19 \\
+ 35 \\
\hline
54
\end{array}
\]

3. Jen’s ribbon is 18 centimeters longer than her desk. The length of her desk is 63 centimeters.
   
a. What is the length of Jen’s ribbon?

\[
\begin{array}{cc}
63 \\
+ 18 \\
\hline
81
\end{array}
\]

Jen’s ribbon is 81 centimeters.

b. The length of Jen’s desk is 20 centimeters shorter than the length of her teacher’s desk. How long is her teacher’s desk?

\[
\begin{array}{cc}
63 \\
- 20 \\
\hline
43
\end{array}
\]

The teacher’s desk is 83 centimeters long.
G2-M4-Lesson 8

Solve vertically. Draw and bundle place value disks on the place value chart.

1. \[ 27 + 45 = 72 \]

2. Santiago counted the number of people on two buses. Bus 1 had 29 people, and bus 2 had 34 people. How many people were on the two buses?

2. \[ 29 + 34 \]

63 people were on the two buses.
G2-M4-Lesson 9

1. Solve using the algorithm. Draw and bundle chips on the place value chart.

\[127 + 45 = 172\]

I draw chips to show each addend. 7 ones plus 5 ones is 12 ones, or 1 ten 2 ones. I bundle the 10 ones to make 1 ten. Now I just add the tens. 2 tens plus 4 tens plus 1 more ten is 7 tens. 1 hundred plus 0 hundreds is 1 hundred. So 127 plus 45 is 172.

2. Solve using the algorithm. Write a number sentence for the problem modeled on the place value chart.

I can count to find the first addend: 100, 110, 120, 130, 140, 141, 142, 143, 144, 145. The first addend is 145. Now I count to find the second addend: 10, 20, 21, 22, 23, 24, 25, 26, 27, 28. The second addend is 28.

I show each step I make with the chips vertically using new groups below.
G2-M4-Lesson 10

1. Solve using the algorithm. Draw and bundle chips on the place value chart.

\[
148 + 39 = 187
\]

\[
\begin{array}{c}
1 & 4 & 8 \\
+ & 3 & 9 \\
\hline
1 & 8 & 7 \\
\end{array}
\]

I show each step I make with the chips vertically using new groups below.

I draw chips to show each addend. 8 ones plus 9 ones is 17 ones or 1 ten 7 ones. I bundle the 10 ones to make 1 ten. Now I just add the tens. 4 tens plus 3 tens plus 1 more ten is 8 tens. 1 hundred plus 0 hundreds is 1 hundred. So 148 plus 39 is 187.

2. Frankie spilled ink on his paper. Can you figure out what problem he was given by looking at his work?

I can count to find the first addend: 100, 110, 111, 112, 113, 114, 115. The first addend is 115. Now I can count to find the second addend: 10, 20, 30, 40, 50, 60, 70, 71, 72, 73, 74, 75, 76. The second addend is 76.

\[
115 + 76 = 191
\]
G2-M4-Lesson 11

1. Solve using mental math.

\[
7 - 6 = 1 \quad 87 - 6 = 81 \quad 87 - 7 = 80 \quad 87 - 8 = 79
\]

2. Solve using your place value chart and place value disks. Unbundle a ten if needed. Think about which problems you can solve mentally, too!

a. \[28 - 7 = \underline{21}\]

b. \[28 - 9 = \underline{19}\]
3. Solve $56 - 28$, and explain your strategy.

\[ 56 - 28 = 28 \]

I use my place value disks to show the whole, 56. I see that I can't subtract 8 ones from 6 ones.

So, I decompose 1 ten into 10 ones. Now I have 4 tens 16 ones.

I subtract 8 ones. 8 ones are left.

I subtract 2 tens. 2 tens are left. 2 tens 8 ones equals 28.

4. The number of marbles in this jar is marked on the front. Miss Clark took 26 marbles out of the jar. How many marbles are left? Complete the number sentence to find out.

\[ 49 - 26 = 23 \]

I can subtract 6 ones from 9 ones; that's 3 ones. And 4 tens minus 2 tens is 2 tens. 2 tens 3 ones equals 23.
G2-M4-Lesson 12

1. Use place value disks to solve the problem. Rewrite the problem vertically, and record each step.

   \[ 71 - 27 \]

I show the whole, 71, with my place value disks. I don’t show 27 because it’s already inside 71. When I subtract the part I know, 27, I’ll find the missing part.

I rewrite the problem in vertical form. Like a detective, I have to look carefully at the whole when subtracting, so I draw a magnifying glass around 71 to see if I need to do any unbundling.

I can’t subtract 7 ones from 1 one, so I need to decompose, or unbundle, a ten.

What I do with the disks, I need to do in vertical form.

Now I have 6 tens 11 ones. I’m ready to subtract!

11 ones − 7 ones = 4 ones.
6 tens − 2 tens = 4 tens.
4 tens 4 ones is 44.
2. Some Grade 1 and Grade 2 students voted on their favorite fruit. The table shows the number of votes for each fruit.

<table>
<thead>
<tr>
<th>Types of Fruit</th>
<th>Number of Votes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pineapple</td>
<td>26</td>
</tr>
<tr>
<td>Mango</td>
<td>18</td>
</tr>
<tr>
<td>Apple</td>
<td>15</td>
</tr>
<tr>
<td>Orange</td>
<td>35</td>
</tr>
<tr>
<td>Peach</td>
<td>43</td>
</tr>
</tbody>
</table>

a. How many more students voted for orange than pineapple? Show your work.

The tape diagram helps me see that I'm looking for the difference between 35 and 26. I can subtract using the vertical form to find the answer.

\[35 - 26 = ?\]

9 more students voted for orange than for pineapple.

b. How many fewer students voted for mango than for pineapple? Show your work.

The tape diagram helps me see that I'm looking for the difference between 18 and 26.

\[26 - 18 = ?\]

8 fewer students voted for mango than for pineapple.
Solve vertically. Draw a place value chart and chips to model each problem. Show how you change 1 ten for 10 ones, when necessary.

\[ 40 - 14 = 26 \]

- 10's

\[ \begin{array}{c}
\text{3} \\
\text{10}
\end{array} \]

\[ \begin{array}{c}
\text{4} \\
\text{0}
\end{array} \]

\[ - \begin{array}{c}
\text{1} \\
\text{4}
\end{array} \]

When I'm subtracting, I only draw the whole, 40, with chips.

I can't subtract 4 ones from 0 ones. I need to unbundle a ten. I cross off 1 ten chip and draw 10 ones. Now I have 3 tens 10 ones.

I cross off chips in the ones place. 10 ones - 4 ones = 6 ones.

I cross off one chip in the tens place. 3 tens - 1 ten = 2

Lesson 13: Use math drawings to represent subtraction with and without decompositions and relate drawings to a written method.

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G2-M1-HW1-1.3.07.2015
G2-M4-Lesson 14

1. Solve by writing the problem vertically. Check your result by drawing chips on the place value chart. Change 1 ten for 10 ones, when needed.

140 – 12 = 128

I draw the magnifying glass so I remember to set the problem up to subtract.

I draw chips to show the whole, 140, on my place value chart.

I can’t subtract 2 ones from 0 ones, so I need to unbundle a ten. I show how I decompose 1 ten into 10 ones on my place value chart and in vertical form. Now I have 1 hundred 3 tens 10 ones.

Now I’m ready to subtract.
10 ones – 2 ones = 8 ones.
3 tens – 1 ten = 2 tens.
1 hundred – 0 hundreds = 1 hundred.
1 hundred 2 tens 8 ones is 128.
2. Solve and show your work. Draw a place value chart and chips, if needed.
   a. Ana has 173 marbles. She has 27 more than Rico. How many marbles does Rico have?

   Since Ana has more, her bar is longer than Rico's.

   I know the whole and one part. I can use the vertical form to subtract to find the missing part.

   \[ \begin{align*}
   A & \quad 173 \\
   R & \quad ? \\
   \end{align*} \]

   This space shows how much more Ana has than Rico.

   I need to unbundle a ten. Now I have 1 hundred 6 tens 13 ones. I'm ready to subtract.

   \[ \begin{align*}
   \phantom{1} & \phantom{1} 6 \phantom{3} 13 \\
   - & \phantom{1} 2 \phantom{7} 3 \\
   \hline
   & \phantom{1} 1 \phantom{6} 4 \phantom{0} 6
   \end{align*} \]

   Rico has 146 marbles.

   b. Rico gives 18 of his marbles to Diana. How many marbles does Rico have left?

   I can draw a single bar to show the total number of Rico's marbles.

   \[ \begin{align*}
   146 \\
   \begin{array}{c}
   \phantom{1} 18 \text{ gives} \\
   \phantom{1} ? \text{ left} \\
   \end{array}
   \end{align*} \]

   Rico gives this part, 18, to Diana.

   The other part is what Rico has left.

   I can use the vertical form to subtract and solve.

   \[ \begin{align*}
   \phantom{1} & \phantom{1} 3 \phantom{16} \\
   - & \phantom{1} 1 \phantom{14} 8 \\
   \hline
   & \phantom{1} 1 \phantom{2} 2 \phantom{8}
   \end{align*} \]

   Rico has 128 marbles left.
G2-M4-Lesson 15

1. Solve using the vertical form. Show the subtraction on the place value chart with chips. Exchange 1 ten for 10 ones, if necessary.

181 - 73

Before I begin subtracting in vertical form, I have to get ready to subtract. I need to check each place to be sure I have enough!

I don't have enough ones in the ones place.

I unbundle a ten as 10 ones. I remember to show this change in vertical form.

I'm ready to subtract.
11 ones - 3 ones = 8 ones.
7 tens - 7 tens = 0 tens.
1 hundred - 0 hundreds = 1 hundred.
1 hundred 8 ones is 108.
2. Maya solved $157 - 39$ vertically and on her place value chart. Explain what Maya did correctly and what she needs to fix.

\[
\begin{array}{c}
100's \\
157 \\
- \\
39 \\
\hline \\
128 \\
\end{array}
\]

<table>
<thead>
<tr>
<th>100's</th>
<th>10's</th>
<th>1's</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Maya correctly **models the problem on the place value chart. She shows the whole, 157, and then she decomposes 1 ten as 10 ones. She changes the model to show 1 hundred 4 tens 17 ones. After she crosses off 3 tens 9 ones, the model shows the correct answer, 118.**

b. Maya needs to fix **the vertical form. She forgot to draw the magnifying glass, which would have reminded her to look carefully to set the problem up for subtraction. She didn't show the change in the tens place, so she subtracted 3 tens from 5 tens, instead of subtracting from 4 tens. That's why she got the wrong answer, 128.**
G2-M4-Lesson 16

Solve the following word problems. Use the RDW process.

1. Audrey put 56 beads on a necklace. Some beads fell off, but she still has 28 left. How many beads fell off?

   I can draw a single bar to show the total number of beads, 56.
   The problem tells me how many beads Audrey has left, 28.

   One part of that total fell off, but I don't know how many, so I label that with a question mark.

   When I know the whole and one part, I have to find the missing part. I can either subtract or count on to find the answer.

   \( 56 - 28 = \underline{28} \) or \( 28 + \underline{28} = 56 \).

   I can solve whichever way is easiest for me! It's easy to subtract friendly numbers, and I notice that 28 is close to 30. I can add 2 to 28 to get 30. And I have to do the same thing to the other number, so I add 2 to 56. My new easier equation is \( 58 - 30 = 28 \).

2. Farmer Ben picks 87 apples. 26 apples are green, 20 are yellow, and the rest are red. How many apples are red?

   I add the parts I know.

   Then I subtract. I can solve mentally. 8 tens - 4 tens is 4 tens. 7 ones - 6 ones is 1 one. 4 tens 1 one is 41.
3. Ava planted 45 flowers in the morning. She planted 26 fewer flowers in the afternoon. How many flowers did she plant altogether?

I draw and label how many flowers Ava planted in the morning.

<table>
<thead>
<tr>
<th>M</th>
<th>45</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>?</td>
</tr>
</tbody>
</table>

But I do know how many fewer she planted in the afternoon, so I can label this space.

To find how many flowers Ava planted in the afternoon, I can subtract the part, 26, from the whole, 45.

45 - 26 = __

I can use the chip model and vertical form to solve.

To find how many flowers Ava planted in the afternoon, I can subtract the part, 26, from the whole, 45.

Ava planted 19 flowers in the afternoon.

To find out how many flowers Ava planted altogether, I add the parts, 45 and 19.

45 + 19 = 64

I can use another model to show my work. The number bond shows that I know the two parts. I need to find the whole.

Ava planted 64 flowers altogether.
G2-M4-Lesson 17

1. Solve mentally.

   1 ten more than 8 ones = 18
   1 hundred more than 8 ones = 108
   1 hundred more than 8 tens = 180

   12 ones + 2 ones = 1 ten(s) 4 one(s)
   12 tens + 2 tens = 1 hundred(s) 4 tens(s)

   10 + 8 = 18
   100 + 8 = 108
   100 + 80 = 180

2. Solve.

   7 ones + 8 ones = 1 ten 5 ones
   7 tens + 8 tens = 1 hundred 5 tens

   7 + 8 = 15
   70 + 80 = 150

3. Fill in the blanks. Then, complete the addition sentence.

   54 + 6 + 40 + 10 + 10 + 100 + 120 + 100 = 220

   First, I add 6 to make a ten, 60. Then I add 40 to make a hundred. It's easy to add on 2 more tens and a hundred to make 220.

Lesson 17: Use mental strategies to relate compositions of 10 tens as 1 hundred to 10 ones as 1 ten.
G2-M4-Lesson 18

1. Solve using your place value chart and place value disks.
   \[35 + 76 = 111\]
   \[36 + 86 = 122\]
   36 is one more than 35, and 86 is 10 more than 76.

2. Circle the statements that are true as you solve the problem using place value disks.
   \[136 + 58\]
   \[1\text{ change 10 ones for 1 ten.}\]
   \[1\text{ change 10 tens for 1 hundred.}\]
   \[\text{The total of the two parts is 184.}\]
   \[\text{The total of the two parts is 194.}\]
   I can set up this problem with place value disks and add like units. 6 ones and 8 ones are
   14 ones. I can change 10 ones for 1 ten. I’ll have 4 ones left over. Then, 3 tens + 5 tens
   + 1 ten equals 9 tens. 1 hundred + 9 tens
   + 4 ones = 194.

3. Solve the problem using your place value disks, and fill in the missing total. Then, write an
   addition sentence that relates to the number bond.
   \[\text{47 + 82}\]
   I can change 10 tens for 1 hundred!
   Now I have 1 hundred 2 tens 9 ones, 129.
   I have 9 ones. I can’t make a ten.
   Addition sentence:
   \[47 + 82 = 129\]
1. Solve the following problems using the vertical form, your place value chart, and place value disks. Bundle a ten or hundred, if needed.

a. \( 24 + 69 = 93 \)

I can solve this one mentally! 69 is close to 70, so I can think \( 24 + 70 = 94 \). Then, I can just subtract 1, and the answer is 93.

b. \( 137 + 63 = 200 \)

I can use my chart and place value disks to solve.

I write it in vertical form as I model it with my place value disks.

Now I add the tens.

I show the ten using new groups below, on the line below the tens place.

I bundle 10 ones and make a ten!

Now I add the tens.

3 tens plus 6 tens plus 1 ten is 10 tens. I can bundle again to make 1 hundred! I show the hundred using new groups below again.

Last, I add the hundreds.

There are 2 hundreds.

---

Lesson 19: Relate manipulative representations to a written method.
2. Eighty-four girls attended swim school. Twenty-nine more boys attended than girls.
   a. How many boys attended swim school?

   ![Diagram showing place value disks for addition]

   Or I could use my place value disks to set up for addition with renaming. I can show 84 and 29 with disks and solve vertically.

   \[84 + 29 = \_\_\_\_\_\_\_\_\]

   I can draw a tape diagram to represent the story. I can use the make ten strategy to solve! (See below.)

   \[\text{girls} \quad \text{more boys}\]

   \[
   \begin{array}{c}
   84 \\
   + 29 \\
   \hline
   113
   \end{array}
   \]

   113 boys attended swim school.

   b. How many boys and girls attended swim school?

   ![Diagram showing addition of 84 and 113]

   \[
   \begin{array}{c}
   84 \\
   + 113 \\
   \hline
   197
   \end{array}
   \]

   197 boys and girls attended swim school.
Solve vertically. Draw chips on the place value chart and bundle, when needed.

1. $58 + 74 = 132$

I show each step I make with chips vertically using new groups below.

100's | 10's | 1's
---|---|---
5 | 8 | 
+ 7 | 4 | 
---|---|---
1 | 3 | 2

I draw chips to show each addend. 8 ones plus 4 ones is 12 ones, or 1 ten 2 ones. I bundle 10 ones to make 1 ten. Now I add the tens. 5 tens plus 7 tens plus 1 more ten is 13 tens. I can bundle again! 10 tens makes 1 hundred. So, 13 tens is 1 hundred 3 tens.

2. For the box below, find and circle two numbers that add up to 160.

If I add 88 and 72, I can add 8 ones and 2 ones, which is 10 ones. I can bundle ten ones to make 1 ten! Then, I can add 8 tens plus 7 tens plus 1 ten to get 16 tens, or 160.

I see the trap; if I forgot to add another ten, I might have chosen 88 and 82 or 78 and 92.
G2-M4-Lesson 21

Solve vertically. Draw chips on the place value chart and bundle, when needed.

1. \(138 + 62 = \boxed{200}\)

2. The orange team scored 26 fewer points than the green team. The orange team scored 49 points.
   a. How many points did the green team score?

   I can draw a comparison tape diagram to solve.

   \[\begin{array}{c}
   \text{orange} \\
   49 \\
   \end{array}\]

   \[\begin{array}{c}
   \text{green} \\
   ? \\
   \end{array}\]

   \[49 + 26 = \boxed{75}\]

   The green team scored 75 points.

   I don't need to solve with chips because 49 is close to 50. I can add 50 and 26, which makes 76. Then, I can subtract 1 since 49 is 1 less than 50. I can use the same strategy for Part (b).
b. How many points did the orange and green teams score altogether?

\[ \begin{array}{c|c|c}
   & 49 & 75 \\
  \hline
  orange & 49 & 75 \\
  green & & \\
\end{array} \]

\[ 49 + 75 = ? \]
\[ 50 + 75 = 125 \]
\[ 125 - 1 = 124 \]

The orange and green team scored 124 points altogether.
G2-M4-Lesson 22

1. Look to make 10 ones or 10 tens to solve the following problems using place value strategies.

   \[ 7 + 6 + 3 + 4 = 20 \]
   \[ 10 + 10 \]

   \[ 37 + 16 + 43 + 54 = 150 \]
   \[ 80 + 70 \]

   \[ 86 + 34 + 33 + 67 = 220 \]
   \[ 120 + 100 \]

   This is similar to the first problem, except now there are tens. When I add 37 plus 43, I know 7 ones plus 3 ones equals 10 ones, or 1 ten. Then, 3 tens plus 4 tens equals 7 tens. 7 tens + 1 ten = 8 tens, or 80.

   I can group 86 and 34 together because 6 and 4 make 10. 8 tens plus 3 tens equals 11 tens. When I add 1 more ten, I get 12 tens, which is 120. 120 + 100 = 220.

2. The table shows the top five soccer teams and their total points scored this season.

<table>
<thead>
<tr>
<th>Teams</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>48</td>
</tr>
<tr>
<td>Yellow</td>
<td>39</td>
</tr>
<tr>
<td>Green</td>
<td>52</td>
</tr>
<tr>
<td>Blue</td>
<td>41</td>
</tr>
<tr>
<td>Orange</td>
<td>42</td>
</tr>
</tbody>
</table>

   A. How many points did the yellow, orange, and blue teams score together?

   \[ 39 + 42 + 41 = 122 \]
   \[ 80 + 42 \]

   Since 9 and 1 make ten, I added 39 and 41 first. I know that 30 + 40 = 70, and 70 + 10 = 80. Then, 80 + 42 = 122.

   The yellow, orange, and blue teams scored 122 points.
b. Which two teams scored a total of 90 points?

48 + 42 = 90

The red and orange teams scored 90 points.

I can look for a total of 9 tens. 4 tens plus 4 tens is 8 tens, which is only 80. But, don’t forget the ones! 8 ones plus 2 ones equals 10 ones, or 1 ten. So 8 tens and 1 more ten is 9 tens, or 90.
G2-M4-Lesson 23

1. Solve using number bonds to subtract from 100.

\[
\begin{align*}
115 - 80 &= 35 \\
100 - 80 &= 20 \\
&\quad + 15 = 35 \\
147 - 50 &= 97 \\
&\quad + 47 = 97 \\
\end{align*}
\]

I can make a number bond to break apart 115. I can take out the 100 from 115. Then, 15 are left.

After I take out 100, I can subtract 50 easily. 100 - 50 = 50. I can look at my number bond and add back the rest, so 50 + 47 = 97.


- Charlotte sold 132 candles.
- Jana sold 72 candles.

My tape diagram shows that I don't know how many candles Jana sold, but I know that Charlotte sold 60 more candles than Jana.

I can break apart 132 so I can subtract from the hundred. This is a good strategy since it's easy to solve 100 - 60 = 40. Then, I can add back the other part, so 40 + 32 = 72.

Jana sold 72 candles.
G2-M4-Lesson 24

1. Solve using mental math. If you cannot solve mentally, use your place value chart and place value disks.

\[47 - 7 = 40\]
\[47 - 8 = 39\]
\[147 - 47 = 100\]
\[147 - 48 = 99\]

I can use 147 - 47 to help me solve 147 - 48. Since the difference in the first problem is 100, the difference in the second problem must be 1 less than 100 because I am only subtracting 1 more.

2. Solve using your place value chart and place value disks. Unbundle the hundred or ten when necessary. Circle what you did to model each problem.

\[145 - 87 = 58\]

I unbundled the hundred. I unbundled a ten.

I only have 3 tens. That's not enough to subtract 8 tens! I need to unbundle the hundred.

Now I have 15 ones. That's enough to subtract 7 ones.

Now I have 13 tens and 15 ones. I am ready to subtract!

13 tens - 8 tens = 5 tens.
15 ones - 7 ones = 8 ones.
5 tens 8 ones is 58.
3. 76 pencils in the basket are sharpened. The basket has 132 pencils. How many pencils are not sharpened?

My tape diagram shows that 132 is the total. I know that one part is 76 sharpened pencils. I am solving for the number of pencils that are not sharpened. That's my unknown.

132 - 76 = ?

76 + 4 → 80 + 20 → 100 + 32 → 132

56 pencils are not sharpened.

I can use the arrow way to find the missing part. I can start at 76 and add 4 to get to a friendly number, 80. Then, I can add 20 to get to 1 hundred. Then, 32 more is 132. So, 20 + 32 + 4 = 56.
1. Solve the following problems using the vertical form, your place value chart, and place value disks. Unbundle a ten or hundred when necessary. Show your work for each problem.

$$173 - 87 = 86$$

I draw my magnifying glass around the total, so I look closely at the whole number.

I can't subtract 7 ones from 3 ones. I need to unbundle a ten.

Now I have 13 ones. That's enough to subtract 7 ones.

What I do with disks, I need to do in the vertical form.

I only have 6 tens. That's not enough to subtract 8 tens. I can change 1 hundred for 10 tens.

Now I have 16 tens and 13 ones. I am ready to subtract!

13 ones - 7 ones = 6 ones.

16 tens - 8 tens = 8 tens.

8 tens 6 ones is 86.
2. Vazyl has $127. He has $65 more than Sergio. How much money does Sergio have?

\[
\begin{align*}
V &= 127 \\
S &= ? \\
65 &
\end{align*}
\]

\[
127 - 65 = ?
\]

I can use the vertical method to figure out how much money Sergio has. I only have to unbundle the hundred because there are enough ones to subtract.

- 7 ones - 5 ones = 2 ones.
- 12 tens - 6 tens = 6 tens.
- 6 tens 2 ones is 62.

Sergio has 62 dollars.

3. Which problem will have the same answer as 122 - 66? Show your work.

a. 144 - 55
b. 126 - 62
c. 166 - 22
d. 144 - 88

I can use the vertical form to solve 122 - 66.

But I also know another strategy. If I add 22 to both numbers, the difference doesn't change. So, 122 + 22 = 144. And 66 + 22 = 88. That means 144 - 88 = 56. I remember this; it's called compensation!
Solve vertically. Draw chips on the place value chart. Unbundle when needed.

\[
152 - 67 = 85
\]

<table>
<thead>
<tr>
<th>hundreds</th>
<th>tens</th>
<th>ones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

When I'm subtracting, I only draw the whole, 152, with chips.

Whatever I do with my chips, I have to show in the vertical form. I unbundled a ten and a hundred, so now I have 14 tens 12 ones. Now, I am ready to subtract!

I can't subtract 6 tens from 4 tens. I need to unbundle a hundred. I can change 1 hundred for 10 tens.

I can't subtract 7 ones from 2 ones. I need to unbundle a ten. I can change 1 ten for 10 ones.

I cross out 6 chips in the tens place. 14 tens minus 6 tens is 8 tens.

I cross out 7 chips in the ones place. 12 ones minus 7 ones is 5 ones.
**G2-M4-Lesson 27**

Solve vertically. Draw chips on the place value chart. Unbundle when needed.

\[ 200 - 66 = 134 \]

- **Hundreds**
  - 1
  - 9
  - 10

- **Tens**
  - 2
  - 0
  - 0

- **Ones**
  - 6
  - 6

\[ \begin{array}{c|c|c}
\text{Hundreds} & \text{Tens} & \text{Ones} \\
\hline
1 & 9 & 10 \\
2 & 0 & 0 \\
\hline
6 & 6 & \end{array} \]

When I'm subtracting, I only draw the whole, 200, with chips.

Whatever I do with my chips, I have to show in the vertical form. I can unbundle 200 in one step! Now I have 1 hundred 9 tens 10 ones. I am ready to subtract!

Sometimes when I subtract, I know that both the tens and the ones are going to need more. I can change 1 hundred for 10 tens and then change a ten for 10 ones.

I still have 1 hundred left!

I can cross out chips in the tens place. 9 tens minus 6 tens is 3 tens.

I can cross out chips in the ones place. 10 ones minus 6 ones is 4 ones.

I can check to make sure my answer is correct by adding the two parts back together. So, 134 + 66 = 200. That's the whole!
G2-M4-Lesson 28

1. Solve vertically. Draw chips on the place value chart. Unbundle when needed.

\[ 200 - 108 = 92 \]

When I'm subtracting, I only draw the whole, 200, with chips.

Whatever I do with my chips, I record the change in the written subtraction. I am ready to subtract!

I can rename 200 as 1 hundred 9 tens 10 ones in just one step!

I have to take away 1 hundred, so there are 0 hundreds left.

I have 9 tens, and I don't have to take away any!

I can cross out chips in the ones place. 10 ones minus 8 ones is 2 ones.

Lesson 28: Subtract from 200 and from numbers with zeros in the tens place.

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2. Harry collected 200 baseball cards. He traded 127 of them and kept the rest. How many baseball cards did he keep?

\[ 200 - 127 = ? \]

Harry kept 73 baseball cards.

When I know the whole and one part, I can subtract to find the answer.

My tape diagram shows the part, 127, and the whole, 200. I don't know how many baseball cards Harry kept, so I put a question mark there; it's my unknown.
G2-M4-Lesson 29

1. Add like units, and record the totals below.

Add 6 tens + 5 tens = 11 tens, or 1 hundred 1 ten.

I add all the ones, tens, and hundreds. Look, there are 10 tens! That's the same as 1 hundred 0 tens. I record the hundred on the line.

Here, I add the hundreds, then tens, and then ones. If I added starting with the ones, the totals would still be the same because I am adding the same parts!

2. Dana counted 59 peaches on one tree and 87 peaches on another tree. How many peaches were on both trees? Add like units and record the totals below to solve.

146 peaches were on both trees.
G2-M4-Lesson 30

1. Linda and Keith solved 127 + 59.

<table>
<thead>
<tr>
<th>Linda’s work:</th>
<th>Keith’s work:</th>
</tr>
</thead>
<tbody>
<tr>
<td>127</td>
<td>127</td>
</tr>
<tr>
<td>+ 59</td>
<td>+ 59</td>
</tr>
<tr>
<td>16</td>
<td>18</td>
</tr>
<tr>
<td>70</td>
<td>59</td>
</tr>
<tr>
<td>+100</td>
<td></td>
</tr>
<tr>
<td>186</td>
<td>186</td>
</tr>
</tbody>
</table>

Linda solved using totals below, and Keith solved using new groups below, but they got the same answer!

Explain what is different about how Linda and Keith solved the problem.

*Linda added the ones, tens, and hundreds by themselves to get the 3 parts: 16, 70, and 100. Then, she added those parts up to get 186. Keith renamed 16 ones as 1 ten 6 ones. Next, he added 2 tens plus 5 tens plus 1 ten, which equals 8 tens. Then, he added 1 hundred. They got the same answer!*  

2. Here is one way to solve 124 + 69. Solve 124 + 69 another way.

\[
\begin{array}{ccc}
\text{124} & + & 69 \\
\text{13} & + & 80 \\
\text{1} & + & 100 \\
\hline
\text{193} \\
\end{array}
\]

I can solve using totals below!

\[
\begin{array}{ccc}
1 & + & 7 \\
3 & + & 8 \\
0 & + & 0 \\
\hline
1 & 9 & 3 \\
\end{array}
\]

Explain how the two ways to solve 124 + 69 are similar.

*In the first problem, when you rename 13 ones, you can see that 1 hundred 8 tens 13 ones becomes 1 hundred 9 tens 3 ones. When I solve the problem another way, it is just like showing the 3 parts before renaming. 1 hundred 8 tens 13 ones \(= 100 + 80 + 13\). I can add the parts in any order and get the same total!*
G2-M4-Lesson 31

Solve the following word problems by drawing a tape diagram. Then, use any strategy that you've learned to solve.

Sandra has 46 fewer coins than Martha. Sandra has 57 coins.

a. How many coins does Martha have?

I use the RDW process to solve. A tape diagram helps me see the parts I know. I know that Sandra has 46 fewer coins than Martha, so that means Martha has more coins, 46 more. I add to find the number of coins Martha has.

\[
\begin{align*}
M & \quad ? \\
S & \quad 57
\end{align*}
\]

\[
57 + 46 = ?
\]

I use a number bond and the make ten strategy to solve!

\[
\begin{align*}
3 & \quad 43 \\
57 + 3 &= 60 \\
60 + 43 &= 103
\end{align*}
\]

Martha has 103 coins.

b. How many coins do Sandra and Martha have together?

From Part (a), I know that Martha has 103 coins. I add them to Sandra's 57 coins to get 160 coins all together.

\[
\begin{align*}
? \\
57 & \quad 103
\end{align*}
\]

\[
\begin{align*}
S \text{ coins} & \quad M \text{ coins} \\
57 + 103 &= ? \\
57 + 100 + 3 &= ? \\
60 + 100 &= 160
\end{align*}
\]

Sandra and Martha have 160 coins together.