## Student Guide

Number Sentences

Questions 1–14 (SG pp. 124–126)

1. A. False; $2 + 300 + 1000 = 1302$, but $(3 \times 10) + 1000 = 30 + 1000 = 1030$. 1302 does not equal 1030.

B. True; The numbers on the right are 2074 in expanded form.

C. False; $8000 + 900 + 40 + 6 = 8946$, but $8000 + 800 + 40 + 6 = 8846$. 8946 does not equal 8846.

D. False; The 4 is in the tens place so it should be $5000 + 40 + 5$ on the right.

E. True; $9000 + 600 + 70 + 8 = 9678$ and $9000 + 678 = 9678$

2. Yes, the number sentence is true. Twelve hops of 100 is written as 12×100. Hop $+ 5$ more to make 1205.

3.

4.
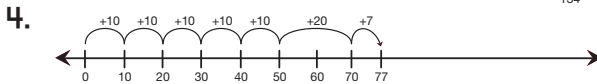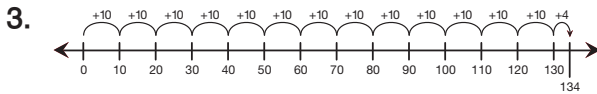
5. A correct equation is the same as a true number sentence because the amounts on both sides are equal.

6. A. correct equation

B. correct equation

C. not correct

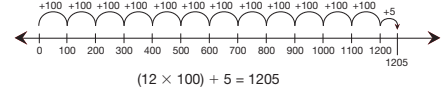**D.** correct equation

E. not correct

7.

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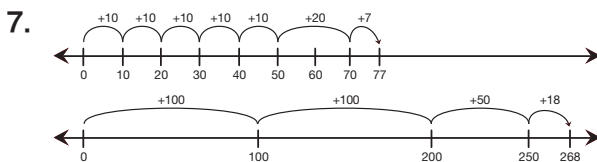
1. Tell whether the number sentences below are true or false. Be ready to explain your thinking. You may use number lines or other strategies.

A. $2 + 30 + 1000 = (3 \times 10) + 1000$

B. $2074 = 2000 + 70 + 4$

C. $8000 + 900 + 40 + 6 = 8000 + 800 + 40 + 6$

D. $5045 = 5000 + 400 + 5$

E. $9000 + 600 + 70 + 8 = 9000 + 678$

2. Study the number line below.
- Do you agree that the number sentence below the number line is true?
- How does the sentence match the moves on the number line?

$$(12 \times 100) + 5 = 1205$$

3. Draw a number line to show that the following number sentence is true.

$$(13 \times 10) + 4 = 134$$

4. Draw a number line to show that the following number sentence is a correct equation.

$$(5 \times 10) + 20 + 7 = 77$$

5. Is a correct equation the same as a true number sentence? Why or why not?

6. Tell whether the number sentences below are correct equations or not.

A. $35 + 100 = (3 \times 10) + 5 + 100$

B. $200 + 200 + 70 = 400 + 60 + 10$

C. $200 + 60 + 4 = 100 + 100 + 4$

D. $(6 \times 10) + 8 + 200 = (2 \times 100) + 50 + 18$

E. $(100 \times 3) + 2 = 100 + 32$

7. Draw 2 number lines, one for each side of the equal sign, to show why your answer to Question 6D is correct.

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Content of Student Guide Page 125:

Unknowns

Mrs. Dewey wrote the equation below on the board. The *n* is called an **unknown**. She said one thing that mathematicians do is to look for the number to replace *n* that will make the number sentence true.

Romesh studied the equation: $3072 = 3000 + n + 2$

Speech bubble (Romesh): I think n must be 70. If you write 3072 in expanded form, it's $3000 + 70 + 2$ and the 70 is missing.

8. Replace the letter with a number to make each equation true.

   A. $892 = 800 + n + 2$
   B. $892 = 700 + n + 2$
   C. $783 = n + 80 + 3$
   D. $783 = 700 + 70 + n$
   E. $3000 + 10 + 7 = n$
   F. $3000 + 10 + 7 = 3000 + n$
   G. $982 + 8 + 10 = 982 + 10 + 10 - n$

9. Explain how you know your answer to Question 8D is true.

10. Ming decided that *n* equals 6 in the following number sentence:
$$1000 = 324 + 600 + 70 + n$$

He used the following number line to explain his thinking. Do you agree with Ming? Why or why not?

Number line: 324, $+600$, 924, $+70$, 994, $n = 6$, 1000

(Ming)

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Content of Student Guide Page 126:

✓ **Check-In: Questions 11–14**

11. Tell whether the number sentences below are true.

   A. $5764 = 5000 + 600 + 70 + 4$
   B. $(3 \times 100) + 7 + (2 \times 10) = 327$

12. Draw a number line to show your answer to Question 11B is correct.

13. Replace the letter with a number to make each number sentence true.

   A. $1000 = 800 + n$
   B. $1000 = 374 + 6 + 20 + n$
   C. $1000 = 374 + 600 + 30 - n$
   D. $1000 = 101 + 9 + 90 + n$
   E. $1000 = 499 + n + 500$

14. Draw a number line to show that your answer to Question 13C is correct.

Choose problems on the *Number Lines and Number Sentences* pages in the *Student Activity Book* to practice showing different partitions of a number and finding the unknown with number lines.

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8. A. $n = 90$

   B. $n = 190$

   C. $n = 700$

   D.* $n = 13$

   E. $n = 3017$

   F. $n = 17$

   G. $n = 2$

9. Answers will vary. A number line shows:

Number line: 0, $+700$, 700, $+70$, 770, $n = 13$, 783

10.* Agree. Students' reasons will vary. Possible response: $324 + 600 + 70 + 6$ adds to 1000.

11. A. False number sentence

   B. True number sentence

12.

Number line: 0, $+100$, 100, $+100$, 200, $+100$, 300, $+10$, 310, $+10$, 320, $+7$, 327
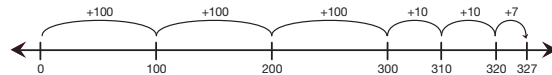
13. A. $n = 200$

   B. $n = 600$

   C. $n = 4$

   D. $n = 800$

   E. $n = 1$

14.

Number line: 374, $+600$, 974, $+30$, 1000, -4, 1004

*Answers and/or discussion are included in the lesson.

Student Guide

Homework

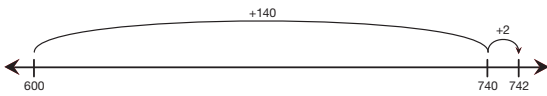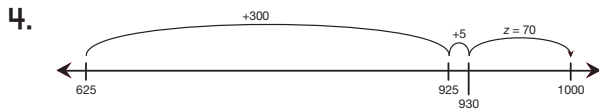### Questions 1–4 (SG p. 127)

1. **A.** $n = 100$
   B. $n = 2001$
   C. $n = 4000$
   D. $n = 30$
   E. $n = 140$

2. Answers will vary. Using the number line:

3. **A.** $n = 850$
   B. $n = 10$
   C. $n = 70$
   D. $n = 500$
   E. $n = 10$
   F. $n = 6$

4.

Homework

1. Find n to make the number sentence true. You may use number lines or other strategies.
   A. $600 + n + 6 = 706$
   B. $1000 + 1000 + 1 = n$
   C. $4076 = n + 70 + 6$
   D. $400 + 30 + 7 = 7 + n + 400$
   E. $700 + 40 + 2 = 600 + n + 2$

2. Show or tell how you know your answer to Question 1E is correct.

3. Replace each letter with a number to make the number sentence true. You may use number lines or other strategies.
   A. $100 + 45 + 5 + n = 1000$
   B. $1000 = 810 + 100 + 80 + n$
   C. $1000 = 625 + 300 + n + 5$
   D. $1000 = 456 + 4 + 40 + n$
   E. $9000 = 8982 + 8 + n$
   F. $1000 = 756 + 200 + 50 - n$

4. Draw a number line to show that your answer to Question 3C is correct.

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Show Different Partitions Are Equal

Use base-ten pieces and number lines as needed for Questions 1–6.

★**1. A.** Show 261 using base-ten shorthand.

　　B. Now show 261 another way, still using base-ten shorthand.

　　C. Write number sentences to match your answers in 1A and 1B.

　　D. Do either of your answers follow the Fewest Pieces Rule? If so, which one? If neither one does, show 261 with base-ten shorthand following the Fewest Pieces Rule. Write a number sentence to match.

★**2.** Lee Yah showed a number using base-ten shorthand:

Lee Yah said, "The number sentence that matches is 400 + 17 + 17 = 434. My number is 434."
　A. Mrs. Dewey said that Lee Yah made a mistake. What is Lee Yah's mistake?

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B. How much are all the skinnies worth in Lee Yah's shorthand?

C. How much are all the bits worth? _____
D. What number did Lee Yah really show with her base-ten shorthand?

E. Write a correct number sentence to match Lee Yah's base-ten shorthand.

★●**3.** Roberto and Jerome both showed 1129 using base-ten shorthand.

　　Roberto　　　　　　　Jerome

A. If they are both correct, tell how you know. If one is not correct, correct it.

B. Write a number sentence next to each correct picture of 1129.

C. Combine these two number sentences into one true number sentence.

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Number Lines and Number Sentences

Questions 1–15 (SAB pp. 104–111)

1. Answers will vary. Possible response shown.

A.

B.
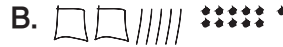
C. If using solutions 1A and 1B above:
$200 + 60 + 1 = 261$; $200 + 50 + 11 = 261$

D. If using 1A, yes. Fewest Pieces is
$200 + 60 + 1 = 261$

2. A. She counted each skinny as 1 instead of 10.

B. 170

C. 17

D. 587

E. $400 + 170 + 17 = 587$

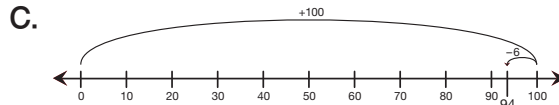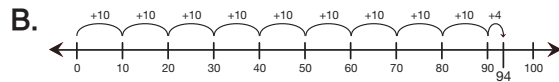**3. A.** They are both correct.
$1000 + 100 + 10 + 19 = 1000 + 120 + 9$

B. Roberto: $1000 + 100 + 10 + 19 = 1129$
Jerome: $1000 + 120 + 9 = 1129$

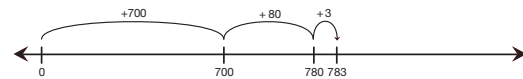**C.** $1000 + 100 + 10 + 19 = 1000 + 120 + 9$

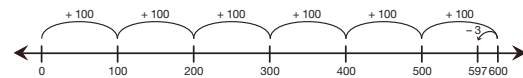**4.** Answers for 4A–E will vary. Possible response shown.

A.

B.

C.

D. $10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 4 = 94$

E. $100 - 6 = 94$

5. A. True

B. True

C. False
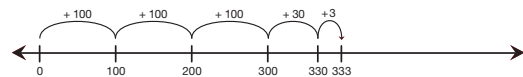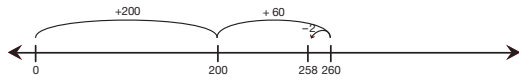
D. False

E. Answers will vary. See above.

6. A. True
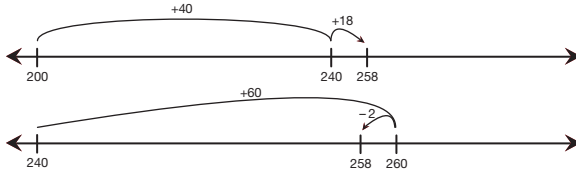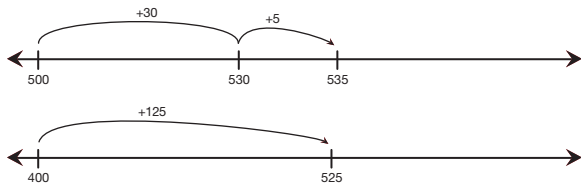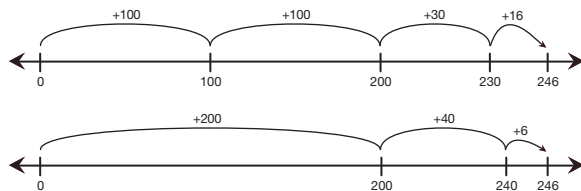

B. True
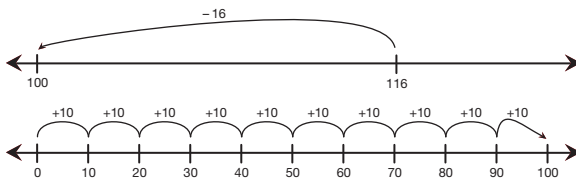
C. False
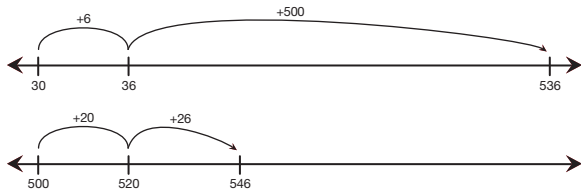
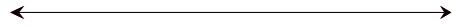**D.** False

E. Answers will vary. See above.

7. Possible response:
$$100 \times 2 + 30 + 16 = 100 + 100 + 40 + 6$$

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★●4. **A.** Show 94 using base-ten shorthand.

B. Use this number line to show how a base-ten hopper can get from 0 to 94. Match the hops to the base-ten pieces you drew in Question 4A.

C. Use this number line to show a different way a base-ten hopper can get from 0 to 94. Try to use fewer hops than you used before.

D. Write a number sentence to match the hops in Question 4B.

E. Write a number sentence to match the hops in Question 4C.

●■5. Tell whether each of these number sentences is true or false.

	True	False
A. $783 = 700 + 80 + 3$		
B. $597 = (6 \times 100) - 3$		
C. $(3 \times 100) + 30 + 3 = 133$		
D. $262 = 200 + 60 - 2$		

E. Choose one number sentence from Question 5 and use this number line to show that your answer is correct.

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●■6. Tell whether each of these number sentences is true or false.

	True	False
A. $200 + 40 + 18 = 200 + 60 - 2$		
B. $116 - 16 = 10 \times 10$		
C. $30 + 6 + 500 = 500 + 20 + 26$		
D. $500 + 30 + 5 = 400 + 125$		

E. Choose one number sentence from Question 6 and use these number lines to show that your answer is correct. Use one number line for each side of the equation.

■7. Write a true number sentence similar to those in Question 6. Use these number lines to show that the number sentence is true.

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Add Using Number Lines

★8. **A.** Use this number line to show how a base-ten hopper can start at 450 and hop 238 ahead.

⟵————————————————⟶

B. Where does it land? _____
C. Write an equation (a true number sentence) to match the hops.

_____

D. Complete the number sentence. 450 + 238 = ☐ .

E. Write another number sentence in the same family.

★●9. What number must *n* be to make the number sentence true?

A. 17 + *n* = 30   *n* = _____

B. 100 + *n* + 8 = 138   *n* = _____

C. 200 + 10 + *n* = 225   *n* = _____

D. 379 = *n* + 70 + 9   *n* = _____

E. Choose one number sentence and use this number line to show that your answer is correct.

⟵————————————————⟶

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8. A. Possible response:

B. 688

C. Possible response:
$$450 + 200 + 40 - 2 = 688$$

D. 688

E. $238 + 450 = 688$; $688 - 238 = 450$;
$688 - 450 = 238$

9. A. $n = 13$

B. $n = 30$
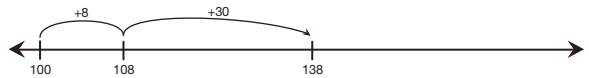
C. $n = 15$
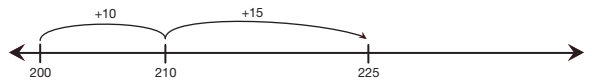
D. $n = 300$
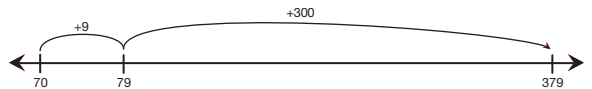
E. Answers will vary. See above.
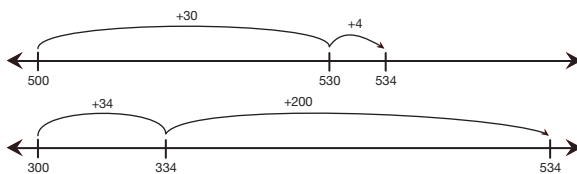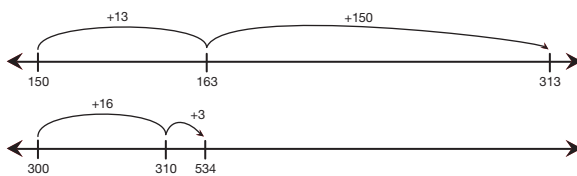
10. A. $n = 200$
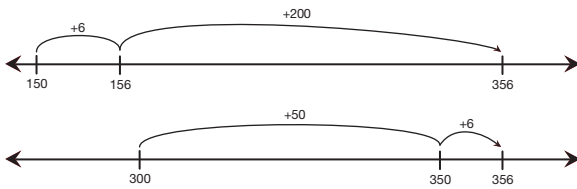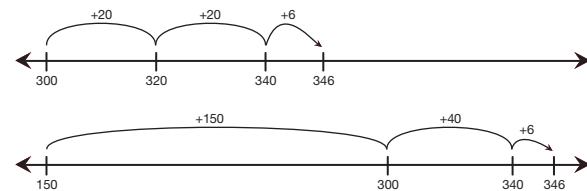

B. $n = 60$
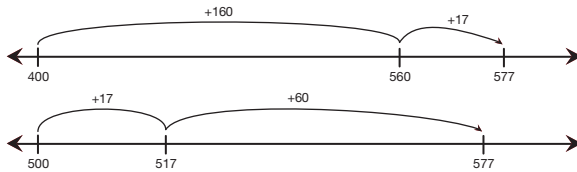
C. $n = 200$

D. $n = 150$

E. Answers will vary. See above.

11. Possible response:
$300 + 20 + 20 + 6 = 150 + 150 + 40 + 6$

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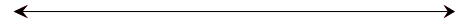●■**10.** What number must *n* be to make the number sentence true?

    A. $n + 150 + 6 = 300 + 50 + 6$ $n =$ _____

    B. $400 + 160 + 17 = 500 + n + 17$ $n =$ _____

    C. $500 + 30 + 4 = 300 + n + 34$ $n =$ _____

    D. $150 + n + 13 = 300 + 10 + 3$ $n =$ _____

    E. Choose one number sentence and use these number lines to show that your answer is correct. Use one number line for each side of the equation.

■**11.** Write a number sentence similar to those in Question 10. Use these number lines to show that the number sentence is true.

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12. A. Possible response:

B. Possible response: $500 - 300 - 30 - 5$

C. $500 - 335 = 165$

D. Possible response: $500 - 165 = 335$; $165 + 335 = 500$; $335 + 165 = 500$

13. A.

B. 760

C. Possible response:
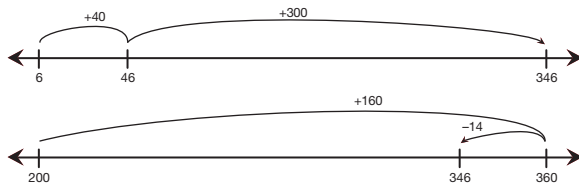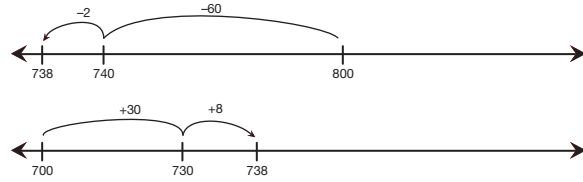$362 + 38 + 60 + 300 = 760$

D.

E. 760

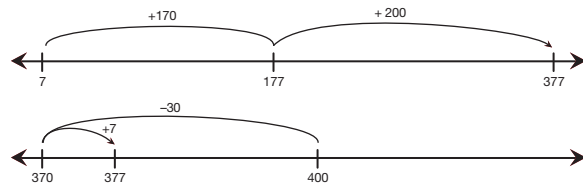**F.** Possible response: $760 - 362 = 398$; $362 + 398 = 760$; $398 + 362 = 760$
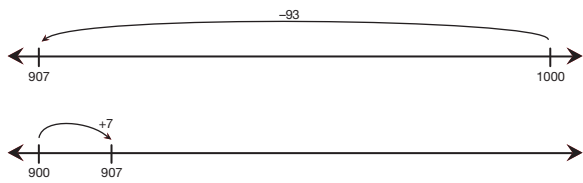
14. A. $n = 160$
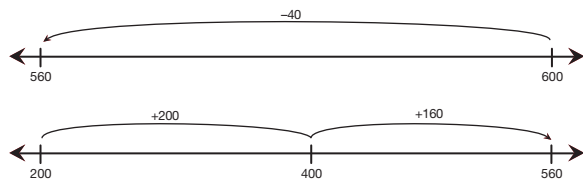

B. $n = 30$

C. $n = 200$

D. $n = 7$

E. Answers will vary. See above.

15. Possible response:
$600 - 40 = 200 + n + 160$

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●■**14.** What number must n be to make the number sentence true?

  A. $6 + 40 + 300 = 200 + n - 14$ $n =$ _____
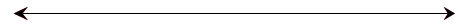
  B. $800 - 60 - 2 = 700 + n + 8$ $n =$ _____

  C. $7 + 170 + n = 400 - 30 + 7$ $n =$ _____

  D. $1000 - 93 = 900 + n$ $n =$ _____

  E. Choose one problem and use these number lines to show that your answer is correct. Use one number line for each side of the equation.

■**15.** Write a subtraction number sentence similar to those in Question 14. Use these number lines to show that the number sentence is true.
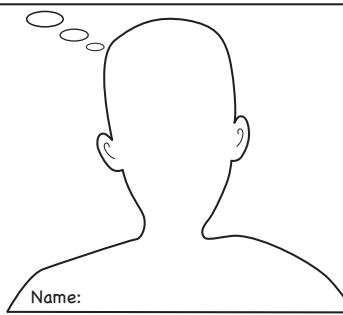
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What I Think

Solve: $100 + 70 + n = 200 + 80 + 5$

Name: _____

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Teacher Guide

Teacher Guide

What I Think (TG p. 119)

Strategies will vary. Two possible responses:

$n = 115$; I looked at 100s, 10s, and 1s on each side. To make both sides the same, you need 100 more in the 100s, 10 more in the 10s, and 5 more in the 1s. $100 + 10 + 5 = 115$, so $n = 115$

I added $200 + 80 + 5 = 285$ on the right. Then I added $100 + 70 = 170$ on the left. I knew the other side had to match, so I thought how much would I have to go on a number line to get from 170 to 285. I counted up

$$170 + \boxed{30} = 200$$
$$200 + \boxed{85} = 285$$
$$30 + 85 = 115, \text{ so } n = 115$$