

## LESSON 31

# Division Of Mixed Numbers

Mixed numbers can be divided by changing them into improper fractions, then making a multiplication problem by inverting the fraction that comes after the division sign.

Example: Divide

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

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

$$\frac{5}{4} \div \frac{7}{3}$$

$$\frac{5}{4} \times \frac{3}{7} = \frac{15}{28}$$

# Divide By Multiplying With The Inverse

<p>1. <math>6 \div 1 \frac{1}{3}</math></p> <p><math>6 \div \frac{4}{3}</math></p> <p><math>\overset{3}{\cancel{6}} \times \frac{\cancel{3}}{\underset{2}{4}} = \frac{9}{2} = 4 \frac{1}{2}</math></p>	<p>6. <math>10 \div 3 \frac{3}{4}</math></p> <p><math>10 \div \frac{15}{4}</math></p> <p><math>\overset{2}{\cancel{10}} \times \frac{\cancel{4}}{\underset{3}{15}} = \frac{8}{3} = 2 \frac{2}{3}</math></p>	<p>11. <math>4 \frac{2}{7} \div \frac{1}{14}</math></p> <p><math>\frac{30}{7} \div \frac{1}{14}</math></p> <p><math>\overset{30}{\cancel{7}} \times \frac{\overset{2}{\cancel{14}}}{1} = 60</math></p>
<p>2. <math>7 \div 1 \frac{1}{4}</math></p> <p><math>7 \div \frac{5}{4}</math></p> <p><math>7 \times \frac{4}{5} = \frac{28}{5} = 5 \frac{3}{5}</math></p>	<p>7. <math>9 \div 1 \frac{2}{7}</math></p> <p><math>\frac{9}{1} \div \frac{9}{7}</math></p> <p><math>\overset{1}{\cancel{9}} \times \frac{\cancel{7}}{\underset{1}{9}} = 7</math></p>	<p>12. <math>1 \frac{7}{8} \div \frac{3}{8}</math></p> <p><math>\frac{15}{8} \div \frac{3}{8}</math></p> <p><math>\overset{5}{\cancel{15}} \times \frac{\cancel{8}^1}{\underset{1}{3}} = 5</math></p>
<p>3. <math>9 \div 3 \frac{3}{4}</math></p> <p><math>9 \div \frac{15}{4}</math></p> <p><math>\overset{3}{\cancel{9}} \times \frac{\cancel{4}}{\underset{5}{15}} = \frac{12}{5} = 2 \frac{2}{5}</math></p>	<p>8. <math>5 \div 1 \frac{2}{3}</math></p> <p><math>\frac{5}{1} \div \frac{5}{3}</math></p> <p><math>\overset{1}{\cancel{5}} \times \frac{\cancel{3}}{\underset{1}{5}} = 3</math></p>	<p>13. <math>4 \frac{1}{6} \div \frac{10}{3}</math></p> <p><math>\frac{25}{6} \div \frac{10}{3}</math></p> <p><math>\overset{5}{\cancel{25}} \times \frac{\cancel{3}^1}{\underset{2}{10}} = \frac{5}{4} = 1 \frac{1}{4}</math></p>
<p>4. <math>12 \div 2 \frac{2}{5}</math></p> <p><math>12 \div \frac{12}{5}</math></p> <p><math>\overset{1}{\cancel{12}} \times \frac{\cancel{5}}{\underset{1}{12}} = 5</math></p>	<p>9. <math>42 \div 4 \frac{1}{5}</math></p> <p><math>\frac{42}{1} \div \frac{21}{5}</math></p> <p><math>\overset{2}{\cancel{42}} \times \frac{\cancel{5}}{\underset{1}{21}} = 10</math></p>	<p>14. <math>5 \frac{2}{8} \div \frac{7}{8}</math></p> <p><math>\frac{42}{8} \div \frac{7}{8}</math></p> <p><math>\overset{6}{\cancel{42}} \times \frac{\cancel{8}^1}{\underset{1}{7}} = 6</math></p>
<p>5. <math>8 \div 1 \frac{1}{3}</math></p> <p><math>8 \div \frac{4}{3}</math></p> <p><math>\overset{2}{\cancel{8}} \times \frac{\cancel{3}}{\underset{1}{4}} = 6</math></p>	<p>10. <math>60 \div 1 \frac{5}{7}</math></p> <p><math>60 \div \frac{12}{7}</math></p> <p><math>\overset{5}{\cancel{60}} \times \frac{\cancel{7}}{\underset{1}{12}} = 35</math></p>	<p>15. <math>5 \frac{4}{7} \div \frac{13}{49}</math></p> <p><math>\frac{39}{7} \div \frac{13}{49}</math></p> <p><math>\overset{3}{\cancel{39}} \times \frac{\cancel{49}^7}{\underset{1}{13}} = 21</math></p>

# Divide By Multiplying With The Inverse

<p>16.</p> $\frac{3}{8} \div 1 \frac{7}{8}$ $\frac{3}{8} \div \frac{15}{8}$ $\frac{\overset{1}{\cancel{3}}}{\underset{1}{\cancel{8}}} \times \frac{\overset{1}{\cancel{8}}}{\underset{5}{\cancel{15}}} = \frac{1}{5}$	<p>21.</p> $\frac{9}{32} \div 2 \frac{1}{4}$ $\frac{9}{32} \div \frac{9}{4}$ $\frac{\overset{1}{\cancel{9}}}{\underset{8}{\cancel{32}}} \times \frac{\overset{1}{\cancel{4}}}{\underset{1}{\cancel{9}}} = \frac{1}{8}$	<p>26.</p> $8 \frac{1}{3} \div \frac{5}{9}$ $\frac{25}{3} \div \frac{5}{9}$ $\frac{\overset{5}{\cancel{25}}}{\underset{1}{\cancel{3}}} \times \frac{\overset{3}{\cancel{9}}}{\underset{1}{\cancel{5}}} = 15$
<p>17.</p> $\frac{5}{9} \div 1 \frac{1}{9}$ $\frac{5}{9} \div \frac{10}{9}$ $\frac{\overset{1}{\cancel{5}}}{\underset{1}{\cancel{9}}} \times \frac{\overset{1}{\cancel{9}}}{\underset{2}{\cancel{10}}} = \frac{1}{2}$	<p>22.</p> $\frac{7}{12} \div 1 \frac{1}{6}$ $\frac{7}{12} \div \frac{7}{6}$ $\frac{\overset{1}{\cancel{7}}}{\underset{2}{\cancel{12}}} \times \frac{\overset{1}{\cancel{6}}}{\underset{1}{\cancel{7}}} = \frac{1}{2}$	<p>27.</p> $4 \frac{1}{8} \div \frac{11}{16}$ $\frac{33}{8} \div \frac{11}{16}$ $\frac{\overset{+3}{\cancel{33}}}{\underset{1}{\cancel{8}}} \times \frac{\overset{2}{\cancel{16}}}{\underset{1}{\cancel{11}}} = 6$
<p>18.</p> $\frac{7}{15} \div 1 \frac{3}{10}$ $\frac{7}{15} \div \frac{13}{10}$ $\frac{\overset{7}{\cancel{7}}}{\underset{3}{\cancel{15}}} \times \frac{\overset{2}{\cancel{10}}}{\underset{13}{\cancel{13}}} = \frac{14}{39}$	<p>23.</p> $\frac{11}{20} \div 2 \frac{1}{5}$ $\frac{11}{20} \div \frac{11}{5}$ $\frac{\overset{1}{\cancel{11}}}{\underset{4}{\cancel{20}}} \times \frac{\overset{1}{\cancel{5}}}{\underset{1}{\cancel{11}}} = \frac{1}{4}$	<p>28.</p> $7 \frac{1}{2} \div \frac{15}{32}$ $\frac{15}{2} \div \frac{15}{32}$ $\frac{\overset{1}{\cancel{15}}}{\underset{1}{\cancel{2}}} \times \frac{\overset{16}{\cancel{32}}}{\underset{1}{\cancel{15}}} = 16$
<p>19.</p> $\frac{5}{16} \div 1 \frac{3}{8}$ $\frac{5}{16} \div \frac{11}{8}$ $\frac{\overset{5}{\cancel{5}}}{\underset{2}{\cancel{16}}} \times \frac{\overset{1}{\cancel{8}}}{\underset{11}{\cancel{11}}} = \frac{5}{22}$	<p>24.</p> $\frac{9}{14} \div 1 \frac{2}{7}$ $\frac{9}{14} \div \frac{9}{7}$ $\frac{\overset{1}{\cancel{9}}}{\underset{2}{\cancel{14}}} \times \frac{\overset{1}{\cancel{7}}}{\underset{1}{\cancel{9}}} = \frac{1}{2}$	<p>29.</p> $6 \frac{2}{3} \div \frac{10}{27}$ $\frac{20}{3} \div \frac{10}{27}$ $\frac{\overset{2}{\cancel{20}}}{\underset{1}{\cancel{3}}} \times \frac{\overset{9}{\cancel{27}}}{\underset{1}{\cancel{10}}} = 18$
<p>20.</p> $\frac{3}{4} \div 1 \frac{5}{16}$ $\frac{3}{4} \div \frac{21}{6}$ $\frac{\overset{1}{\cancel{3}}}{\underset{1}{\cancel{4}}} \times \frac{\overset{4}{\cancel{16}}}{\underset{7}{\cancel{21}}} = \frac{4}{7}$	<p>25.</p> $\frac{27}{50} \div 1 \frac{4}{5}$ $\frac{27}{50} \div \frac{9}{5}$ $\frac{\overset{3}{\cancel{27}}}{\underset{10}{\cancel{50}}} \times \frac{\overset{1}{\cancel{5}}}{\underset{1}{\cancel{9}}} = \frac{3}{10}$	<p>30.</p> $1 \frac{3}{10} \div \frac{91}{100}$ $\frac{13}{10} \div \frac{91}{100}$ $\frac{\overset{1}{\cancel{13}}}{\underset{1}{\cancel{10}}} \times \frac{\overset{10}{\cancel{100}}}{\underset{7}{\cancel{91}}} = \frac{10}{7} = 1 \frac{3}{7}$

# Divide By Multiplying With The Inverse

<p>31.</p> $1 \frac{3}{4} \div 2 \frac{5}{8}$ $\frac{7}{4} \div \frac{21}{8}$ $\frac{\overset{1}{\cancel{7}}}{\underset{1}{\cancel{4}}} \times \frac{\overset{2}{\cancel{8}}}{\underset{3}{\cancel{21}}} = \frac{2}{3}$	<p>36.</p> $3 \frac{1}{7} \div 6 \frac{3}{5}$ $\frac{22}{7} \div \frac{33}{5}$ $\frac{\overset{2}{\cancel{22}}}{\underset{1}{\cancel{7}}} \times \frac{\overset{5}{\cancel{5}}}{\underset{3}{\cancel{33}}} = \frac{10}{21}$	<p>41.</p> $4 \frac{6}{7} \div 1 \frac{3}{14}$ $\frac{34}{7} \div \frac{17}{14}$ $\frac{\overset{2}{\cancel{34}}}{\underset{1}{\cancel{7}}} \times \frac{\overset{2}{\cancel{14}}}{\underset{17}{\cancel{17}}} = 4$
<p>32.</p> $8 \frac{3}{4} \div 1 \frac{7}{8}$ $\frac{35}{4} \div \frac{15}{8}$ $\frac{\overset{7}{\cancel{35}}}{\underset{1}{\cancel{4}}} \times \frac{\overset{2}{\cancel{8}}}{\underset{3}{\cancel{15}}} = \frac{4}{3} = 1 \frac{1}{3}$	<p>37.</p> $2 \frac{2}{11} \div 3 \frac{3}{11}$ $\frac{24}{11} \div \frac{36}{11}$ $\frac{\overset{2}{\cancel{24}}}{\underset{1}{\cancel{11}}} \times \frac{\overset{1}{\cancel{11}}}{\underset{3}{\cancel{36}}} = \frac{2}{3}$	<p>42.</p> $15 \frac{2}{5} \div 9 \frac{7}{9}$ $\frac{77}{5} \div \frac{88}{9}$ $\frac{\overset{7}{\cancel{77}}}{\underset{1}{\cancel{5}}} \times \frac{\overset{9}{\cancel{9}}}{\underset{8}{\cancel{88}}} = \frac{63}{40} = 1 \frac{23}{40}$
<p>33.</p> $1 \frac{3}{7} \div 1 \frac{1}{14}$ $\frac{10}{7} \div \frac{15}{14}$ $\frac{\overset{2}{\cancel{10}}}{\underset{1}{\cancel{7}}} \times \frac{\overset{2}{\cancel{14}}}{\underset{3}{\cancel{15}}} = \frac{4}{3} = 1 \frac{1}{3}$	<p>38.</p> $2 \frac{4}{7} \div 1 \frac{6}{21}$ $\frac{18}{7} \div \frac{27}{21}$ $\frac{\overset{2}{\cancel{18}}}{\underset{1}{\cancel{7}}} \times \frac{\overset{3}{\cancel{21}}}{\underset{3}{\cancel{27}}} = 2$	<p>43.</p> $1 \frac{14}{25} \div 5 \frac{1}{5}$ $\frac{39}{25} \div \frac{26}{5}$ $\frac{\overset{3}{\cancel{39}}}{\underset{5}{\cancel{25}}} \times \frac{\overset{1}{\cancel{5}}}{\underset{2}{\cancel{26}}} = \frac{3}{10}$
<p>34.</p> $5 \frac{5}{6} \div 5 \frac{5}{8}$ $\frac{35}{6} \div \frac{45}{8}$ $\frac{\overset{7}{\cancel{35}}}{\underset{3}{\cancel{6}}} \times \frac{\overset{4}{\cancel{8}}}{\underset{9}{\cancel{45}}} = \frac{28}{27} = 1 \frac{1}{27}$	<p>39.</p> $2 \frac{1}{12} \div 1 \frac{1}{24}$ $\frac{25}{12} \div \frac{25}{24}$ $\frac{\overset{1}{\cancel{25}}}{\underset{1}{\cancel{12}}} \times \frac{\overset{2}{\cancel{24}}}{\underset{1}{\cancel{25}}} = 2$	<p>44.</p> $5 \frac{3}{7} \div 8 \frac{1}{7}$ $\frac{38}{7} \div \frac{57}{7}$ $\frac{\overset{2}{\cancel{38}}}{\underset{1}{\cancel{7}}} \times \frac{\overset{1}{\cancel{7}}}{\underset{3}{\cancel{57}}} = \frac{2}{3}$
<p>35.</p> $1 \frac{5}{12} \div 1 \frac{8}{9}$ $\frac{17}{12} \div \frac{17}{9}$ $\frac{\overset{1}{\cancel{17}}}{\underset{4}{\cancel{12}}} \times \frac{\overset{3}{\cancel{9}}}{\underset{1}{\cancel{17}}} = \frac{3}{4}$	<p>40.</p> $1 \frac{5}{20} \div 2 \frac{3}{16}$ $\frac{25}{20} \div \frac{35}{16}$ $\frac{\overset{5}{\cancel{25}}}{\underset{5}{\cancel{20}}} \times \frac{\overset{4}{\cancel{16}}}{\underset{7}{\cancel{35}}} = \frac{4}{7}$	<p>45.</p> $1 \frac{9}{17} \div 1 \frac{14}{51}$ $\frac{26}{17} \div \frac{65}{51}$ $\frac{\overset{2}{\cancel{26}}}{\underset{1}{\cancel{17}}} \times \frac{\overset{3}{\cancel{51}}}{\underset{5}{\cancel{65}}} = \frac{6}{5} = 1 \frac{1}{5}$