Lesson 7-9

Friday, December 13, 2019 10:49 AM

MB 419

Name

Lesson 7-9
Use Models to Subtract Mixed Numbers

Solve & Share
Clara and Erin volunteered at an animal shelter a total of $9\frac{5}{6}$ hours. Clara worked for $4\frac{1}{3}$ hours. How many hours did Erin work? *You can use fraction strips to solve this problem.*

$9\frac{5}{6} - 4\frac{1}{3} = h$

$9\frac{5}{6} - 4\frac{2}{6} = h$

$4\frac{1}{3} \times\frac{2}{2} = 4\frac{2}{6}$

I can ...
use models to subtract mixed numbers.

Common Standards 5.NF.A.1, 5.NF.A.2 Mathematical Practices MP.2, MP.3, MP.4, MP.5, MP.8

Generalize
How can you use what you know about adding mixed numbers to help subtract mixed numbers? *Show your work!*

$5\frac{3}{6} \div 3 = 5\frac{1}{2}$ hrs

Look Back! MP.2 Reasoning How can you estimate the difference for the problem above? Explain your thinking.

Round to the nearest whole number.

$9\frac{5}{6} - 4\frac{1}{3}$

$10 - 4 = 6$

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How Can You Model Subtraction of Mixed Numbers?

James needs $1\frac{11}{12}$ inches of pipe to repair a small part of a bicycle frame. He has a pipe that is $2\frac{1}{2}$ inches long. Does he have enough pipe left over to fix a $\frac{1}{4}$-inch piece of frame on another bike?

Rename $2\frac{1}{2}$ as $2\frac{6}{12}$ so that the fractions have a common denominator.

$2\frac{1}{2}$ inches

$1\frac{11}{12}$ inches

Step 1
Model the number you are subtracting from, $2\frac{6}{12}$.

If the fraction you will be subtracting is greater than the fraction part of the number you model, rename 1 whole.

Since $\frac{11}{12} > \frac{6}{12}$, rename 1 whole as $\frac{12}{12}$.

Step 2
Use your renamed model to cross out the number that you are subtracting, $1\frac{11}{12}$.

There are $\frac{7}{12}$ left.

So, $2\frac{1}{2} - 1\frac{11}{12} = \frac{7}{12}$.

James will have $\frac{7}{12}$ inch of pipe left. He does not have enough for the other bike.

$2\frac{6}{12} + \frac{12}{12} = 1\frac{18}{12}$

$-1\frac{11}{12} = 1\frac{11}{12}$

$\frac{7}{12}$

$\frac{2}{4} \times\frac{3}{3} = \frac{9}{12}$

Convince Me! MP.5 Use Appropriate Tools
Use fraction strips to find $5\frac{1}{2} - 2\frac{3}{4}$.

$2\frac{3}{4}$

$5\frac{1}{2} \times\frac{2}{2} = 4\frac{2}{4} + \frac{4}{4} = 4\frac{6}{4}$

$-2\frac{3}{4} = 2\frac{3}{4} = 2\frac{3}{4}$

$2\frac{3}{4}$

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Guided Practice

Do You Understand?

1. MP.3 Construct Arguments When subtracting two mixed numbers, is it always necessary to rename one of the wholes? Explain.

No, only if you need more fraction parts to be taken away.

Do You Know How?

In 2–5, use fraction strips to find each difference.

2. $4\frac{5}{6} - 2\frac{1}{6}$

3. $4\frac{5}{6} - 2\frac{4}{6}$

$2\frac{3}{6} \div 3 = 2\frac{1}{2}$

4. $5\frac{3}{5} - 2\frac{5}{6}$

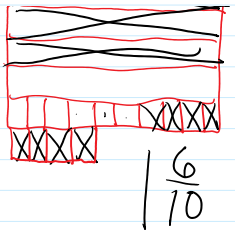
5. $5\frac{4}{10} - 3\frac{4}{5}$

$5\frac{4}{10} - 4\frac{14}{10} + \frac{10}{10} = 4\frac{14}{10}$

$3\frac{4}{5} \times\frac{2}{2} = 3\frac{8}{10}$

$-3\frac{8}{10}$

$1\frac{6}{10} \div 2 = 1\frac{3}{5}$



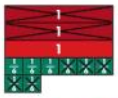
$\frac{6}{10}$

Complete 11, 14, 18, 20

Independent Practice

In **6** and **7**, use each model to find the difference.

6. Terrell lives $2\frac{5}{6}$ blocks away from his best friend. His school is $4\frac{1}{3}$ blocks away in the same direction. If he stops at his best friend's house first, how much farther do they have to walk to school?



7. Tina bought $3\frac{1}{4}$ pounds of turkey and $2\frac{1}{4}$ pounds of cheese. She used $1\frac{1}{4}$ pounds of cheese to make macaroni and cheese. How much cheese does she have left?

In **8–15**, use fraction strips to find each difference.

8. $12\frac{3}{4} - 9\frac{5}{8}$ 9. $8\frac{1}{6} - 7\frac{2}{3}$ 10. $13\frac{7}{9} - 10\frac{4}{5}$ 11. $3\frac{1}{12} - 2\frac{3}{4}$

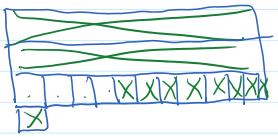
12. $6\frac{3}{4} - 3\frac{11}{12}$ 13. $4\frac{3}{5} - 1\frac{1}{10}$ 14. $6\frac{1}{2} - 3\frac{7}{10}$ 15. $6\frac{2}{3} - 4\frac{2}{9}$

*For another example, see Set F on page 447.

(11) $3\frac{1}{12} = 2\frac{1}{12} + \frac{12}{12} = 2\frac{13}{12}$

$-2\frac{3}{4} \times 3 = 2\frac{9}{12} = -2\frac{9}{12}$

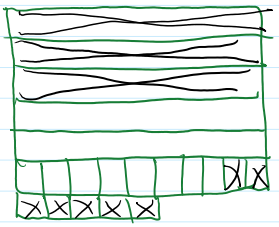
$\frac{4}{12} \div 4 = \frac{1}{3}$



(14) $6\frac{1}{2} \times 5 = 5\frac{5}{10} + \frac{10}{10} = 5\frac{15}{10}$

$-3\frac{7}{10} = 3\frac{7}{10} = -3\frac{7}{10}$

$2\frac{8}{10} \div 2 = 2\frac{4}{5}$



Math Practices and Problem Solving

For **16** and **17**, use the table at the right.

Tree Leaf Lengths

Tree	Leaf Length (in.)
Sugar Maple	$6\frac{3}{4}$
Red Oak	$8\frac{1}{2}$
Paper Birch	$5\frac{5}{8}$

16. How much longer is a Red Oak leaf than a Sugar Maple leaf? Write an equation to model your work.

17. How much longer is a Red Oak leaf than a Paper Birch leaf? Write an equation to model your work.

18. **Higher Order Thinking** Lemmy walked $3\frac{1}{2}$ miles on Saturday and $4\frac{3}{4}$ miles on Sunday. Ronnie walked $5\frac{3}{8}$ miles on Saturday. Who walked farther? How much farther?

$3\frac{1}{2} \times 2 = 3\frac{2}{4}$ $+4\frac{3}{4}$ $+4\frac{3}{4}$ $7\frac{5}{4}$

Lemmy walked $2\frac{7}{8}$ mi farther

19. **MP.4 Model with Math** Jamal is buying lunch for his family. He buys 4 drinks that each cost $1.75 and 4 sandwiches that each cost $7.50. If the prices include tax and he also leaves an $8 tip, how much does he spend in all? Write equations to show your work.

$7\frac{5}{4} \times 2 = 7\frac{10}{8}$ $-5\frac{3}{8} = -5\frac{3}{8}$ $2\frac{7}{8}$

Common Core Assessment

20. Draw lines to match each expression on the left to its difference on the right.

$12\frac{1}{2} - 10\frac{11}{12}$	$1\frac{3}{4}$
$5\frac{2}{3} - 4\frac{4}{9}$	$1\frac{1}{12}$
$12\frac{3}{4} - 11\frac{1}{2}$	$1\frac{5}{9}$
$6\frac{1}{4} - 4\frac{1}{2}$	$1\frac{1}{4}$

21. Draw lines to match each expression on the left to its difference on the right.

$13\frac{5}{6} - 10\frac{1}{3}$	$2\frac{3}{5}$
$4\frac{1}{2} - 1\frac{2}{3}$	$2\frac{5}{6}$
$14\frac{3}{10} - 10\frac{3}{5}$	$3\frac{7}{10}$
$12\frac{4}{10} - 9\frac{4}{5}$	$3\frac{1}{2}$

$12\frac{1}{2} \times 6 = 11\frac{6}{12} + \frac{12}{12} = 11\frac{18}{12}$

$-10\frac{11}{12} \quad -10\frac{11}{12} = -10\frac{11}{12}$

$1\frac{7}{12}$

$5\frac{2}{3} \times 3 = 5\frac{6}{9}$

$-4\frac{4}{9} \quad -4\frac{4}{9}$

$1\frac{2}{9}$

$12\frac{3}{4} = 12\frac{3}{4}$

$-11\frac{1}{2} \times 2 = -11\frac{2}{4}$

$1\frac{1}{4}$

$-11 \times 2 = -11\frac{2}{4}$

$1\frac{1}{4}$

$6\frac{1}{4} - 4\frac{1}{2} \times 2 = 4\frac{2}{4}$

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

$5\frac{5}{4} - 4\frac{2}{4}$

$1\frac{3}{4}$