# **Subtraction Discussion Guide (for use during or after reading)**

1. Use your own words to describe and define subtraction. (What Is Subtraction?, p. 4-5)
   1. Subtraction is represented by the – symbol and can be used to find the difference between two amounts. Many people think about subtraction as taking away from something.
2. What is the counting back strategy? Explain how it is used on pages 6 and 7. (Counting Back, p. 6-9).
   1. The counting back strategy is the opposite of the counting up addition strategy. Counting back from a total can help us subtract. The text shows 16 total peaches, but 9 of them are rotten. We can count back 9 numbers from 16 to find the total number of good peaches. 16 – 9 = 7.
3. Look back at pages 8 and 9. How can addition be used to help solve this subtraction problem? (Counting Back, p. 6-9)
   1. In this example, addition was used to help decompose numbers to find a group of ten. Doing this helped make the problem easier to solve. Instead of counting back 9 from 16, this example used addition to rewrite 16 as 10 + 6. We can easily subtract 7 from that group of 10, leaving us with 3. Finally, we can add those 3 to the remaining 6 to get a final difference of 9.
4. What is a number line and why is it helpful? (Number Lines, p. 10-11)
   1. A number line is a tool mathematicians use to help them visualize or solve problems. Number lines typically show digits in order from least (left side of the line) to greatest (right side of the line). Although number lines can go on for ever and ever, we can use them to help us visualize specific numbers or groups of numbers.
5. How was the problem highlighted on pages 10 and 11 solved strategically? (Number Lines, p. 10-11)
   1. A number line is a strategic tool that can be used to subtract. The story situation on pages 10 and 11 illustrates the subtraction problem 37 – 19. If we start at 37 on the number line and jump back 19, we can find our difference of 18. There are many ways to jump back on this number line. We could jump back by ones, by groups of 5, by groups of 10, etc. Different mathematicians find different jumping back strategies more efficient than others.
6. Consider the problem on pages 10 and 11. How could you solve this problem using another strategy? (Number Lines, p. 10-11)
   1. Students’ answers will vary. For example, rather than solving this problem with a number line, we could use a counting on addition strategy. Instead of thinking about 37 – 19 = ?, we could rewrite the problem as 19 + ? = 37. We could make a friendly number group of 20 by adding 1 more. We could continue counting up because we know 20 + 10 = 30 and 30 + 7 = 37. The total, therefore, would be 1 + 10 + 7 = 18.
7. Explain how addition can be used to check a subtraction problem’s answer for accuracy. (Checking Your Work, p. 12-13)
   1. Addition and subtraction are related operations. They work as opposites. In order to check our subtraction work, we can add our answer to what we subtracted. If that sum matches what we started with, we know we are correct. For example, we can check the subtraction problem 34 – 16 = 18 with addition: 18 + 16 = 34.
8. Compare the strategies used to solve the same problem on pages 14-15 and 16-17. Which strategy do you think is the most efficient? Why? (Losing Your Marbles, p. 14-17)
   1. The first strategy used to solve the problem 53 – 25 uses a number line, the finding tens strategy, and the foundational ideas of counting back and counting on to find the difference of 28. The second strategy relies on doubles knowledge. Here, we used a known doubles fact that 25 doubled is 50. We then counted on 3 more to get to 53. 25 + 3 gives us 28.
   2. Students’ answers about efficiency may vary.
9. Who was Ada Lovelace and what was her claim to fame? (Who’s Who: Ada Lovelace, p. 32-33)
   1. Ada Lovelace was a mathematician born in 1815 in London, England. She wrote the first ever published computer program!
10. Although this book is titled “Subtraction,” the authors wrote a lot about addition. Why might this be? How are subtraction and addition related? (General)
    1. Even though this book is mainly about subtraction, the authors included addition because the two operations are so closely related. They are opposite in nature and can be used to solve the same problems with different strategies and in different ways.