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2-6 Study Guide and Intervention

Adding and Subtracting Unlike Fractions

Fractions that have different denominators are called **unlike fractions.** To add or subtract unlike fractions, first rewrite the fractions with a common denominator. Then add or subtract and simplify, if neccessary.

EXAMPLE 1 **Find $\frac{3}{5} + \frac{2}{3}$. Write in simplest form.**

$$\frac{3}{5} + \frac{2}{3} = \frac{3}{5} \cdot \frac{3}{3} + \frac{2}{3} \cdot \frac{5}{5}$$ The LCD is 5 · 3 or 15.

$$= \frac{9}{15} + \frac{10}{15}$$ Rename each fraction using the LCD.

$$= \frac{9 + 10}{15}$$ Add the numerators. The denominators are the same.

$$= \frac{19}{15} \text{ or } 1\frac{4}{15}$$ Simplify.

EXAMPLE 2 **Find $-3\frac{1}{2} - 1\frac{5}{6}$. Write in simplest form.**

$$-3\frac{1}{2} - 1\frac{5}{6} = -\frac{7}{2} - \frac{11}{6}$$ Write the mixed numbers as improper fractions.

$$= -\frac{7}{2} \cdot \frac{3}{3} - \frac{11}{6}$$ The LCD is 2 · 3 or 6.

$$= -\frac{21}{6} - \frac{11}{6}$$ Rename $\frac{7}{2}$ using the LCD.

$$= \frac{-21 - 11}{6}$$ Subtract the numerators.

$$= -\frac{32}{6} \text{ or } -\frac{16}{3} \text{ or } -5\frac{1}{3}$$ Simplify.

EXERCISES

Add or subtract. Write in simplest form.

1. $\frac{2}{5} + \frac{3}{10}$
2. $\frac{1}{3} + \frac{2}{9}$
3. $\frac{5}{9} + \left(-\frac{1}{6}\right)$
4. $-\frac{3}{4} - \frac{5}{6}$
5. $\frac{4}{5} - \left(-\frac{1}{3}\right)$
6. $1\frac{2}{3} - \left(-\frac{4}{9}\right)$
7. $-\frac{7}{10} - \left(-\frac{1}{2}\right)$
8. $2\frac{1}{4} + 1\frac{3}{8}$
9. $3\frac{3}{4} - 1\frac{1}{3}$
10. $-1\frac{1}{5} - 2\frac{1}{4}$
11. $-2\frac{4}{9} - \left(-1\frac{1}{3}\right)$
12. $3\frac{3}{5} - 2\frac{2}{3}$

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2-6 Practice: Skills

Adding and Subtracting Unlike Fractions

Add or subtract. Write in simplest form.

1. $\frac{1}{6} + \frac{1}{2}$

2. $\frac{4}{9} + \frac{1}{3}$

3. $\frac{7}{8} + \frac{1}{4}$

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

5. $\frac{6}{7} - \frac{3}{14}$

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

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

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

9. $-\frac{3}{7} - \frac{2}{3}$

10. $\frac{4}{7} - \left(-\frac{1}{2}\right)$

11. $3\frac{2}{5} + 2\frac{1}{3}$

12. $5\frac{5}{7} + 3\frac{1}{2}$

13. $3\frac{1}{6} + 4\frac{1}{4}$

14. $1\frac{1}{2} + \left(-1\frac{1}{5}\right)$

15. $2\frac{3}{4} + \left(-6\frac{3}{8}\right)$

16. $5\frac{1}{4} + \left(-2\frac{2}{3}\right)$

17. $-5\frac{1}{12} - 3\frac{2}{3}$

18. $-3\frac{3}{5} - \frac{9}{10}$

19. $-2\frac{1}{5} - 3\frac{3}{4}$

20. $2\frac{1}{3} - \left(-4\frac{5}{6}\right)$

21. $3\frac{2}{7} - \left(-4\frac{2}{3}\right)$

22. $5\frac{7}{9} - \left(-2\frac{1}{3}\right)$

23. $10\frac{2}{9} - \left(-3\frac{1}{3}\right)$

24. $-2\frac{1}{3} - \left(-5\frac{4}{5}\right)$

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2-6 Practice: Word Problems

Adding and Subtracting Unlike Fractions

1. GEOMETRY Two line segments have lengths of $3\frac{1}{4}$ inches and $1\frac{1}{3}$ inches. What is the sum of the lengths of the two line segments?	**2. COMPUTERS** The biology class has created two data files on the computer. One file is $2\frac{1}{9}$ megabytes, while the other file is $4\frac{1}{2}$ megabytes. How much larger is the second file than the first?
3. HUMAN BODY The index finger on Pablo's right hand measures $3\frac{3}{8}$ inches, while the index finger on his left hand measures $3\frac{5}{16}$ inches. Which hand has the longer index finger? How much longer is it?	**4. DECORATING** Sugi has two pictures that she wants to put beside each other in a frame. One is $3\frac{1}{2}$ inches wide and the other is $5\frac{1}{8}$ inches wide. How wide must the frame be to fit both pictures?
5. PETS Laura purchased two puppies from a litter. One of the puppies weighs $4\frac{5}{6}$ pounds and the other puppy weighs $5\frac{1}{2}$ pounds. How much more does the second puppy weigh than the first?	**6. AGE** Alma is $6\frac{3}{4}$ years old, while her brother David is $3\frac{5}{6}$ years old. What is the sum of the ages of Alma and David?
7. MEASUREMENT Ned pours $7\frac{2}{5}$ ounces of water from a beaker containing $10\frac{1}{4}$ ounces. How much water is left in the beaker?	**8. GEOMETRY** A triangle has sides of $1\frac{1}{6}$ inches, $1\frac{1}{3}$ inches, and $1\frac{2}{3}$ inches. What is the perimeter of the triangle?