Lesson 7-4

Friday, December 13, 2019 10:35 AM

Name _____

Solve

Solve & Share

Rose bought the length of copper pipe shown below. She used $\frac{1}{2}$ yard to repair a water line in her house. How much pipe does she have left? ***Solve this problem any way you choose.***

$\frac{4}{6}$ yard

Lesson 7-4
Subtract Fractions with Unlike Denominators

I can ...
subtract fractions with unlike denominators.

Content Standards 5.NF.A.1, 5.NF.A.2
Mathematical Practices MP.2, MP.3, MP.4, MP.7, MP.8

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

6: 6 12 18

2: 2 4 6

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

$\frac{1}{6}$ yd of pipe

Use Structure You can use mental math to find equivalent fractions so that $\frac{1}{2}$ and $\frac{4}{6}$ will have like denominators. *Show your work!*

Look Back! MP.8 Generalize How is subtracting fractions with unlike denominators similar to adding fractions with unlike denominators?

You have to find a common denominator by listing multiples and making equivalent fractions.

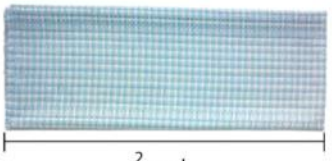
Digital Resources at PearsonRealize.com Topic 7 | Lesson 7-4 389

How Can You Subtract Fractions with Unlike Denominators?

Essential Question

A

Linda used $\frac{1}{4}$ yard of the fabric she bought for a sewing project. How much fabric did she have left?



B Step 1

Find a common multiple of the denominators.

Multiples of 3: 3, 6, 9, 12, . . .

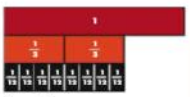
Multiples of 4: 4, 8, 12, . . .

The number 12 is a multiple of 3 and 4. Write equivalent fractions with a denominator of 12 for $\frac{2}{3}$ and $\frac{1}{4}$.

C Step 2

Use the Identity Property to rename the fractions with a common denominator.

$\frac{2}{3} \times \frac{4}{4} = \frac{8}{12}$



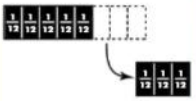
$\frac{2}{3} = \frac{8}{12}$

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

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

D Step 3

Subtract the numerators.



$$\begin{array}{r} \frac{2}{3} = \frac{8}{12} \\ -\frac{1}{4} = \frac{3}{12} \\ \hline \frac{5}{12} \end{array}$$

Linda has $\frac{5}{12}$ yard of fabric left.

Convince Me! MP.3 Critique Reasoning Suppose Linda had $\frac{2}{3}$ of a yard of fabric and told Sandra that she used $\frac{3}{4}$ of a yard. Sandra says this is not possible. Do you agree? Explain your answer.

$\frac{3 \times 3}{4 \times 3} = \frac{9}{12}$ $\frac{2 \times 4}{3 \times 4} = \frac{8}{12}$

$\frac{8}{12} < \frac{9}{12}$

Sandra is correct. $\frac{2}{3} = \frac{8}{12}$ which is less than $\frac{3}{4} = \frac{9}{12}$.

4: 4 8 (12) 16

3: 3 6 9 (12)

Name _____

Guided Practice

Practice Buddy Tools Assessment

Do You Understand?

1. MP.2 Reasoning In the example on page 390, is it possible to use a common denominator greater than 12 and get the correct answer? Why or why not?

12, 24, 36 — Any multiple of 12 will be a common denominator.

2. In the example on page 390, if Linda had started with one yard of fabric and used $\frac{5}{8}$ of a yard, how much fabric would be left?

$1 - \frac{5}{8} = \frac{8}{8} - \frac{5}{8} = \frac{3}{8}$ yd

Do You Know How?

For **3–6**, find each difference.

3. $\frac{4}{7} = \frac{12}{21}$
$-\frac{1}{3} = \frac{7}{21}$

4. $\frac{5}{8}$
$-\frac{1}{4}$

5. $\frac{7}{8}$
$-\frac{1}{6}$

$\frac{\times 3}{\times 3} = \frac{21}{24}$ $\frac{4}{5} = \frac{24}{30}$

$\frac{\times 4}{\times 4} = \frac{4}{24}$ $\frac{1}{6} = \frac{5}{30}$

$\frac{13}{24}$

8: 8 16 (24) 32 40 48 56 64

3: 3 6 9 12 15 18 21 (24)

$1 - \frac{3}{8} = \frac{8}{8} - \frac{3}{8} = \frac{5}{8}$ ✓

8: 8 16 24 32 40 48 56 64
3: 3 6 9 12 15 18 21 24

Complete 10, 16, 21, & 22

Independent Practice

Leveled Practice In **7–16**, find each difference.

7. $\frac{1}{4} = \frac{\square}{8}$
$-\frac{1}{8} = \frac{\square}{8}$

8. $\frac{2}{3} = \frac{\square}{6}$
$-\frac{1}{2} = \frac{\square}{6}$

5: 5 10 15 20 25
4: 4 8 12 16 20

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

10. $\frac{4}{5}$
$-\frac{1}{4}$

$\frac{\times 4}{\times 4} = \frac{16}{20}$ $\frac{3}{2}$
$\frac{\times 5}{\times 5} = \frac{5}{20} - \frac{7}{12}$
$1\frac{1}{20}$

1×11
1×20 2×10 4×5

12. $\frac{6}{7}$
$-\frac{1}{2}$

5: 5 10 15 20 25 30 35 (40)
8: 8 16 24 32 (40) 48 56

13. $\frac{7}{10} - \frac{2}{5}$

14. $\frac{13}{16} - \frac{1}{4}$

15. $\frac{2}{9} - \frac{1}{6}$

16. $\frac{6}{5} - \frac{3}{8}$

$\frac{6 \times 8}{5 \times 8} = \frac{48}{40}$
$\frac{3 \times 5}{8 \times 5} = \frac{15}{40}$
$\frac{33}{40}$

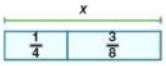
1×33 3×11
1×40 2×20 4×10 5×8

*For another example, see Set C on page 446.

Math Practices and Problem Solving

17. **MP.4. Model with Math** Write and solve an equation to find the difference between the location of Point *A* and Point *B* on the ruler.

18. **Algebra** Write an addition and a subtraction equation for the diagram. Then find the missing value.



19. **MP.3 Construct Arguments** Why do fractions need to have a common denominator before you add or subtract them?

20. **Number Sense** Without using paper and pencil, how would you find the sum of 9.8 and 2.6?

21. **Higher Order Thinking** Find two fractions with a difference of $\frac{1}{5}$ but with neither denominator equal to 5.

$\frac{1}{5} + \frac{1}{2} = \frac{2}{10} + \frac{5}{10} = \frac{7}{10}$

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

5: 5 (10) 15 20 25

2: 2 4 6 8 (10)

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

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

Common Core Assessment

22. Choose the correct numbers from the box below to complete the subtraction sentence that follows.

$\frac{9}{10}$	$\frac{2}{3}$	$\frac{1}{30}$	$\frac{6}{7}$	$\frac{17}{30}$

$\square - \frac{1}{3} = \frac{9}{10}$ $\frac{17}{30}$

23. Choose the correct numbers from the box below to complete the subtraction sentence that follows.

$\frac{11}{12}$	$\frac{1}{6}$	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$

$\square - \square = \frac{7}{12}$

$\frac{9}{10} - \frac{1}{3} = \frac{27}{30} - \frac{10}{30} = \frac{17}{30}$

10: 10 20 (30) 40 50 60 70 80 90 100

3: 3 6 9 12 15 18 21 24 27 (30)

$\frac{9}{10} \times \frac{3}{3} = \frac{27}{30}$ $\frac{1}{3} \times \frac{10}{10} = \frac{10}{30}$