Student Guide

Workshop: Addition (SG p. 146)
Questions 1–2

1. Responses may vary.
2. 0–9, 11, 22, 33, 44, 55, 66, 77, 88, 99 should be shaded on the chart.

Palindromes
A palindrome is a number, word, or phrase that reads the same forward and backward.

1. Look at Professor Peabody’s examples of palindromes. List three more examples.
2. Find all the palindromes on the Palindrome Recording Chart in the Student Activity Book.

Palindrome Recording Chart
A. 110
B. 110
C. 33
D. 176
E. 99
F. 44
G. Problems will vary. A mental math strategy for A: 19 + 91 = 20 + 90 = 110.
H. Problems and methods will vary. 97 + 79 = 160 + 16 = 176.
### Strategies to Add (SAB pp. 203–214)

#### Questions 1–21

<table>
<thead>
<tr>
<th></th>
<th>Number Sentences</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>26 + 13 = 39</td>
</tr>
<tr>
<td>2.</td>
<td>27 + 32 = 59</td>
</tr>
<tr>
<td>3.</td>
<td>68 + 22 = 90</td>
</tr>
<tr>
<td>4.</td>
<td>154 + 28 = 182</td>
</tr>
</tbody>
</table>

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**Strategies to Add**

**Using Base-Ten Pieces**

1. Solve 26 + 13 using base-ten pieces. Record your work with base-ten shorthand and the recording sheet.

Use the Workshop Menu to choose practice with using base-ten pieces.

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5. Answers will vary. Possible response: I agree with Tara. Tara thinks about the base-ten pieces she needs to represent the numbers she is adding together. She separates and groups the pieces by hundreds, tens, and ones. Then she combines the hundreds, tens, and ones to get an answer. That is like using expanded form because each of the numbers she needs to add together are broken apart into hundreds, tens, and ones, and then the hundreds, tens, and ones are combined to get an answer.

6. Problems will vary. One possible solution is given for Question 7:

   \[ \begin{align*}
   686 &= 600 + 80 + 6 \\
   &+ 587 = 500 + 80 + 7 \\
   \hline
   1100 + 160 + 13 &= 1273
   \end{align*} \]
10. Mental math strategies will vary. One possible solution for $64 + 59$: Think of $63 + 60$. $60 + 60 + 3 = 123$.

11. Possible response:

+100 +100 +100 +100 +50 +8

12. A. Grace’s method for $132 + 98$: Take the 2 from the 132 and put it with 98. Now the problem is $130 + 100 = 230$.

B. Peter’s method for $504 + 75$: Think about money. $500 + 75 = 575 + 4 = 579$.

C. Ana’s method for $352 + 98$: Think about a number line. Start at 352 and hop forward 100 to get to 452 and then hop back 2 to 450.

D. Frank’s method for $350 + 250$: Separate out the hundreds and add $300 + 200$. That is 500. Then $50 + 50 = 100$. $500 + 100 = 600$. 

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**Student Activity Book - Page 208**

14. Mental math strategies will vary. One possible solution for $732 + 198$: Take 2 from 732 and add it to 198 to make 200. $730 + 200 = 930$.

15. A. 500
   B. 1102
   C. 338
   D. 970
   E. 1044
   F. 1765

G. Problems and strategies will vary. One possible strategy for $325 + 175$: Think about money and add 75 + 25 to make 100. Then add $300 + 100 + 100 = 500$. 

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15. Solve the following problems using a mental math strategy. Record your answer and explain your strategy to your partner. You do not need to write your strategy down, but you can jot down some notes.

   - **A.** $325 + 175$
   - **B.** $604 + 498$
   - **C.** $130 + 208$
   - **D.** $849 + 121$
   - **E.** $747 + 297$
   - **F.** $998 + 767$

   - **G.** Show how you solved one of the problems above by describing your strategy in the thought bubble below.
16. Strategies and methods will vary.
Three possible solutions for $48 + 37$:
- Use mental math: Take 2 from 37 to make 50, and $50 + 35 = 85$.
- Use all-partials:
  
  $\begin{align*}
  48 \\
  + 37 \\
  \hline
  85
  \end{align*}$

- Use expanded form:
  
  $\begin{align*}
  48 &= 40 + 8 \\
  + 37 &= 30 + 7 \\
  70 + 15 &= 85
  \end{align*}$
20. Strategies and methods will vary. One possible solution strategy is given for each problem.

A. 205; All-partials:

```
  137
+  68
  15
  90
 100
```

B. 112; Compact method:

```
  1
+  46
```

C. 81; Mental math for 35 + 46: Separate the tens and add 30 + 40 = 70. Add the ones, 5 + 6 = 11. 70 + 11 = 81.

D. 656; Expanded form:

```
446 = 400 + 40 + 6
+ 210 = 200 + 10
```

```
600 + 50 + 6 = 656
```

E. Use base-ten pieces:

```
300 + 50 + 6 = 356
```

F. 3884; Compact method:

```
  1
+ 2436
```

```
3884
```

G. 69; Use a number line for 23 + 46: Start at 23 and hop forward four +10 hops to 63. Then hop 6 more to 69.

H. 5784; All-partials:

```
 2558
+  3226
```

```
5000
```

```
700
```

```
70
```

```
14
```

```
5784
```
   A. 802
   B. 702
   C. 913
   D. 618
Teacher Guide

Addition and Place Value Quiz
(TG pp. 1–3) Questions 1–8

1. Possible strategy: If I add just the hundreds, I get 300. If I add just the tens, I get 110.
   300 + 110 = 410 so I know 420 is reasonable.

2. Strategies and methods will vary. One possible solution is given for each problem:
   A. 102; Using mental math for 75 + 27: Think about money. 75 + 25 + 2 = 102
   B. 1475; Using expanded form:
      \[
      907 = 900 + 0 + 7 \\
      + 568 = 500 + 60 + 8 \\
      \underline{1400 + 60 + 15} = 1475
      \]
   C. 9492; Using compact method:
      \[
      \begin{align*}
      \underline{6653} & \\
      + & 2839 \\
      \underline{9492}
      \end{align*}
      \]

3. Possible strategy: If I add just the hundreds, I get 300. If I add just the tens, I get 110.
   300 + 110 = 410 so I know 420 is reasonable.

4. Strategies and methods will vary. One possible solution is given for each problem:
   A. 102; Using mental math for 75 + 27: Think about money. 75 + 25 + 2 = 102
   B. 1475; Using expanded form:
      \[
      907 = 900 + 0 + 7 \\
      + 568 = 500 + 60 + 8 \\
      \underline{1400 + 60 + 15} = 1475
      \]
   C. 9492; Using compact method:
      \[
      \begin{align*}
      \underline{6653} & \\
      + & 2839 \\
      \underline{9492}
      \end{align*}
      \]

5. One possible estimation strategy: 6653 is a little more than 6500. 2839 is a little less than 3000. 6500 + 3000 is 9500 so I know 9492 is reasonable.

6. The 1 over the 3 stands for 100 from adding 10 + 60 + 50 which equals 120 in the tens column.

Assessment Master
7. Ana added 6 tens plus 6 tens to get 12 tens or 120 in this step.

8. Using mental math: \(425 + 200 + 6 = 631\).
   Using all-partials:
   
   \[
   \begin{array}{c}
   425 \\
   + 206 \\
   \hline
   631
   \end{array}
   \]
   Explanations will vary. Possible response: Mental math is a good solution strategy because it is quicker than using paper and pencil.