

# Dividing Fractions

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Score: \_\_\_\_\_ / 24

## Quick Review

To divide by a fraction, **multiply by its reciprocal**. The **reciprocal** of a fraction is that fraction flipped upside down — the reciprocal of  $\frac{1}{2}$  is  $\frac{2}{1}$ . So  $\frac{2}{3} \div \frac{1}{2}$  becomes  $\frac{2}{3} \times \frac{2}{1}$ . A helpful phrase is “**keep, change, flip**”: keep the first fraction, change  $\div$  to  $\times$ , and flip the second one. Then multiply as usual and **simplify**. Dividing by a fraction less than 1 gives a *bigger* answer — that is expected!

◇ **Example:** Divide  $\frac{2}{3} \div \frac{1}{2}$ .

⇒ Use “keep, change, flip.” **Keep** the first fraction  $\frac{2}{3}$ . **Change** the division to multiplication. **Flip** the second fraction:  $\frac{1}{2}$  becomes  $\frac{2}{1}$ . Now multiply:  $\frac{2}{3} \times \frac{2}{1} = \frac{4}{3}$ . Converting to a mixed number,  $\frac{4}{3} = 1\frac{1}{3}$ .

**Answer:**  $\frac{4}{3} = 1\frac{1}{3}$

## PRACTICE

Divide. Write each answer in simplest form.

- |                                    |       |                                       |       |
|------------------------------------|-------|---------------------------------------|-------|
| 1. $\frac{2}{3} \div \frac{1}{2}$  | _____ | 11. $\frac{5}{8} \div \frac{1}{2}$    | _____ |
| 2. $\frac{3}{4} \div \frac{1}{2}$  | _____ | 12. $\frac{2}{7} \div \frac{4}{7}$    | _____ |
| 3. $\frac{5}{6} \div \frac{1}{3}$  | _____ | 13. $\frac{9}{10} \div \frac{3}{5}$   | _____ |
| 4. $\frac{4}{5} \div \frac{2}{3}$  | _____ | 14. $\frac{1}{2} \div \frac{1}{8}$    | _____ |
| 5. $\frac{7}{8} \div \frac{1}{4}$  | _____ | 15. $\frac{3}{5} \div \frac{9}{10}$   | _____ |
| 6. $\frac{2}{9} \div \frac{1}{3}$  | _____ | 16. $\frac{8}{9} \div \frac{2}{3}$    | _____ |
| 7. $\frac{5}{12} \div \frac{1}{6}$ | _____ | 17. $\frac{5}{6} \div \frac{5}{12}$   | _____ |
| 8. $\frac{3}{8} \div \frac{3}{4}$  | _____ | 18. $\frac{7}{12} \div \frac{7}{8}$   | _____ |
| 9. $\frac{7}{10} \div \frac{7}{5}$ | _____ | 19. $\frac{2}{3} \div \frac{8}{9}$    | _____ |
| 10. $\frac{4}{9} \div \frac{2}{3}$ | _____ | 20. $\frac{11}{12} \div \frac{11}{6}$ | _____ |

## Word Problems

- A ribbon is  $\frac{3}{4}$  meter long. It is cut into pieces each  $\frac{1}{2}$  meter long. How many pieces are there? \_\_\_\_\_
- There is  $\frac{5}{6}$  cup of trail mix to share into  $\frac{1}{3}$ -cup servings. How many servings are there? \_\_\_\_\_
- A board  $\frac{7}{8}$  foot long is split into  $\frac{1}{4}$ -foot sections. How many sections are made? \_\_\_\_\_
- A jug holds  $\frac{1}{2}$  gallon of lemonade poured into  $\frac{1}{8}$ -gallon cups. How many cups can be filled? \_\_\_\_\_



## Answer Keys

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

<p>1. Flip: <math>\frac{1}{2} \times \frac{2}{4} = \frac{2}{8} = \frac{1}{4}</math>.</p> <p>2. Flip: <math>\frac{1}{2} \times \frac{3}{4} = \frac{3}{8}</math>.</p> <p>3. Flip: <math>\frac{1}{2} \times \frac{5}{4} = \frac{5}{8}</math>.</p> <p>4. Flip: <math>\frac{1}{2} \times \frac{6}{5} = \frac{6}{10} = \frac{3}{5}</math>.</p> <p>5. Flip: <math>\frac{1}{2} \times \frac{7}{4} = \frac{7}{8}</math>.</p> <p>6. Flip: <math>\frac{1}{2} \times \frac{2}{3} = \frac{2}{6} = \frac{1}{3}</math>.</p> <p>7. Flip: <math>\frac{1}{2} \times \frac{5}{1} = \frac{5}{2}</math>.</p> <p>8. Flip: <math>\frac{1}{2} \times \frac{3}{4} = \frac{3}{8}</math>.</p> <p>9. Flip: <math>\frac{1}{2} \times \frac{5}{7} = \frac{5}{14}</math>.</p> <p>10. Flip: <math>\frac{1}{2} \times \frac{2}{3} = \frac{2}{6} = \frac{1}{3}</math>.</p> <p>11. Flip: <math>\frac{1}{2} \times \frac{5}{4} = \frac{5}{8}</math>.</p> <p>12. Flip: <math>\frac{1}{2} \times \frac{1}{4} = \frac{1}{8}</math>.</p>	<p>13. Flip: <math>\frac{3}{2} \times \frac{2}{3} = \frac{6}{6} = 1</math>.</p> <p>14. Flip: <math>\frac{1}{2} \times \frac{8}{2} = \frac{8}{4} = 2</math>.</p> <p>15. Flip: <math>\frac{1}{2} \times \frac{10}{5} = \frac{10}{10} = 1</math>.</p> <p>16. Flip: <math>\frac{1}{2} \times \frac{8}{3} = \frac{8}{6} = \frac{4}{3}</math>.</p> <p>17. Flip: <math>\frac{1}{2} \times \frac{12}{6} = \frac{12}{12} = 1</math>.</p> <p>18. Flip: <math>\frac{7}{12} \times \frac{8}{9} = \frac{56}{108} = \frac{14}{27}</math>.</p> <p>19. Flip: <math>\frac{3}{8} \times \frac{8}{3} = \frac{24}{24} = 1</math>.</p> <p>20. Flip: <math>\frac{11}{12} \times \frac{6}{11} = \frac{66}{132} = \frac{1}{2}</math>.</p> <p>21. <math>\frac{3}{4} \div \frac{1}{2} = \frac{3}{4} \times \frac{2}{1} = \frac{6}{4} = 1\frac{2}{4} = 1\frac{1}{2}</math> pieces.</p> <p>22. <math>\frac{5}{6} \div \frac{1}{3} = \frac{5}{6} \times \frac{3}{1} = \frac{15}{6} = 2\frac{3}{6} = 2\frac{1}{2}</math> servings.</p> <p>23. <math>\frac{7}{8} \div \frac{1}{4} = \frac{7}{8} \times \frac{4}{1} = \frac{28}{8} = 3\frac{4}{8} = 3\frac{1}{2}</math> sections.</p> <p>24. <math>\frac{1}{2} \div \frac{1}{8} = \frac{1}{2} \times \frac{8}{1} = \frac{8}{2} = 4</math> cups.</p>
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