Essential Understanding You can use the same rules to add and subtract rational expressions that you use to add and subtract numerical fractions.

You can add the numerators of rational expressions with like denominators. If a, b, and c represent polynomials (with $c \neq 0$), then $\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$.

Problem 1 Adding Expressions With Like Denominators

Got It? What is the sum $\frac{2a}{3a-4} + \frac{3a}{3a-4}$?

A Practice Add.

1. $\frac{5c}{2c+7} + \frac{c-28}{2c+7}$

2. $\frac{n}{n^2+4n+4} + \frac{2}{n^2+4n+4}$

Problem 2 Subtracting Expressions With Like Denominators

Got It? What is the difference?

a. $\frac{2}{z+3} - \frac{7}{z+3}$

b. $\frac{9n-3}{10n-4} - \frac{3n+5}{10n-4}$

c. $\dfrac{7q-3}{q^2-4} - \dfrac{6q-5}{q^2-4}$

To add or subtract rational expressions with different denominators, you can write the expressions with the least common denominator (LCD).

Problem 3 **Adding Expressions With Different Denominators**

Got It? What is the sum $\dfrac{3}{7y^4} + \dfrac{2}{3y^2}$?

(A) Practice Add.

5. $\dfrac{6}{5x^8} + \dfrac{4}{3x^6}$

6. $\dfrac{9}{m+2} + \dfrac{8}{m-7}$

Problem 4 **Subtracting Expressions With Different Denominators**

Got It? What is the difference $\frac{c}{3c-1} - \frac{4}{c-2}$?

A Practice Subtract.

7. $\frac{a}{a+3} - \frac{4}{a+5}$

8. $\frac{5}{t^2} - \frac{4}{t+1}$

Ⓐ Practice   9. **Exercise** Jane walks one mile from her house to her grandparents' house. Then she returns home, walking with her grandfather. Her return rate is 70% of her rate walking alone. Let r represent her rate walking alone.

  a. Write an expression for the amount of time Jane spends walking.

  b. Simplify your expression.

  c. Suppose Jane's rate walking alone is 3 mi/h. About how much time does she spend walking?