
5.6 Ratios and Rates

- The maximum allowable debt to income ratio is 7 to 20 for mortgage buyers.
- The desired student to teacher ratio for elementary schools is 20 to 1.
- For 2-stroke lawn mower fuel, mix 1 part oil to 24 parts gasoline.

As we can see from the ratios above, ratios can help us in finances, school administration, and chemical mixtures. In fact, we can find ratios to be helpful in many areas of the world around us.

Ratios can be written primarily in three forms:

Examples	a to b	$\frac{a}{b}$	$a:b$
debt to income ratio	7 to 20	$\frac{7}{20}$	7:20
student to teacher ratio	20 to 1	$\frac{20}{1}$	20:1
fuel mixture ratio	1 to 24	$\frac{1}{24}$	1:24

<i>Demonstration Problems</i>	<i>Practice Problems</i>												
Complete the table in lowest terms: 1. (a) 21 to 56 <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>a to b</th> <th>$\frac{a}{b}$</th> <th>$a:b$</th> </tr> </thead> <tbody> <tr> <td style="height: 100px;"></td> <td></td> <td></td> </tr> </tbody> </table>	a to b	$\frac{a}{b}$	$a:b$				Complete the table in lowest terms: 1. (b) 15 to 27 <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>a to b</th> <th>$\frac{a}{b}$</th> <th>$a:b$</th> </tr> </thead> <tbody> <tr> <td style="height: 100px;"></td> <td></td> <td></td> </tr> </tbody> </table>	a to b	$\frac{a}{b}$	$a:b$			
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Answers: 1. (b) 5 to 9; $\frac{5}{9}$; 5:9													

<i>Demonstration Problems</i>	<i>Practice Problems</i>																								
<p>Complete the tables in lowest terms: 2. (a) 4.8 to 11.2</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="padding: 5px;"><i>a to b</i></th> <th style="padding: 5px;">$\frac{a}{b}$</th> <th style="padding: 5px;"><i>a:b</i></th> </tr> </thead> <tbody> <tr> <td style="height: 80px;"></td> <td></td> <td></td> </tr> </tbody> </table> <p>3. (a) $1\frac{3}{4}$ to $2\frac{5}{8}$</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="padding: 5px;"><i>a to b</i></th> <th style="padding: 5px;">$\frac{a}{b}$</th> <th style="padding: 5px;"><i>a:b</i></th> </tr> </thead> <tbody> <tr> <td style="height: 80px;"></td> <td></td> <td></td> </tr> </tbody> </table>	<i>a to b</i>	$\frac{a}{b}$	<i>a:b</i>				<i>a to b</i>	$\frac{a}{b}$	<i>a:b</i>				<p>Complete the tables in lowest terms: 2. (b) 0.8 to 0.05</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="padding: 5px;"><i>a to b</i></th> <th style="padding: 5px;">$\frac{a}{b}$</th> <th style="padding: 5px;"><i>a:b</i></th> </tr> </thead> <tbody> <tr> <td style="height: 80px;"></td> <td></td> <td></td> </tr> </tbody> </table> <p>3. (b) $1\frac{1}{4}$ to $2\frac{3}{8}$</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="padding: 5px;"><i>a to b</i></th> <th style="padding: 5px;">$\frac{a}{b}$</th> <th style="padding: 5px;"><i>a:b</i></th> </tr> </thead> <tbody> <tr> <td style="height: 80px;"></td> <td></td> <td></td> </tr> </tbody> </table>	<i>a to b</i>	$\frac{a}{b}$	<i>a:b</i>				<i>a to b</i>	$\frac{a}{b}$	<i>a:b</i>			
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Answers: 2. (b) 16 to 1; $\frac{16}{1}$; 16:1; 3. (b) 10 to 19; $\frac{10}{19}$; 10:19																									

