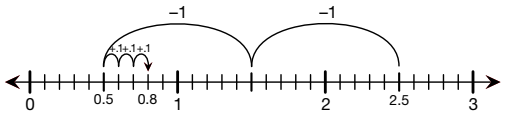
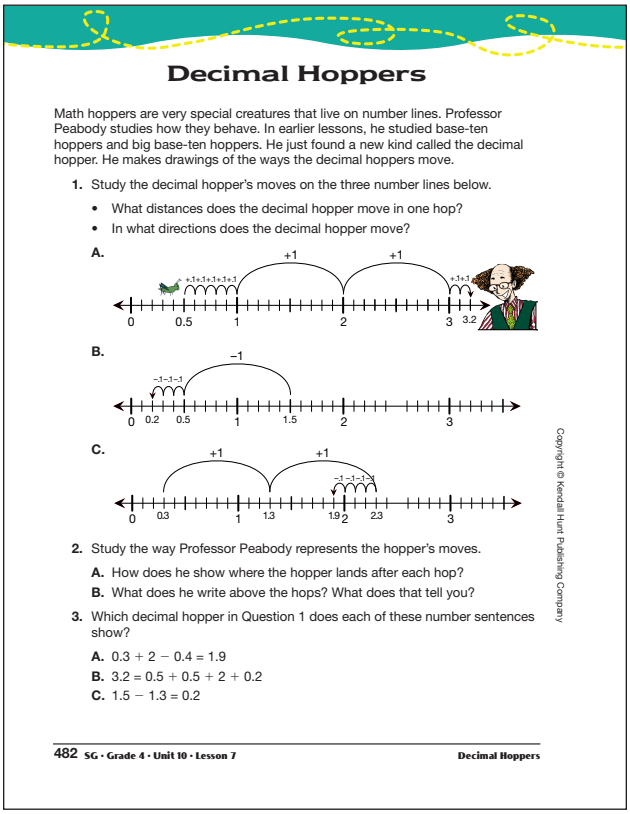
Student Guide

Decimal Hoppers

Questions 1–13 (SG pp. 482–486)

1. **A.*** The decimal hopper moves 1 or 0.1 in one hop. It moves in the positive direction.
   B.* The decimal hopper moves 1 or 0.1 in one hop. It moves in the negative direction.
   C.* The decimal hopper moves 1 or 0.1 in one hop. It moves in both the negative and positive directions.
2. **A.** Each hop comes down on the number it lands on.
   B. He writes a number as well as a + or − sign. This shows how far and in which direction the hopper moved.
3. **A.** C
   B. A
   C. B
4. **A.** They both start at 1.3.
   B. They both land at 2.2.
   C. The first hopper used nine hops, the second hopper used two hops.
   D. 1.3 + 0.9 = 2.2; 1.3 + 1.0 − 0.1 = 2.2.
   E. Answers will vary. Students may think the first hopper is easier to understand because it is like counting up by 0.1.
   F. Answers will vary. Students may think the second hopper is easier to do because there are only two hops.
5. **A.** Both hoppers start at 2.5 and land on 0.8.
   B. Maya's; her hopper moved by only 1 or 0.1.
   C. Michael's; his hopper did not move by only 1 or 0.1.
   D. 2.5 + 0.3 − 2 = 0.8.
   E.





Decimal Hoppers

Math hoppers are very special creatures that live on number lines. Professor Peabody studies how they behave. In earlier lessons, he studied base-ten hoppers and big base-ten hoppers. He just found a new kind called the decimal hopper. He makes drawings of the ways the decimal hoppers move.

1. Study the decimal hopper's moves on the three number lines below.
   - What distances does the decimal hopper move in one hop?
   - In what directions does the decimal hopper move?

A.

B.

C.

2. Study the way Professor Peabody represents the hopper's moves.
   A. How does he show where the hopper lands after each hop?
   B. What does he write above the hops? What does that tell you?
3. Which decimal hopper in Question 1 does each of these number sentences show?
   A. 0.3 + 2 − 0.4 = 1.9
   B. 3.2 = 0.5 + 0.5 + 2 + 0.2
   C. 1.5 − 1.3 = 0.2

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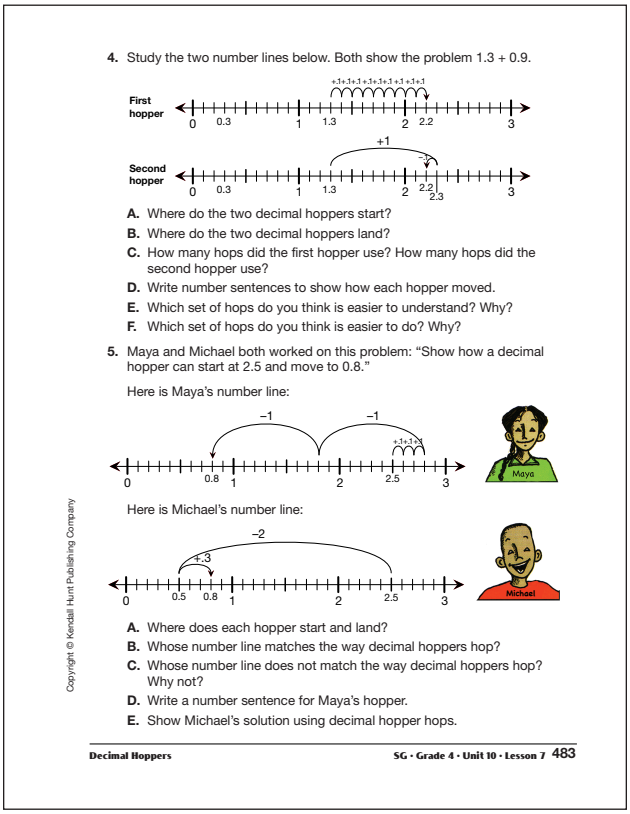

4. Study the two number lines below. Both show the problem 1.3 + 0.9.

First hopper

Second hopper

   A. Where do the two decimal hoppers start?
   B. Where do the two decimal hoppers land?
   C. How many hops did the first hopper use? How many hops did the second hopper use?
   D. Write number sentences to show how each hopper moved.
   E. Which set of hops do you think is easier to understand? Why?
   F. Which set of hops do you think is easier to do? Why?
5. Maya and Michael both worked on this problem: "Show how a decimal hopper can start at 2.5 and move to 0.8."

Here is Maya's number line:

Here is Michael's number line:

   A. Where does each hopper start and land?
   B. Whose number line matches the way decimal hoppers hop?
   C. Whose number line does not match the way decimal hoppers hop? Why not?
   D. Write a number sentence for Maya's hopper.
   E. Show Michael's solution using decimal hopper hops.

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

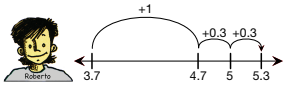
Play *Start, Hop, Stop!* using the game directions, spinners, and game sheets in the *Student Activity Book.*

Adding and Subtracting with Decimals

Mrs. Dewey asked Roberto to find this sum.

3.7 + 1.6 = ?

Roberto solved the problem using a number line.



3.7 + 1.6 = 5.3

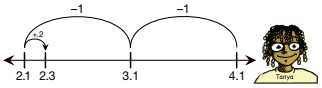
6. A. How is Roberto's method different from the decimal hoppers?

B. Explain how Roberto solved the problem.

C. Use a number line to solve the problem a different way.

Tanya solved this subtraction problem using a number line.

4.1 − 1.8 = ?



7. A. What answer does Tanya's number line show?

B. Explain how Tanya solved the problem.

C. Use a number line to solve the problem a different way.

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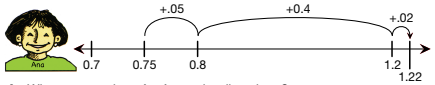
8. Ana solved this problem using a number line.

0.75 + 0.47 = ?

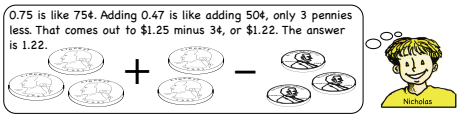


A. What answer does Ana's number line show?

B. Explain how Ana solved the problem.

C. Use a number line to solve the problem a different way.

Nicholas solved the problem in Question 8 by thinking about money.



Solve the problems in Questions 9–13 by using number lines, hundredths charts, thinking about money, or using mental math.

9. Shannon has $0.85 in her pocket. A bottle of juice from the vending machine costs $1.50. How much more money does Shannon need to buy juice?

10. A. 0.2 + 1.9 = ?

B. 1.8 + 1.2 = ?

C. 1.45 + 0.88 = ?

D. 2.3 – 1.6 + 0.7 = ?

11. Jackie's dad needs about 3 pounds of ground beef for a recipe. He bought these two packages of ground beef at the store.

Did he buy enough ground beef? Show or tell why you think so.

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6. A. He jumped by numbers other than 1.0 or 0.1.

B. He split 1.6 into 1 + 0.3 + 0.3 and added these to 3.7.

C. Number lines will vary.

7. A. Tanya's line shows that 4.1 − 1.8 = 2.3.

B. She subtracted 2 from 4.1 and added 0.2. 4.1 − 2 + 0.2 = 2.3.

C. Number lines will vary.

8. A.* Ana's line shows 0.75 + 0.47 = 1.22.

B.* Ana split 0.47 into 0.05 + 0.4 + 0.02 and added these to 0.75.

C.* Number lines will vary.

9. $0.65; 1.5 – 0.85 = 0.65

10. A. 2.1

B. 3.0

C. 2.33

D. 1.4

11.* He bought the right amount of beef, 1.68 + 1.38 = 3.06, which is close to 3.

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

12. 0.28 meters, 2.06 − 1.78 = 0.28 m

13. 0.3 miles; 0.6 + 0.9 = 1.5;
1.5 – 1.2 = 0.3 miles

Homework

Questions 1–3 (SG p. 486)

1. A. 3.4

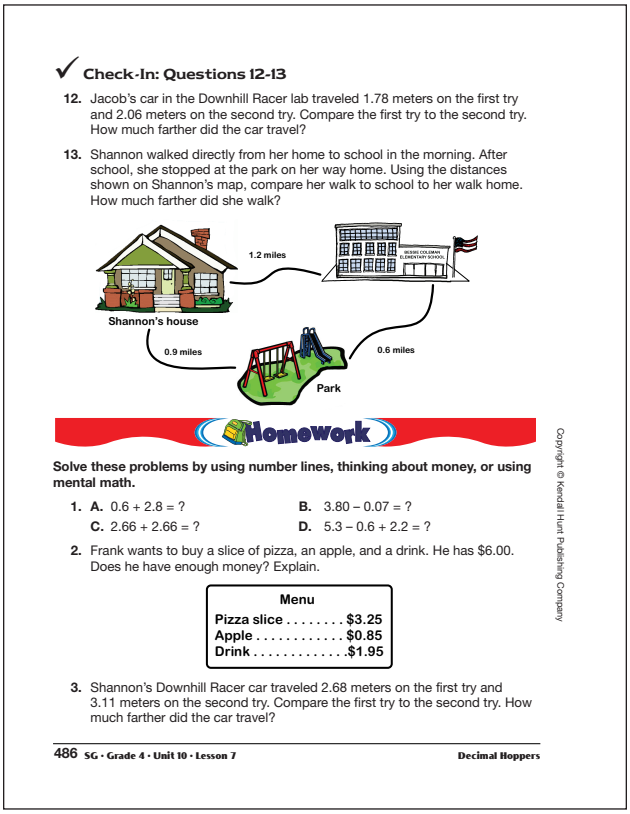
B. 3.73

C. 5.32

D. 6.9

2. He does not have enough money;
3.25 + 0.85 + 1.95 = 6.05

3. 0.43 meters; 3.11 – 2.68 = 0.43



✓ **Check-In: Questions 12-13**

12. Jacob's car in the Downhill Racer lab traveled 1.78 meters on the first try and 2.06 meters on the second try. Compare the first try to the second try. How much farther did the car travel?

13. Shannon walked directly from her home to school in the morning. After school, she stopped at the park on her way home. Using the distances shown on Shannon's map, compare her walk to school to her walk home. How much farther did she walk?

Homework

Solve these problems by using number lines, thinking about money, or using mental math.

1. A. 0.6 + 2.8 = ?
B. 3.80 – 0.07 = ?
C. 2.66 + 2.66 = ?
D. 5.3 – 0.6 + 2.2 = ?

2. Frank wants to buy a slice of pizza, an apple, and a drink. He has $6.00. Does he have enough money? Explain.

Menu	
Pizza slice	$3.25
Apple	$0.85
Drink	$1.95

3. Shannon's Downhill Racer car traveled 2.68 meters on the first try and 3.11 meters on the second try. Compare the first try to the second try. How much farther did the car travel?

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