Lesson 7-11

Friday, December 13, 2019 10:52 AM

MB 431

Name

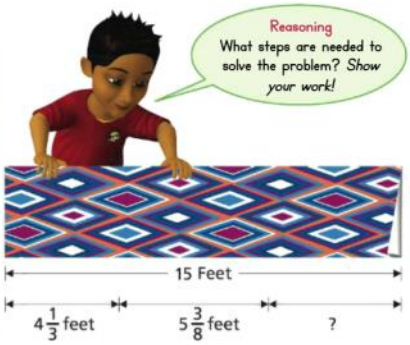
Lesson 7-11
Add and Subtract Mixed Numbers

Solve & Share

Tim has 15 feet of wrapping paper. He uses $4\frac{1}{3}$ feet for his daughter's present and $5\frac{3}{8}$ feet for his niece's present. How much wrapping paper does Tim have left? *Solve this problem any way you choose.*

I can ...
add and subtract mixed numbers.

Content Standards 5.NF.A.1, 5.NF.A.2
Mathematical Practices MP.1, MP.2, MP.3, MP.4, MP.6



$15-(5\frac{3}{8}+4\frac{1}{3})=w$

~~15~~ $-9\frac{17}{24}$

$14\frac{24}{24}-9\frac{17}{24}=5\frac{7}{24}$

$5\frac{7}{24}$ ft. left

$15-5\frac{3}{8}-4\frac{1}{3}=w$

8: 8 16 (24)
3: 3 6 9 .. (24)

$5\frac{3}{8}\times\frac{3}{3}=5\frac{9}{24}$ $4\frac{1}{3}\times\frac{8}{8}=4\frac{8}{24}$

$5\frac{9}{24}+4\frac{8}{24}=9\frac{17}{24}$

Look Back! MP.3 Construct Arguments In the problem above, how could you have estimated the amount of wrapping paper that is left?

$15-(4\frac{1}{3}+5\frac{3}{8})$
$15-(4\frac{1}{2}+5\frac{1}{2})$
$15-10=5$

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How Can Adding and Subtracting Mixed Numbers Help You Solve Problems?

Clarisse has two lengths of fabric to make covers for a sofa and chair. The covers require $9\frac{2}{3}$ yards of fabric. How much fabric will Clarisse have left?

Find a common denominator when adding and subtracting fractions.

Step 1

Add to find out how much fabric Clarisse has in all.

$$5\frac{3}{4} = 5\frac{9}{12}$$
$$+\ 7\frac{5}{6} = 7\frac{10}{12}$$
$$12\frac{19}{12} = 13\frac{7}{12}$$

Clarisse has $13\frac{7}{12}$ yards of fabric in all.

Step 2

Subtract the amount she will use from the total length of fabric.

$$13\frac{7}{12} = 12\frac{19}{12}$$
$$-\ 9\frac{2}{3} = 9\frac{8}{12}$$
$$3\frac{11}{12}$$

Clarisse will have $3\frac{11}{12}$ yards of fabric left.

Convince Me! MP.1 Make Sense and Persevere Clarisse has $14\frac{3}{4}$ yards of fabric to cover another sofa and chair. The new sofa needs $9\frac{1}{6}$ yards of fabric and the new chair needs $4\frac{1}{3}$ yards of fabric. Estimate to decide if Clarisse has enough fabric. If so, how much fabric will she have left?

Name _____

Guided Practice

Do You Understand?

1. MP.2 Reasoning In the example on page 432, why do you add before you subtract?

2. MP.3 Construct Arguments In the example on page 432, does Clarisse have enough fabric left over to make two cushions that each use $2\frac{1}{3}$ yards of fabric? Explain.

$7\frac{2}{3} \times \frac{5}{5} = 7\frac{10}{15}$

$3\frac{4}{5} \times \frac{3}{3} = 3\frac{12}{15}$

Do You Know How?

In **3–5**, find the sum or difference.

3. $5\frac{1}{9} - 2\frac{2}{3}$

4. $2\frac{1}{4} + 8\frac{2}{3}$

5. $6\frac{7}{25} - 3\frac{9}{50}$

In **6–9**, solve. Do the addition in the parentheses first.

6. $4\frac{3}{5} + 11\frac{2}{15}$

7. $8\frac{2}{3} - 3\frac{3}{4}$

8. $\left(5\frac{2}{3} + 3\frac{4}{5}\right) - 1\frac{4}{15}$

9. $8\frac{2}{5} - \left(3\frac{2}{3} + 2\frac{3}{5}\right)$

$(7\frac{10}{15} + 3\frac{12}{15}) - 1\frac{4}{15}$

$10\frac{22}{15} - 1\frac{4}{15}$

$9\frac{18}{15}$

$9 + 1\frac{3}{15} = 10\frac{3}{15} \div \frac{3}{3} = 10\frac{1}{5}$

Complete 18, 21, 26

Independent Practice

In **10–14**, find each sum or difference.

10. $9\frac{1}{3} - 4\frac{1}{6}$ 11. $12\frac{1}{4} - 9\frac{3}{5}$ 12. $6\frac{3}{5} + 1\frac{3}{25}$ 13. $3\frac{4}{9} + 2\frac{2}{3}$ 14. $5\frac{31}{75} - 3\frac{2}{25}$

In **15–20**, solve. Do the operation in the parentheses first.

15. $\left(2\frac{5}{8} + 2\frac{1}{2}\right) - 4\frac{2}{3}$ 16. $\left(5\frac{3}{4} + 1\frac{5}{6}\right) - 6\frac{7}{12}$ 17. $4\frac{3}{5} + \left(8\frac{1}{5} - 7\frac{3}{10}\right)$

18. $\left(13 - 10\frac{1}{3}\right) + 2\frac{2}{3}$ 19. $\left(2\frac{1}{2} + 3\frac{1}{4}\right) - 1\frac{1}{4}$ 20. $2\frac{3}{14} + \left(15\frac{4}{7} - 6\frac{3}{4}\right)$

$\left(12\frac{3}{3} - 10\frac{1}{3}\right) + 2\frac{2}{3}$

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

*For another example, see Set G on page 448.

Math Practices and Problem Solving

In **21–23**, use the table below.

DATA

Frog Species	Body Length (cm)	Maximum Jump (cm)
Bullfrog	$20\frac{3}{10}$	$213\frac{1}{2}$
Leopard frog	$12\frac{1}{2}$	$162\frac{1}{2}$
South African sharp-nosed frog	$7\frac{3}{5}$	$334\frac{2}{5}$

21. **MP.6 Be Precise** How much longer is the maximum jump of a South African sharp-nosed frog than the maximum jump of a leopard frog?

$334\frac{2}{5} - 162\frac{1}{2}$

$\frac{2 \times 2}{5 \times 2} = \frac{4}{10}$ $\frac{1 \times 5}{2 \times 5} = \frac{5}{10}$

$334\frac{4}{10} - 162\frac{5}{10} = 333\frac{14}{10} - 162\frac{5}{10} = 171\frac{9}{10}$ cm

$333 - 162 = 171$

22. How many centimeters long is a bullfrog? Round to the nearest whole number.

23. **Higher Order Thinking** Which frog jumps about 10 times its body length? Explain how you found your answer.

24. **Vocabulary** Write three numbers that are **common denominators** of $\frac{7}{15}$ and $\frac{3}{5}$.

25. Marie plants 12 packages of vegetable seeds in a community garden. Each package costs $1.97 with tax. What is the total cost of the seeds?

Common Core Assessment

26. Does the mixed number $5\frac{3}{8}$ make each equation true? Choose Yes or No.

$\square - 4\frac{1}{6} = 1\frac{1}{12}$	○ Yes	○ No
$10\frac{11}{12} - 5\frac{3}{8} = \square$	○ Yes	○ No
$\square + 1\frac{1}{4} = 6\frac{5}{8}$	○ Yes	○ No
$3\frac{1}{8} + \frac{3}{4} + \frac{1}{2} = \square$	○ Yes	○ No

27. Does the mixed number $3\frac{1}{3}$ make each equation true? Choose Yes or No.

$3\frac{1}{3} - \square = 0$	○ Yes	○ No
$2\frac{2}{5} + \square = 5\frac{3}{8}$	○ Yes	○ No
$9\frac{1}{12} - 6\frac{3}{4} = \square$	○ Yes	○ No
$\square - 3\frac{1}{9} = \frac{2}{9}$	○ Yes	○ No

A. $5\frac{3}{8} - 4\frac{1}{6}$

$5\frac{9}{24} - 4\frac{4}{24} = 1\frac{5}{24}$ No

B. $10\frac{11}{12} - 5\frac{3}{8}$

$10\frac{22}{24} - 5\frac{9}{24} = 5\frac{13}{24}$ No

C. $5\frac{3}{8} + 1\frac{1}{4}$

$5\frac{3}{8} + 1\frac{2}{8} = 6\frac{5}{8}$ Yes

D. $3\frac{1}{8} + 1\frac{3}{4} + \frac{1}{2}$

$3\frac{1}{8} + 1\frac{6}{8} + \frac{4}{8} = 4\frac{11}{8}$

$4 + 1\frac{3}{8} = 5\frac{3}{8}$ Yes