

# Multiplying and Dividing Fractions

Name: \_\_\_\_\_

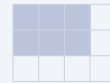
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## Quick Review and Helpful Hints

To *multiply* fractions, multiply the numerators together and the denominators together, then simplify. To *divide*, multiply by the reciprocal of the second fraction (flip it, then multiply). Canceling common factors before you multiply keeps the numbers small.

▶ **Example:** Multiply  $\frac{2}{3} \times \frac{3}{4}$ . **Work:** Multiply straight across:  $\frac{2 \times 3}{3 \times 4} = \frac{6}{12}$ . Simplify by dividing top and bottom by 6. ★ **Answer:**  $\frac{1}{2}$



$$\frac{2}{3} \times \frac{3}{4} = \frac{6}{12} = \frac{1}{2}$$

## ◆ Practice Problems

Multiply or divide. Write each answer in simplest form.

1.  $\frac{1}{2} \times \frac{1}{3}$

\_\_\_\_\_

8.  $\frac{3}{4} \div \frac{1}{2}$

\_\_\_\_\_

2.  $\frac{2}{3} \times \frac{3}{5}$

\_\_\_\_\_

9.  $\frac{7}{8} \times \frac{2}{7}$

\_\_\_\_\_

3.  $\frac{3}{4} \times \frac{2}{9}$

\_\_\_\_\_

10.  $\frac{5}{9} \div \frac{5}{6}$

\_\_\_\_\_

4.  $\frac{1}{2} \div \frac{1}{4}$

\_\_\_\_\_

11.  $\frac{2}{5} \times \frac{10}{3}$

\_\_\_\_\_

5.  $\frac{2}{3} \div \frac{4}{9}$

\_\_\_\_\_

12.  $\frac{6}{7} \div \frac{3}{14}$

\_\_\_\_\_

6.  $\frac{5}{6} \times \frac{3}{10}$

\_\_\_\_\_

13.  $\frac{3}{8} \times \frac{4}{9}$

\_\_\_\_\_

7.  $\frac{4}{5} \times \frac{5}{8}$

\_\_\_\_\_

14.  $\frac{8}{15} \div \frac{2}{5}$

\_\_\_\_\_

## ◆ Word Problems

15. A recipe calls for  $\frac{3}{4}$  cup of flour. How much flour is needed for half a batch?

\_\_\_\_\_

16. A 6-foot ribbon is cut into pieces that are each  $\frac{3}{4}$  foot long. How many pieces are there?

\_\_\_\_\_

17. A farmer plants  $\frac{2}{3}$  of a 9-acre field. How many acres are planted?

\_\_\_\_\_

18. A baker has  $\frac{5}{8}$  lb of chocolate and packages it into  $\frac{1}{4}$ -lb gift bags. How many bags can be filled, counting a partial bag if needed?

\_\_\_\_\_



## Answer Keys

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

2.  $\frac{2}{5}$

3.  $\frac{1}{6}$

4.  $2$

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

6.  $\frac{1}{4}$

7.  $\frac{1}{2}$

8.  $\frac{3}{2}$

9.  $\frac{1}{4}$

10.  $\frac{2}{3}$

11.  $\frac{4}{3}$

12.  $4$

13.  $\frac{1}{6}$

14.  $\frac{4}{3}$

15.  $\frac{3}{8}$  cup

16. 8 pieces

17. 6 acres

18.  $\frac{5}{2}$  bags

### Step-by-Step Explanations

1. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is To multiply, go straight across:  $\frac{1 \times 1}{2 \times 3} = \frac{1}{6}$ . It is already in simplest form. So the final answer is  $\frac{1}{6}$ .

2. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Multiply across:  $\frac{2 \times 3}{3 \times 5} = \frac{6}{15}$ . Top and bottom share 3, so simplify to  $\frac{2}{5}$ . So the final answer is  $\frac{2}{5}$ .

3. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Multiply across:  $\frac{3 \times 2}{4 \times 9} = \frac{6}{36}$ . Divide top and bottom by 6 to get  $\frac{1}{6}$ . So the final answer is  $\frac{1}{6}$ .

4. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Dividing means multiply by the reciprocal – flip  $\frac{1}{4}$  to  $\frac{4}{1}$ . Then  $\frac{1}{2} \times \frac{4}{1} = \frac{4}{2} = 2$ . So the final answer is 2.

5. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Flip the second fraction and multiply:  $\frac{2}{3} \times \frac{9}{4} = \frac{18}{12}$ , which simplifies to  $\frac{3}{2}$ . So the final answer is  $\frac{3}{2}$ .

6. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Multiply across:  $\frac{5 \times 3}{6 \times 10} = \frac{15}{60}$ . Divide by 15 to reach  $\frac{1}{4}$ . So the final answer is  $\frac{1}{4}$ .

7. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Multiply across:  $\frac{4 \times 5}{5 \times 8} = \frac{20}{40}$ , which simplifies to  $\frac{1}{2}$  (the 5's cancel). So the final answer is  $\frac{1}{2}$ .

8. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Flip and multiply:  $\frac{3}{4} \times \frac{2}{1} = \frac{6}{4} = \frac{3}{2}$ . So the final answer is  $\frac{3}{2}$ .

9. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Multiply across:  $\frac{7 \times 2}{8 \times 7} = \frac{14}{56} = \frac{1}{4}$  (the 7's cancel). So the final answer is  $\frac{1}{4}$ .

10. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Flip the second fraction:  $\frac{5}{9} \times \frac{6}{5} = \frac{30}{45} = \frac{2}{3}$  (the 5's cancel). So the final answer is  $\frac{2}{3}$ .

11. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Multiply across:  $\frac{2 \times 10}{5 \times 3} = \frac{20}{15} = \frac{4}{3}$ . So the final answer is  $\frac{4}{3}$ .

12. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Flip and multiply:  $\frac{6}{7} \times \frac{14}{3} = \frac{84}{21} = 4$ . So the final answer is 4.

13. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Multiply across:  $\frac{3 \times 4}{8 \times 9} = \frac{12}{72} = \frac{1}{6}$ . So the final answer is  $\frac{1}{6}$ .

14. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Flip and multiply:  $\frac{8}{15} \times \frac{5}{2} = \frac{40}{30} = \frac{4}{3}$ . So the final answer is  $\frac{4}{3}$ .

15. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Half a batch means multiply by  $\frac{1}{2}$ :  $\frac{3}{4} \times \frac{1}{2} = \frac{3}{8}$  cup of flour. So the final answer is  $\frac{3}{8}$  cup.

16. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Divide the total length by the piece length:  $6 \div \frac{3}{4} = 6 \times \frac{4}{3} = \frac{24}{3} = 8$  pieces. So the final answer is 8 pieces.

17. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Find  $\frac{2}{3}$  of 9 by multiplying:  $\frac{2}{3} \times 9 = \frac{18}{3} = 6$  acres. So the final answer is 6 acres.

18. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Divide the bar by the bag size:  $\frac{5}{8} \div \frac{1}{4} = \frac{5}{8} \times 4 = \frac{20}{8} = \frac{5}{2}$ , which is  $2\frac{1}{2}$  bags. So the final answer is  $\frac{5}{2}$  bags.



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