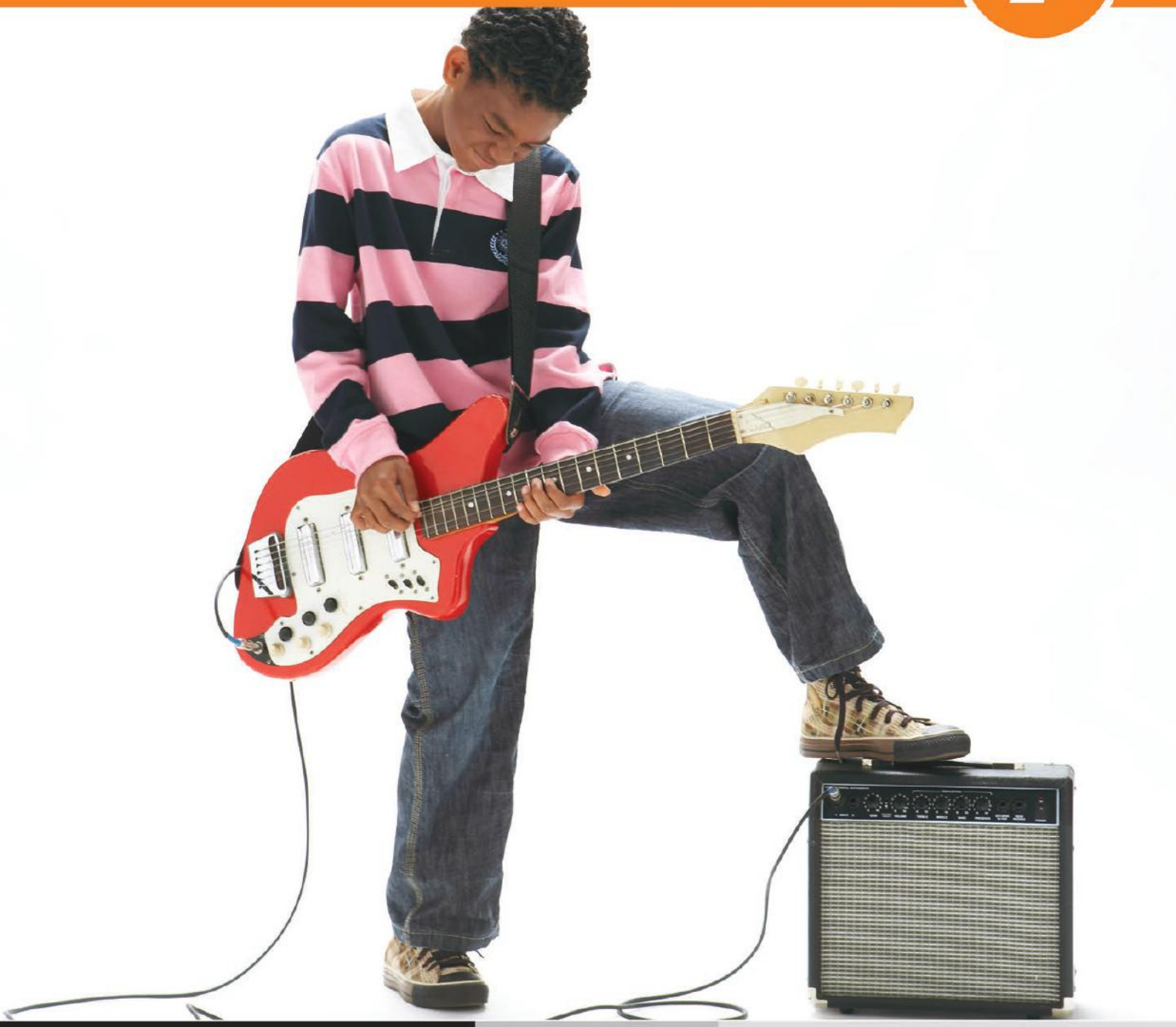
GOLD EDITION

PRACTICE COACH™ PLUS

Mathematics 7



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Add and Subtract Rational Numbers

Coached Instruction

Compare Alicia's and Jamal's methods for solving the problem below.

Which sum has the least value?

A. $-2.5 + 3.8$

B. $-2.5 + (-3.8)$

C. $2.5 + 3.8$

D. $2.5 + (-3.8)$

ALICIA'S METHOD

I added the numbers to find the sum in each choice.

A: $-2.5 + 3.8 = 1.3$

B: $-2.5 + (-3.8) = -6.3$

C: $2.5 + 3.8 = 6.3$

D: $2.5 + (-3.8) = -1.3$

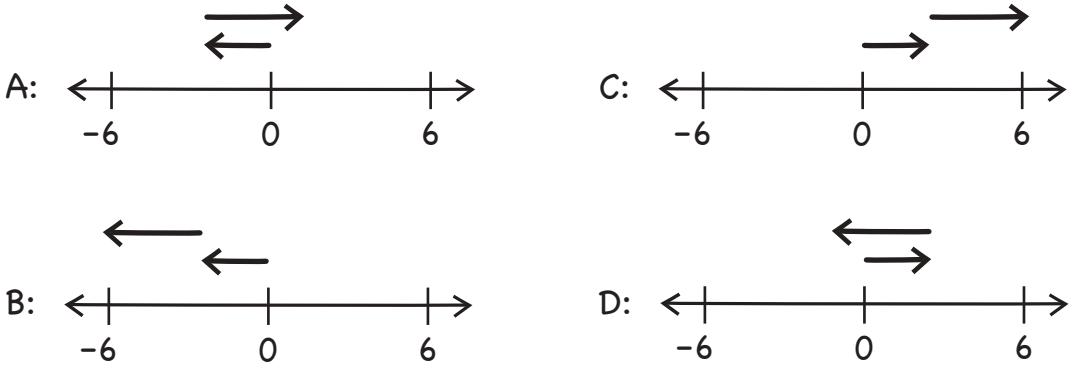
Then I compared the sums to find the least value.

$-6.3 < -1.3 < 1.3 < 6.3$

Choice B is the correct answer.

JAMAL'S METHOD

I drew number lines to determine which has the least sum.



The number line for Choice B has the top arrow farthest to the left of 0, so the correct answer is B.

DISCUSS

How are the two methods similar and different?

Where is the sum shown on each number line in Jamal's method?

APPLY

Which has the greatest sum?

A. $-1.7 + (-2.4) + 1.2$

B. $-1.7 + (-2.4) + (-1.2)$

C. $-1.7 + 2.4 + (-1.2)$

D. $-1.7 + 2.4 + 1.2$

Show your work.

Compare Alani's and Steve's methods of solving the problem below.

Luke and Skylar start at home. Skylar bikes $5\frac{2}{5}$ kilometers west, and Luke bikes $3\frac{1}{2}$ kilometers east. How many kilometers farther from home is Skylar than Luke?

A. $1\frac{9}{10}$ kilometers

B. $2\frac{9}{10}$ kilometers

C. $8\frac{9}{10}$ kilometers

D. $9\frac{9}{10}$ kilometers

ALANI'S METHOD

I represented moving west as a negative number and moving east as a positive number.

Skylar: $-5\frac{2}{5}$ Luke: $3\frac{1}{2}$

Then I added to find the difference in the distances traveled from home.

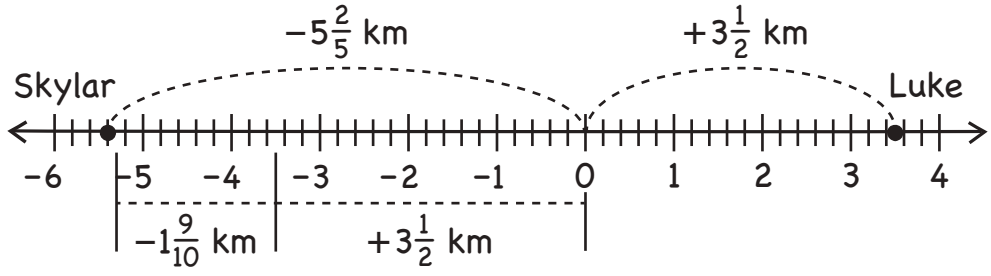
$$-5\frac{2}{5} + 3\frac{1}{2} = -5\frac{4}{10} + 3\frac{5}{10} = -1\frac{9}{10}$$

Skylar is $1\frac{9}{10}$ kilometers farther from home than Luke.

The correct answer is A.

STEVE'S METHOD

I drew a diagram and used it to understand the problem.



$$-5\frac{2}{5} + 3\frac{1}{2} = \left(-1\frac{9}{10}\right) + \left(-3\frac{1}{2}\right) + 3\frac{1}{2} = \left(-1\frac{9}{10}\right) + \left(-3\frac{1}{2} + 3\frac{1}{2}\right) = -1\frac{9}{10}$$

The correct answer is A.

DISCUSS

Why is Skylar's distance from home represented as a positive number when the sum is negative?

APPLY

Luisa and Megan are sisters. They start walking away from home. Luisa walks $6\frac{1}{2}$ blocks west while Megan walks $7\frac{3}{4}$ blocks east. How many blocks apart are the sisters now?

A. $\frac{1}{2}$ block

B. $1\frac{1}{4}$ blocks

C. $13\frac{1}{2}$ blocks

D. $14\frac{1}{4}$ blocks

Use drawings and/or equations to justify your answer.

ERROR ANALYSIS

Compare Renee's and Howard's methods of solving the problem below.

Two different negative numbers are subtracted. Which describes the difference?

A. It is always positive.

B. It is always negative.

C. It is always positive or negative.

D. It is always positive, negative, or zero.

RENEE'S METHOD

I tested two negative numbers, -6 and -4.

They are 2 units away from each other on a number line, so the difference is always positive.

I think Choice A is correct.

HOWARD'S METHOD

I used two negative numbers to check. I chose -3 and -5 and subtracted two different ways.

$-5 - (-3) = -5 + 3 = -2$

$-3 - (-5) = -3 + 5 = 2$

I think Choice C is correct.

Who is correct?

Howard is correct. If the minuend is greater than the subtrahend, the difference is positive. If the minuend is less than the subtrahend, the difference is negative.

DISCUSS

What was Renee's error?

How can Renee use a number line to check whether the difference of two negative numbers is positive or negative?

APPLY

Roger said that if two negative numbers and one positive number are added, the sum will always be negative. Do you agree? Show your work and explain your reasoning.

Lesson Practice | Part 1

Choose the correct answer.

1. Andre uses $\frac{3}{4}$ teaspoon of oregano and $\frac{3}{8}$ teaspoon of rosemary in a recipe. How much oregano and rosemary does Andre use in all?

A. $\frac{1}{2}$ teaspoon

B. $\frac{8}{9}$ teaspoon

C. $1\frac{1}{8}$ teaspoons

D. $1\frac{3}{8}$ teaspoons

Use this information for questions 2 and 3.

Sharon's house, the library, and Lisa's house are all on the same straight road. Sharon has to ride her bike $1\frac{3}{5}$ miles to get from her house to the library and another $2\frac{3}{4}$ miles to get from the library to Lisa's house.

2. How far does Sharon live from Lisa?

A. $4\frac{1}{4}$ miles

B. $4\frac{3}{10}$ miles

C. $4\frac{7}{20}$ miles

D. $4\frac{2}{5}$ miles

3. How much closer to the library does Sharon live than Lisa?

A. $\frac{17}{20}$ mile

B. $1\frac{3}{20}$ miles

C. $1\frac{1}{5}$ miles

D. $1\frac{1}{4}$ miles

4. Add.

$3.65 + (-4.7) = \square$

A. -8.35

B. -1.05

C. 1.05

D. 8.35

5. Paul owes his father \$10.75. He borrows \$5.50 more from his father. Which of the following best represents Paul's debt to his father?

A. $-\$16.25$

B. $-\$15.25$

C. $-\$5.25$

D. \$5.25

6. Subtract.

$2\frac{1}{2} - 4\frac{1}{4} = \square$

A. $-2\frac{1}{4}$

B. $-1\frac{3}{4}$

C. $1\frac{3}{4}$

D. $7\frac{3}{4}$

7. Subtract.

$$-\frac{2}{3} - \left(-\frac{7}{8}\right) = \square$$

A. $-1\frac{13}{24}$

B. $-\frac{5}{24}$

C. $\frac{5}{24}$

D. $1\frac{13}{24}$

8. Max walked $1\frac{3}{4}$ miles east and then he walked $2\frac{7}{10}$ miles west. Which describes Max's location from his original starting point?

A. $4\frac{9}{20}$ miles east

B. $4\frac{9}{20}$ miles west

C. $\frac{19}{20}$ mile east

D. $\frac{19}{20}$ mile west

9. Add.

$$-3\frac{1}{5} + \left(-2\frac{3}{4}\right) = \square$$

A. $-5\frac{19}{20}$

B. $-5\frac{4}{9}$

C. $-1\frac{11}{20}$

D. $-\frac{9}{20}$

10. Which has the least result?

A. $\frac{3}{4} - \frac{3}{4}$

B. $\frac{3}{4} + \frac{3}{4}$

C. $-\frac{3}{4} + \frac{3}{4}$

D. $-\frac{3}{4} - \frac{3}{4}$

11. The outside temperature was 4.2°F at 8:30 P.M. By 12 midnight, the temperature had fallen 9.5°F. Let m represent the temperature at 12 midnight.

A. Write a subtraction equation to represent how to find m, the temperature at 12 midnight.

B. Write an addition equation to represent how to find m, the temperature at 12 midnight.

C. What was the temperature at 12 midnight?

Lesson Practice | Part 2

Choose the correct answer.

1. Add.

$$-\frac{7}{8} + \left(-1\frac{3}{5}\right) = \square$$

A. $-2\frac{17}{40}$

B. $-\frac{29}{40}$

C. $\frac{29}{40}$

D. $2\frac{17}{40}$

2. Carter's checking account had a balance of −$12.75. He deposited a check for $22.40 into his account. What is Carter's account balance now?

A. −$35.15

B. −$9.65

C. $9.65

D. $35.15

3. Before going out of business, Just DVDs had net profits of −$6.25 million one year and −$8.4 million the next year. What was Just DVDs net profits the last two years of its business?

A. −$14.65 million

B. −$14.29 million

C. −$2.15 million

D. $2.15 million

4. Subtract.

$$2\frac{7}{10} - 5\frac{1}{5} = \square$$

A. $-7\frac{9}{10}$

B. $-2\frac{1}{2}$

C. $2\frac{1}{2}$

D. $7\frac{9}{10}$

5. The seventh-grade class at Van Buren Middle School spent $225.98 on supplies for a car wash. The day of the car wash it rained and they only earned $82.75. What were the net earnings of the car wash?

A. −$308.73

B. −$143.23

C. $143.23

D. $308.73

6. Cora walked $\frac{3}{5}$ mile east and then $1\frac{1}{4}$ miles west. Which describes Cora's location from her original location?

A. $1\frac{17}{20}$ miles east

B. $1\frac{17}{20}$ miles west

C. $\frac{13}{20}$ mile east

D. $\frac{13}{20}$ mile west

7. Which does **not** give the same result as $-2.34 + 5.2$?

A. $5.2 - 2.34$

B. $5.2 + (-2.34)$

C. $-2.34 - (-5.2)$

D. $5.2 - (-2.34)$

8. Add.

$$-6.475 + 4.9 = \square$$

A. -11.375

B. -1.575

C. 1.575

D. 11.375

9. Which gives the same result as $-3\frac{1}{2} - \left(-2\frac{3}{5}\right)$?

A. $-3\frac{1}{2} - 2\frac{3}{5}$

B. $-3\frac{1}{2} + \left(-2\frac{3}{5}\right)$

C. $-3\frac{1}{2} + 2\frac{3}{5}$

D. $-2\frac{3}{5} - 3\frac{1}{2}$

10. Subtract.

$$-4.2 - (-6.9) = \square$$

A. -11.1

B. -2.7

C. 2.7

D. 11.1

11. A movie cost \$7.5 million to make. The film earned \$2.65 million the first week and \$2.1 million the second week.

A. Let p represent the net profits, in millions of dollars, that the movie made. Write an equation to represent the net profits, in millions of dollars, of the movie after 2 weeks.

B. What are the net profits, in millions of dollars, of the movie after 2 weeks?

12. Which has the greater sum, $-6.2 + 9.3$ or $6.2 + (-9.3)$? Show your work or explain your reasoning.

13. Mr. Harris drives $7\frac{1}{2}$ miles directly west from his home to a restaurant. He then drives $8\frac{2}{3}$ miles directly east of the restaurant to his office. How far, and in what direction, is his office from his home? Show your work.

14. Katia made this conjecture:

When three fractions with the same sign are added, the sum has the same sign as the addends.

Is her conjecture always true, sometimes true, or never true? Justify your answer with examples or counterexamples.

She also made this conjecture.

When a negative fraction is subtracted from a negative fraction, the difference is positive.

Is her conjecture always true, sometimes true, or never true? Justify your answer with examples or counterexamples.