

# Dividing Fractions by Fractions

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

Date: \_\_\_\_\_

Score: \_\_\_\_\_ / 24

## Q Quick Review

Dividing by a fraction means asking “how many of *this* fit inside *that*?” The quick rule is **keep, change, flip**: keep the first fraction, change  $\div$  to  $\times$ , and flip the second fraction to its **reciprocal** (swap its top and bottom). So  $\frac{3}{4} \div \frac{1}{2}$  becomes  $\frac{3}{4} \times \frac{2}{1}$ . Then multiply across and write the answer in **simplest form**. A whole number like 6 is just  $\frac{6}{1}$ , so the same rule works there too.

◇ **Example:** Find  $\frac{2}{3} \div \frac{4}{5}$ .

⇒ We want to know how many groups of  $\frac{4}{5}$  fit into  $\frac{2}{3}$ . Use keep, change, flip: keep  $\frac{2}{3}$ , change the  $\div$  to  $\times$ , and flip  $\frac{4}{5}$  to get its reciprocal  $\frac{5}{4}$ . Now multiply:  $\frac{2}{3} \times \frac{5}{4} = \frac{2 \times 5}{3 \times 4} = \frac{10}{12}$ . Both numbers share a factor of 2, so divide top and bottom by 2 to get  $\frac{5}{6}$ . Since  $\frac{5}{6}$  is less than 1, less than one whole group fits — that makes sense!

**Answer:**  $\frac{5}{6}$

## PRACTICE

Divide. Write each answer in simplest form.

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

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

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

4.  $\frac{5}{8} \div \frac{5}{16}$  \_\_\_\_\_

5.  $\frac{3}{8} \div \frac{3}{4}$  \_\_\_\_\_

6.  $\frac{7}{10} \div \frac{7}{10}$  \_\_\_\_\_

7.  $\frac{5}{6} \div \frac{1}{3}$  \_\_\_\_\_

8.  $\frac{9}{10} \div \frac{3}{5}$  \_\_\_\_\_

9.  $\frac{2}{9} \div \frac{1}{3}$  \_\_\_\_\_

10.  $\frac{7}{8} \div \frac{1}{2}$  \_\_\_\_\_

11.  $\frac{4}{9} \div \frac{2}{3}$  \_\_\_\_\_

12.  $\frac{5}{12} \div \frac{5}{6}$  \_\_\_\_\_

13.  $\frac{2}{3} \div \frac{5}{6}$  \_\_\_\_\_

14.  $\frac{3}{5} \div \frac{9}{10}$  \_\_\_\_\_

15.  $\frac{8}{15} \div \frac{4}{5}$  \_\_\_\_\_

16.  $\frac{11}{12} \div \frac{1}{6}$  \_\_\_\_\_

17.  $\frac{7}{12} \div \frac{7}{8}$  \_\_\_\_\_

18.  $\frac{3}{10} \div \frac{9}{20}$  \_\_\_\_\_

19.  $\frac{4}{7} \div \frac{8}{21}$  \_\_\_\_\_

20.  $\frac{5}{6} \div \frac{15}{8}$  \_\_\_\_\_

## ◆ Word Problems

21. A baker has 6 cups of flour and each batch of muffins needs  $\frac{3}{4}$  cup. How many batches can the baker make? \_\_\_\_\_

22. A ribbon is  $\frac{3}{4}$  yard long. Pieces of length  $\frac{1}{8}$  yard are cut from it. How many pieces can be cut? \_\_\_\_\_

23. A water jug holds  $\frac{1}{2}$  gallon. A small cup holds  $\frac{1}{6}$  gallon. How many cups fill the jug? \_\_\_\_\_

24. A trail is  $\frac{7}{8}$  mile long. Marker posts are placed every  $\frac{1}{4}$  mile. How many  $\frac{1}{4}$ -mile sections is the trail? \_\_\_\_\_



## Answer Keys

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|--|--|
| <p>1. <math>\frac{3}{2}</math></p> <p>2. <math>2</math></p> <p>3. <math>2</math></p> <p>4. <math>2</math></p> <p>5. <math>\frac{1}{2}</math></p> <p>6. <math>1</math></p> <p>7. <math>\frac{5}{2}</math></p> <p>8. <math>\frac{3}{2}</math></p> <p>9. <math>\frac{2}{3}</math></p> <p>10. <math>\frac{7}{4}</math></p> <p>11. <math>\frac{2}{3}</math></p> <p>12. <math>\frac{1}{2}</math></p> | <p>13. <math>\frac{4}{5}</math></p> <p>14. <math>\frac{2}{3}</math></p> <p>15. <math>\frac{2}{3}</math></p> <p>16. <math>\frac{11}{2}</math></p> <p>17. <math>\frac{2}{3}</math></p> <p>18. <math>\frac{2}{3}</math></p> <p>19. <math>\frac{3}{2}</math></p> <p>20. <math>\frac{4}{9}</math></p> <p>21. 8 batches</p> <p>22. 6 pieces</p> <p>23. 3 cups</p> <p>24. <math>\frac{7}{2}</math> sections</p> |
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### Step-by-Step Explanations

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|--|--|
| <p>1. Keep, change, flip: <math>\frac{3}{4} \times \frac{2}{1} = \frac{6}{4} = \frac{3}{2}</math>.</p> <p>2. <math>\frac{1}{1} \times \frac{4}{2} = \frac{4}{2} = 2</math>. Four quarters of a unit, but here just 2 fit into a half.</p> <p>3. <math>\frac{4}{5} \times \frac{5}{2} = \frac{20}{10} = 2</math>. Two groups of <math>\frac{2}{5}</math> fit inside <math>\frac{4}{5}</math>.</p> <p>4. <math>\frac{16}{5} \times \frac{5}{8} = \frac{80}{40} = 2</math>.</p> <p>5. <math>\frac{4}{3} \times \frac{3}{4} = \frac{12}{12} = 1</math>.</p> <p>6. Any number divided by itself is 1 — exactly one group fits.</p> <p>7. <math>\frac{5}{6} \times \frac{3}{1} = \frac{15}{6} = \frac{5}{2}</math>.</p> <p>8. <math>\frac{9}{10} \times \frac{5}{3} = \frac{45}{30} = \frac{3}{2}</math>.</p> <p>9. <math>\frac{2}{3} \times \frac{3}{1} = \frac{6}{3} = 2</math>.</p> <p>10. <math>\frac{7}{4} \times \frac{2}{1} = \frac{14}{4} = \frac{7}{2}</math>.</p> <p>11. <math>\frac{4}{9} \times \frac{3}{2} = \frac{12}{18} = \frac{2}{3}</math>.</p> <p>12. <math>\frac{5}{12} \times \frac{6}{5} = \frac{30}{60} = \frac{1}{2}</math>.</p> | <p>13. <math>\frac{2}{3} \times \frac{6}{5} = \frac{12}{15} = \frac{4}{5}</math>.</p> <p>14. <math>\frac{3}{5} \times \frac{10}{9} = \frac{30}{45} = \frac{2}{3}</math>.</p> <p>15. <math>\frac{8}{15} \times \frac{5}{4} = \frac{40}{60} = \frac{2}{3}</math>.</p> <p>16. <math>\frac{11}{12} \times \frac{6}{1} = \frac{66}{12} = \frac{11}{2}</math>.</p> <p>17. <math>\frac{7}{12} \times \frac{8}{7} = \frac{56}{84} = \frac{2}{3}</math>.</p> <p>18. <math>\frac{3}{10} \times \frac{20}{9} = \frac{60}{90} = \frac{2}{3}</math>.</p> <p>19. <math>\frac{4}{7} \times \frac{21}{8} = \frac{84}{56} = \frac{3}{2}</math>.</p> <p>20. <math>\frac{5}{6} \times \frac{8}{15} = \frac{40}{90} = \frac{4}{9}</math>.</p> <p>21. Divide the total by the size of one batch: <math>6 \div \frac{3}{4} = 6 \times \frac{4}{3} = \frac{24}{3} = 8</math> batches.</p> <p>22. <math>\frac{3}{4} \div \frac{1}{8} = \frac{3}{4} \times \frac{8}{1} = \frac{24}{4} = 6</math> pieces.</p> <p>23. <math>\frac{1}{2} \div \frac{1}{6} = \frac{1}{2} \times \frac{6}{1} = \frac{6}{2} = 3</math> cups.</p> <p>24. <math>\frac{7}{8} \div \frac{1}{4} = \frac{7}{8} \times \frac{4}{1} = \frac{28}{8} = \frac{7}{2}</math>, or <math>3\frac{1}{2}</math> sections.</p> |
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