Exercises [A-1]

1. (a) Multiply $\frac{3}{5}$ by 15. (b) Divide $\frac{3}{5}$ by 15. (c) Multiply $\frac{3}{5}$ by $\frac{20}{21}$.
2. (a) Multiply $\frac{3}{5}$ by 2. (b) Multiply $\frac{3}{5}$ by $\frac{1}{2}$. (c) Divide $\frac{3}{5}$ by $\frac{1}{2}$.
3. (a) Multiply $\frac{5}{4}$ by $\frac{3}{4}$. (b) Divide $\frac{5}{4}$ by $\frac{3}{4}$. (c) Divide 3 by $\frac{3}{4}$.
4. (a) Multiply $\frac{x}{y}$ by y. (b) Divide $\frac{x}{y}$ by x. (c) Divide $\frac{x}{y}$ by y.
5. (a) Multiply $\frac{x-2}{3}$ by 6. (b) Divide $\frac{3x+6}{5}$ by 3.
6. (a) Multiply $\frac{1}{4}(x-3)$ by 8. (b) Divide $\frac{1}{4}(x-2)$ by $\frac{1}{2}$.
7. (a) Multiply $\frac{1}{2}(\frac{1}{2}x+\frac{1}{4})$ by 8. (b) Multiply $\frac{1}{3}(x+\frac{1}{4})$ by 12.
8. (a) Multiply $\frac{2}{3}(x+1.2)$ by 15. (b) Multiply $.05(12-x)$ by 100.

Simplify each of the following expressions:

9. $\frac{a^2b}{c^2d}\cdot\frac{c}{b}\div\frac{ab^2}{cd^2}$
10. $\frac{a^2-6a+9}{a^2-9}\cdot\frac{3a+9}{a-3}$
11. $\frac{6x}{5x-25}\div\frac{4x}{x^2-25}$
12. $\frac{2x^2-4x}{x+1}\cdot\frac{x+x^2}{x^2-4x+4}$
13. $\frac{2x^2-6x+4}{x^2-1}\cdot\frac{1+x}{2-x}$
14. $\frac{a-b}{a+b}\div(b^2-a^2)$
15. $\frac{c-d}{c^2+d^2}\div\frac{d^2-c^2}{d^2+cd}$
16. $\frac{6x^2-5x-6}{6x^2-11x-10}\cdot\frac{15-6x}{9-12x+4x^2}$
17. $\frac{6a^2-5ab+b^2}{4a^2-4ab+b^2}\div\frac{9a^2-b^2}{2ab-b^2}$
18. $\frac{2x^3-2a^2x}{x^2-2ax+a^2}\cdot\frac{a-x}{a^2x+ax^2}$
19. $\frac{a^3-b^3}{a^4-b^4}\div\frac{1}{b+a}$
20. $\frac{8+a^3}{9a-3a^2}\cdot\frac{2a^2-6a}{(a-1)^2+3}$

Exercises [A-2]

1. (a) Multiply $\frac{n}{2}$ by 2. (b) Divide $\frac{n}{2}$ by 2. (c) Divide 2 by $\frac{2}{n}$.
2. (a) Multiply $\frac{a}{b}$ by b. (b) Divide $\frac{a}{b}$ by a. (c) Divide a by $\frac{a}{b}$.
3. (a) Multiply $\frac{2}{3}$ by 4. (b) Divide $\frac{2}{3}$ by 4. (c) Divide 4 by $\frac{2}{3}$.
4. (a) Multiply $\frac{3-2x}{3}$ by 6. (b) Divide $\frac{5x-10}{2}$ by 10.
5. (a) Divide 6 by $\frac{3x-6}{5}$. (b) Multiply $\frac{n}{2}-\frac{n}{3}$ by 6.

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1. a. 9
   b. $\frac{1}{25}$
   c. $\frac{4}{7}$

2. a. $\frac{6}{5}$
   b. $\frac{3}{10}$
   c. $\frac{6}{5}$

3. a. $\frac{15}{16}$
   b. $\frac{5}{3}$
   c. 4

4. a. x
   b. $\frac{1}{y}$
   c. $\frac{x}{y^2}$

5. a. $2x - 4$
   b. $\frac{x + 2}{5}$

6. a. $2x - 6$
   b. $\frac{1}{2}(x - 2)$

7. a. $2x + 1$
   b. $4x + 1$

8. a. $10x + 12$
   b. $80 - 5x$

9. $\frac{ad}{b^2}$

10. 3

11. $\frac{3(x + 5)}{10}$

12. $\frac{2x^2}{x - 2}$

13. -2

14. $-\frac{1}{(a + b)^2}$

15. $-\frac{d}{c^2 + d^2}$

16. $\frac{3}{3 - 2x}$ or $\frac{-3}{2x - 3}$

17. $\frac{b}{3a + b}$

18. $-\frac{2}{a}$

19. $\frac{a^2 + ab + b^2}{a^2 + b^2}$

20. $-\frac{2(a + 2)}{3}$

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1. a. n
   b. $\frac{n}{4}$
   c. n

2. a. a
   b. $\frac{1}{b}$
   c. b

3. a. $\frac{8}{3}$
   b. $\frac{1}{6}$
   c. 6

4. a. $6 - 4x$
   b. $\frac{x - 2}{4}$

5. a. $\frac{10}{x - 2}$
   b. n

6. $\frac{b^2}{9a}$

7. $\frac{3(x + 3)}{2}$

8. $\frac{1}{(a - c)^2}$

9. 1

10. 1

11. $-\frac{1}{3}$

12. $\frac{3(2 - t)}{4}$

13. $\frac{2(1 - x)}{7 + x}$

14. $-\frac{x^2 + 3}{2}$

15. $\frac{n^2 + 1}{n(n - 1)}$