Common Denominators

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3. Multiply numerator and denominator of each fraction by the multiplier

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• Find multipliers	126 ÷ 18 = 7 126 ÷ 21 = 6		Multiplier for $^{3}/_{18}$ is 7 Multiplier for $^{2}/_{21}$ is 6

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• Find multipliers	126 ÷ 18 = 7 126 ÷ 21 = 6 Multiplier for $^{3}/_{18}$ is 7 Multiplier for $^{2}/_{21}$ is 6
• Multiply numerator and denominator	$\frac{3 \times 7}{18 \times 7} = \frac{21}{126}$

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• Find LCM of 18 and 21	Factors of 18: 1, 2, 3, 6, 9, 18 Factors of 21: 1, 3, 7, 21 $18 \div 3 = 6$ $21 \times 6 = 126$ LCM is 126
• Find multipliers	$126 \div 18 = 7$ $126 \div 21 = 6$ Multiplier for $^{3}/_{18}$ is 7 Multiplier for $^{2}/_{21}$ is 6
• Multiply numerator and denominator	$\frac{3 \times 7}{18 \times 7} = \frac{21}{126}$ $\quad \frac{2 \times 6}{21 \times 6} = \frac{12}{126}$

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• Find multipliers	$126 \div 18 = 7$ $126 \div 21 = 6$	Multiplier for $^{3}/_{18}$ is 7 Multiplier for $^{2}/_{21}$ is 6
• Multiply numerator and denominator	$\frac{3 \times 7}{18 \times 7} = \frac{21}{126}$	$\frac{2 \times 6}{21 \times 6} = \frac{12}{126}$

So the new fractions with common denominators are $^{21}/_{126}$ and $^{12}/_{126}$

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For example: find fractions so that $^{3}/_{18}$ and $^{2}/_{21}$ have common denominators.

• Find LCM of 18 and 21	Factors of 18: 1, 2, 3, 6, 9, 18 Factors of 21: 1, 3, 7, 21	$18 \div 3 = 6$ $21 \times 6 = 126$ LCM is 126
• Find multipliers	$126 \div 18 = 7$ $126 \div 21 = 6$	Multiplier for $^{3}/_{18}$ is 7 Multiplier for $^{2}/_{21}$ is 6
• Multiply numerator and denominator	$\frac{3 \times 7}{18 \times 7} = \frac{21}{126}$ $\quad \frac{2 \times 6}{21 \times 6} = \frac{12}{126}$	

So the new fractions with common denominators are $^{21}/_{126}$ and $^{12}/_{126}$

These new fractions simplify to $^{3}/_{18}$ and $^{2}/_{21}$ respectively so we say they are *equivalent*.
We can also write $^{3}/_{18} = {}^{21}/_{126}$ and $^{2}/_{21} = {}^{12}/_{126}$