1. Find the sums below.

a. \[46 \text{ mL} + 5 \text{ mL} = \boxed{51 \text{ mL}}\]

b. \[46 \text{ mL} + 25 \text{ mL} = \boxed{71 \text{ mL}}\]

c. \[46 \text{ mL} + 125 \text{ mL} = \boxed{171 \text{ mL}}\]

d. \[59 \text{ cm} + 30 \text{ cm} = \boxed{89 \text{ cm}}\]

e. \[509 \text{ cm} + 83 \text{ cm} = \boxed{592 \text{ cm}}\]

f. \[597 \text{ cm} + 30 \text{ cm} = \boxed{627 \text{ cm}}\]

g. \[39 \text{ g} + 63 \text{ g} = \boxed{102 \text{ g}}\]

h. \[345 \text{ g} + 294 \text{ g} = \boxed{639 \text{ g}}\]

i. \[480 \text{ g} + 476 \text{ g} = \boxed{956 \text{ g}}\]

j. \[1 \text{ L} + 245 \text{ mL} + 2 \text{ L} + 412 \text{ mL} = \boxed{3 \text{ L} 657 \text{ mL}}\]

k. \[2 \text{ kg} + 509 \text{ g} + 3 \text{ kg} + 367 \text{ g} = \boxed{5 \text{ kg} 876 \text{ g}}\]
2. Nadine and Jen buy a small bag of popcorn and a pretzel at the movie theater. The pretzel weighs 63 grams more than the popcorn. What is the weight of the pretzel?

\[
\begin{align*}
\text{pretzel} & \quad 107g \\
\text{popcorn} & \quad 44g \\
& + \quad 63g \\
\hline \\
\text{pretzel weighs 107 grams.}
\end{align*}
\]

3. In math class, Jason and Andrea find the total liquid volume of water in their beakers. Jason says the total is 782 mL, but Andrea says it is 792 mL. The amount of water in each beaker can be found in the table to the right. Show whose calculation is correct. Explain the mistake of the other student.

<table>
<thead>
<tr>
<th>Student</th>
<th>Liquid Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jason</td>
<td>475 mL</td>
</tr>
<tr>
<td>Andrea</td>
<td>317 mL</td>
</tr>
</tbody>
</table>

Andrea is right. Jason forgot to add the 10 mL yardstick be re-grouped.

4. It takes Greg 15 minutes to mow the front lawn. It takes him 17 more minutes to mow the back lawn than the front lawn. What is the total amount of time Greg spends mowing the lawns?

\[
\begin{align*}
15 \quad + \quad 32 &= 47 \\
\hline \\
\text{He spends 47 minutes mowing the lawns.}
\end{align*}
\]
1. Find the sums.
   
   a. \(24 \text{ cm} + 36 \text{ cm}\)
   
   \[20 \text{ cm} + 40 \text{ cm} = 60 \text{ cm}\]

   b. \(562 \text{ m} + 180 \text{ m}\)
   
   \[560 \text{ m} + 100 \text{ m} = 660 \text{ m}\]

   \[62 \text{ m} + 80 \text{ m} = 142 \text{ m}\]

   c. \(345 \text{ km} + 239 \text{ km}\)
   
   \[350 \text{ km} + 234 \text{ km} = 584 \text{ km}\]

2. Brianna jogs 15 minutes more on Sunday than Saturday. She jogged 26 minutes on Saturday.

   a. How many minutes does she jog on Sunday?
   
   \[26 \text{ min} + 15 \text{ min} = 41 \text{ mins}\]

   b. How many minutes does she jog in total?
   
   \[26 \text{ min} + 41 \text{ min} = 67 \text{ mins}\]

   \[60 + 7 = 67 \text{ mins}\]
1. Find the sums below. Choose mental math or the algorithm.

   a. 75 cm + 7 cm
     \[
     \begin{array}{c}
     75 \text{ cm} \\
     + 7 \text{ cm} \\
     \hline
     82 \text{ cm}
     \end{array}
     \]

   b. 39 kg + 56 kg
     \[
     \begin{array}{c}
     39 \text{ kg} \\
     + 56 \text{ kg} \\
     \hline
     95 \text{ kg}
     \end{array}
     \]

   c. 362 mL + 229 mL
     \[
     \begin{array}{c}
     361 \text{ mL} \\
     + 230 \text{ mL} \\
     \hline
     591 \text{ mL}
     \end{array}
     \]

   d. 283 g + 92 g
     \[
     \begin{array}{c}
     283 \text{ g} \\
     + 92 \text{ g} \\
     \hline
     375 \text{ g}
     \end{array}
     \]

   e. 451 mL + 339 mL
     \[
     \begin{array}{c}
     450 \text{ mL} \\
     + 340 \text{ mL} \\
     \hline
     790 \text{ mL}
     \end{array}
     \]

   f. 149 L + 331 L
     \[
     \begin{array}{c}
     150 \text{ L} \\
     + 330 \text{ L} \\
     \hline
     480 \text{ L}
     \end{array}
     \]

2. The liquid volume of five drinks is shown below.

   a. Jen drinks the apple juice and the water. How many milliliters does she drink in all?

<table>
<thead>
<tr>
<th>Drink</th>
<th>Liquid Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple juice</td>
<td>125 mL</td>
</tr>
<tr>
<td>Milk</td>
<td>236 mL</td>
</tr>
<tr>
<td>Water</td>
<td>248 mL</td>
</tr>
<tr>
<td>Orange juice</td>
<td>174 mL</td>
</tr>
<tr>
<td>Fruit punch</td>
<td>208 mL</td>
</tr>
</tbody>
</table>

   Jen drinks 361 mL.

   b. Kevin drinks the milk and the fruit punch. How many milliliters does he drink in all?

   Kevin drinks 444 mL.
3. There are 75 students in Grade 3. There are 44 more students in Grade 4 than in Grade 3. How many students are in Grade 4? Use a tape diagram to model your thinking.

4. Mr. Green’s sunflower grew 29 centimeters in one week. The next week it grew 5 centimeters more. What is the total number of centimeters the sunflower grew in 2 weeks?

\[
\begin{align*}
29 \text{ cm} + 5 \text{ cm} &= 34 \text{ cm} \\
30 \text{ cm} + 4 \text{ cm} &= 34 \text{ cm}
\end{align*}
\]

5. Kylie records the weights of 3 objects as shown below. Which 2 objects can she put on a pan balance to equal the weight of a 460 gram bag? Show how you know.

<table>
<thead>
<tr>
<th>Paperback Book</th>
<th>Banana</th>
<th>Bar of Soap</th>
</tr>
</thead>
<tbody>
<tr>
<td>343 grams</td>
<td>108 grams</td>
<td>117 grams</td>
</tr>
</tbody>
</table>

\[
\begin{align*}
343 \text{ g} + 108 \text{ g} &= 451 \text{ g} \\
117 \text{ g} + 108 \text{ g} &= 225 \text{ g} \\
120 \text{ g} + 105 \text{ g} &= 225 \text{ g}
\end{align*}
\]
1. Find the sums below.

   a. \[52 \text{ mL} + 68 \text{ mL}\]
      \[= \frac{52 \text{ mL} + 68 \text{ mL}}{50 \text{ mL} + 70 \text{ mL}}\]
      \[= 120 \text{ mL}\]

   b. \[352 \text{ mL} + 68 \text{ mL}\]
      \[= \frac{352 \text{ mL} + 68 \text{ mL}}{350 \text{ mL} + 70 \text{ mL}}\]
      \[= 420 \text{ mL}\]

   c. \[352 \text{ mL} + 468 \text{ mL}\]
      \[= \frac{352 \text{ mL} + 468 \text{ mL}}{350 \text{ mL} + 470 \text{ mL}}\]
      \[= 820 \text{ mL}\]

   d. \[56 \text{ cm} + 94 \text{ cm}\]
      \[= \frac{56 \text{ cm} + 94 \text{ cm}}{50 \text{ cm} + 100 \text{ cm}}\]
      \[= 150 \text{ cm}\]

   e. \[506 \text{ cm} + 94 \text{ cm}\]
      \[= \frac{506 \text{ cm} + 94 \text{ cm}}{500 \text{ cm} + 100 \text{ cm}}\]
      \[= 600 \text{ cm}\]

   f. \[506 \text{ cm} + 394 \text{ cm}\]
      \[= \frac{506 \text{ cm} + 394 \text{ cm}}{500 \text{ cm} + 400 \text{ cm}}\]
      \[= 900 \text{ cm}\]

   g. \[697 \text{ g} + 138 \text{ g}\]
      \[= \frac{697 \text{ g} + 138 \text{ g}}{700 \text{ g} + 135 \text{ g}}\]
      \[= 835 \text{ g}\]

   h. \[345 \text{ g} + 597 \text{ g}\]
      \[= \frac{345 \text{ g} + 597 \text{ g}}{342 \text{ g} + 600 \text{ g}}\]
      \[= 942 \text{ g}\]

   i. \[486 \text{ g} + 497 \text{ g}\]
      \[= \frac{486 \text{ g} + 497 \text{ g}}{483 \text{ g} + 500 \text{ g}}\]
      \[= 983 \text{ g}\]

   j. \[3 \text{ L} 251 \text{ mL} + 1 \text{ L} 549 \text{ mL}\]
      \[= \frac{3 \text{ L} 251 \text{ mL} + 1 \text{ L} 549 \text{ mL}}{4 \text{ L} 800 \text{ mL}}\]

   k. \[4 \text{ kg} 384 \text{ g} + 2 \text{ kg} 467 \text{ g}\]
      \[= \frac{4 \text{ kg} 384 \text{ g} + 2 \text{ kg} 467 \text{ g}}{6 \text{ kg} 851 \text{ g}}\]
      \[= 851 \text{ g}\]
2. Lane makes sauerkraut. He weighs the amounts of cabbage and salt he uses. Draw and label a tape diagram to find the total weight of the cabbage and salt Lane uses.

\[ 907\, g + 93\, g = 1000\, g = 1\, kg \]

3. Sue bakes mini muffins for the school bake sale. After wrapping 86 muffins, she still has 58 muffins left cooling on the table. How many muffins did she bake altogether?

\[
\begin{align*}
86 \text{ muffins} & \quad + \quad 58 \text{ muffins} \\
\hline
144 \text{ muffins}
\end{align*}
\]

4. The milk carton to the right holds 183 milliliters more liquid than the juice box. What is the total capacity of the juice box and milk carton?

\[
\begin{align*}
279\, mL & \quad + \quad 183\, mL = 462\, mL \\
280\, mL & \quad + \quad 182\, mL = 462\, mL \\
280\, mL & \quad + \quad 181\, mL = 461\, mL \\
\text{The total capacity is} & \quad 741\, mL.
\end{align*}
\]
1. Find the sums.

   a. 78 g + 29 g
      \[ 78 g + 29 g \]
      \[ 77 g + 30 g \]
      \[ 107 g \]

   b. 328 kg + 289 kg
      \[ 328 kg + 289 kg = \]
      \[ 327 + 230 kg = \]
      \[ 557 kg \]

   c. 509 L + 293 L
      \[ 509 L + 293 L \]
      \[ 510 L + 292 L \]

2. The third grade sells lemonade to raise funds. After selling 38 liters of lemonade in 1 week, they still have 26 liters of lemonade left. How many liters of lemonade did they have at the beginning?

   \[ 38 L \]
   \[ + 26 L \]
   \[ \underline{64 L} \]

   They had 64 L of lemonade at the beginning.
Name ____________________________ Date _____________

1. Find the sums below.

   a. \(47 \text{ m} + 8 \text{ m}\)

   \[
   \begin{array}{c}
   + 3 \text{ m} \\
   \hline
   50 \text{ m} + 5 \text{ m}
   \end{array}
   \]

   b. \(47 \text{ m} + 38 \text{ m}\)

   \[
   \begin{array}{c}
   + 3 \text{ m} \\
   \hline
   50 \text{ m} + 35 \text{ m}
   \end{array}
   \]

   c. \(147 \text{ m} + 383 \text{ m}\)

   \[
   \begin{array}{c}
   + 3 \text{ m} \\
   \hline
   150 \text{ m} + 380 \text{ m}
   \end{array}
   \]

   d. \(63 \text{ mL} + 9 \text{ mL}\)

   \[
   \begin{array}{c}
   + 1 \text{ mL} \\
   \hline
   62 \text{ mL} + 10 \text{ mL}
   \end{array}
   \]

   e. \(463 \text{ mL} + 79 \text{ mL}\)

   \[
   \begin{array}{c}
   + 11 \text{ mL} \\
   \hline
   462 \text{ mL} + 80 \text{ mL}
   \end{array}
   \]

   f. \(463 \text{ mL} + 179 \text{ mL}\)

   \[
   \begin{array}{c}
   + 179 \text{ mL} \\
   \hline
   642 \text{ mL}
   \end{array}
   \]

   g. \(368 \text{ kg} + 263 \text{ kg}\)

   \[
   \begin{array}{c}
   + 1 \text{ kg} \\
   \hline
   368 \text{ kg} + 263 \text{ kg}
   \end{array}
   \]

   h. \(508 \text{ kg} + 293 \text{ kg}\)

   \[
   \begin{array}{c}
   + 7 \text{ kg} \\
   \hline
   501 \text{ kg} + 300 \text{ kg}
   \end{array}
   \]

   i. \(103 \text{ kg} + 799 \text{ kg}\)

   \[
   \begin{array}{c}
   + 1 \text{ kg} \\
   \hline
   102 \text{ kg} + 800 \text{ kg}
   \end{array}
   \]

   j. \(4 \text{ L} 342 \text{ mL} + 2 \text{ L} 214 \text{ mL}\)

   \[
   \begin{array}{c}
   + 556 \text{ mL} \\
   \hline
   6 \text{ L} + 556 \text{ mL}
   \end{array}
   \]

   k. \(3 \text{ kg} 296 \text{ g} + 5 \text{ kg} 326 \text{ g}\)

   \[
   \begin{array}{c}
   + 8 \text{ kg} \\
   \hline
   300 \text{ g} + 322 \text{ kg}
   \end{array}
   \]
2. Mrs. Haley roasts a turkey for 55 minutes. She checks it, and decides to roast it for an additional 36 minutes. Use a tape diagram to find the total minutes Mrs. Haley roasts the turkey.

She roasts the turkey for 91 mins.

3. A miniature horse weighs 228 fewer kilograms than a Shetland pony. Use the table to find the weight of a Shetland pony.

<table>
<thead>
<tr>
<th>Types of Horses</th>
<th>Weight in kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shetland pony</td>
<td>381 kg</td>
</tr>
<tr>
<td>American Saddlebred</td>
<td>543 kg</td>
</tr>
<tr>
<td>Clydesdale horse</td>
<td></td>
</tr>
<tr>
<td>Miniature horse</td>
<td>53 kg</td>
</tr>
</tbody>
</table>

4. A Clydesdale horse weighs as much as a Shetland pony and an American Saddlebred horse combined. How much does a Clydesdale horse weigh?

A Clydesdale horse weighs 92.4 kg.
1. a. Find the actual sum either on paper or using mental math. Round each addend to the nearest hundred and find the estimated sums.

   A
   \[
   \begin{align*}
   451 + 253 &= 704 \\
   500 + 300 &= 800 \\
   451 + 249 &= 700 \\
   500 + 300 &= 800 \\
   448 + 249 &= 697 \\
   400 + 200 &= 600
   \end{align*}
   \]

   B
   \[
   \begin{align*}
   356 + 161 &= 517 \\
   400 + 200 &= 600 \\
   356 + 148 &= 504 \\
   400 + 100 &= 500 \\
   347 + 149 &= 496 \\
   300 + 100 &= 400
   \end{align*}
   \]

   C
   \[
   \begin{align*}
   652 + 158 &= 810 \\
   700 + 200 &= 900 \\
   647 + 158 &= 805 \\
   600 + 200 &= 800 \\
   647 + 146 &= 793 \\
   600 + 100 &= 700
   \end{align*}
   \]

   Circle the estimated sum that is the closest to its real sum.

b. Look at the sums that gave the most precise estimates. Explain below what they have in common. You might use a number line to support your explanation.

If one number rounds up and the other number rounds down and both numbers are rounded about the same amount.
2. Janet watched a movie that is 94 minutes long on Friday night. She watched a movie that is 151 minutes long on Saturday night.

a. Decide how to round the minutes. Then, estimate the total minutes Janet watched movies on Friday and Saturday.

Rounded to the nearest ten
100 minutes + 150 minutes = 250 minutes

b. How many times does Janet actually spend watching movies?

\[ \frac{94 \text{ minutes}}{150 \text{ minutes}} + 150 \text{ minutes} = 245 \text{ minutes} \]

My estimated amount is close to the actual sum.

100 mins + 200 mins = 300 mins.

3. Sadie, a bear at the zoo, weighs 182 kilograms. Her cub weighs 74 kilograms.

a. Estimate the total weight of Sadie and her cub using whatever method you think best.

180 kgs + 70 kgs = 250 kgs

b. What is the actual weight of Sadie and her cub? Model the problem with a tape diagram.

The total weight of Sadie and her cub is 256 kgs.
Jesse practices the trumpet for a total of 165 minutes during the first week of school. He practices for 245 minutes during the second week.

a. Estimate the total time Jesse practices by rounding to the nearest 10 minutes.

\[
\begin{align*}
170 \text{ mins} & \quad \text{first week} \\
250 \text{ mins} & \quad \text{second week} \\
\hline
420 \text{ mins} & \quad \text{He practices for a total of 420 minutes.}
\end{align*}
\]

b. Estimate the total amount of time Jesse practices by rounding to the nearest 100 minutes.

\[
\begin{align*}
200 \text{ mins.} & \quad \text{first wk.} \\
200 \text{ mins.} & \quad \text{second wk} \\
\hline
400 \text{ mins.}
\end{align*}
\]

c. Explain why the estimates are so close to each other.

When you estimated the numbers, one was rounded up and one was rounded down and they were both rounded about the same amount.
1. Cathy collects the following information about her dogs, Stella and Oliver.

<table>
<thead>
<tr>
<th>Stella</th>
<th>Oliver</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time Spent</td>
<td>Time Spent</td>
</tr>
<tr>
<td>Getting a Bath</td>
<td>Getting a Bath</td>
</tr>
<tr>
<td>36 minutes</td>
<td>25 minutes</td>
</tr>
<tr>
<td>Weight</td>
<td>Weight</td>
</tr>
<tr>
<td>32 kg</td>
<td>7 kg</td>
</tr>
</tbody>
</table>

Use the information in the charts to answer the questions below.

a. Estimate the total weight of Stella and Oliver.

A 30 kg - Stella
10 kg - Oliver
40 kg

The total estimated weight of both dogs is 40 kg.

b. What is the total weight of Stella and Oliver?

32 kg
+ 7 kg
49 kg

The total weight is 49 kg.

c. Estimate the total amount of time Cathy spends giving her dogs a bath.

40 minutes
30 minutes
70 minutes

The estimated time spent giving the dogs baths is 70 minutes.

d. What is the actual total time Cathy spends giving her dogs a bath?

36 minutes
25 minutes
61 minutes

The actual time spent giving the dogs baths was 61 minutes.

e. Explain how estimating helps you check the reasonableness of your answers.

It helps me quickly see, using easy to odd numbers, about how much the answer should be.
2. Dena reads for 361 minutes during Week 1 of her school's two-week long Read-A-Thon. She reads for 212 minutes during Week 2 of the Read-A-Thon.

a. Estimate the total amount of time Dena reads during the Read-A-Thon by rounding.

\[
\begin{align*}
\text{400 minutes} + \text{200 minutes} &= \text{600 minutes} \\
\text{The estimated time reading for the Read-A-Thon was 600 minutes.}
\end{align*}
\]

b. Estimate the total amount of time Dena reads during the Read-A-Thon by rounding in a different way.

\[
\begin{align*}
\text{360 minutes} + \text{210 minutes} &= \text{570 minutes}
\end{align*}
\]

c. Calculate the actual number of minutes that Dena reads during the Read-A-Thon. Which method of rounding was more precise? Why?

\[
\begin{align*}
\text{361 minutes} + \text{212 minutes} &= \text{573 minutes} \\
\text{The actual number of minutes that Dena read was 573 minutes.}
\end{align*}
\]

When I rounded to the tens the rounded number was closer to the actual number because when you round to the tens your rounded number is closer to the actual number, but when you round to the hundreds your number rounded is usually further away than your actual number.