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2022

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By

Reza Nazari

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All inquiries should be addressed to:

info@effortlessMath.com

www.EffortlessMath.com

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Topic	Adding and Subtracting Fractions	
Notes	✓ For "like" fractions (fractions with the same denominator), add or subtract the numerators and write the answer over the common denominator. ✓ Find equivalent fractions with the same denominator before you can add or subtract fractions with different denominators. ✓ Adding and Subtracting with the same denominator: $\frac{a}{b}+\frac{c}{b}=\frac{a+c}{b}, \frac{a}{b}-\frac{c}{b}=\frac{a-c}{b}$ ✓ Adding and Subtracting fractions with different denominators: $\frac{a}{b}+\frac{c}{d}=\frac{ad+bc}{bd}, \frac{a}{b}-\frac{c}{d}=\frac{ad-bc}{bd}$	
Example	***Find the sum***. $\frac{1}{3}+\frac{2}{5}=$ For "unlike" fractions, find equivalent fractions with the same denominator before you can add fractions with different denominators. Use this formula: $\frac{a}{b}+\frac{c}{b}=\frac{a+c}{b} \rightarrow \frac{(5)(1)+(3)(2)}{3\times5}=\frac{11}{15}$ ***Subtract***. $\frac{6}{5}-\frac{3}{5}$ For like fractions, subtract and write the answer over the common denominator: $\frac{6-3}{5}=\frac{3}{5}$	
Your Turn!	1) $\frac{2}{7}+\frac{3}{7}=$	2) $\frac{7}{8}-\frac{1}{4}=$
	3) $\frac{4}{5}+\frac{1}{9}=$	4) $\frac{3}{7}-\frac{1}{4}=$
	5) $\frac{2}{9}+\frac{3}{4}=$	6) $\frac{5}{6}-\frac{2}{5}=$
Find more at bit.ly/3nKet2X	7) $\frac{1}{3}+\frac{3}{8}=$	8) $\frac{9}{11}-\frac{2}{3}=$

Topic	Multiplying and Dividing Fractions	
Notes	✓ Multiplying fractions: multiply the top numbers and multiply the bottom numbers. ✓ Dividing fractions: Keep, Change, Flip Keep first fraction, change division sign to multiplication, and flip the numerator and denominator of the second fraction. Then, solve!	
Examples	***Multiply***. $\frac{2}{7}\times\frac{1}{6}=$ Multiply the top numbers and multiply the bottom numbers. $\frac{2}{7}\times\frac{1}{6}=\frac{2\times1}{7\times6}=\frac{2}{42}$, simplify: $\frac{2}{42}=\frac{2\div2}{42\div2}=\frac{1}{21}$ ***Divide***. $\frac{2}{6}\div\frac{2}{3}=$ Keep first fraction, change division sign to multiplication, and flip the numerator and denominator of the second fraction. Then: $\frac{2}{6}\div\frac{2}{3}=\frac{2}{6}\times\frac{3}{2}=\frac{2\times3}{6\times2}=\frac{6\div6}{12\div6}=\frac{1}{2}$	
Your Turn! **Find more at** bit.ly/3haSiQW	1) $\frac{3}{4}\times\frac{2}{3}=$	2) $\frac{3}{8}\div\frac{2}{3}=$
	3) $\frac{3}{8}\times\frac{4}{5}=$	4) $\frac{4}{5}\div\frac{4}{15}=$
	5) $\frac{1}{8}\times\frac{3}{7}=$	6) $\frac{5}{9}\div\frac{4}{7}=$
	7) $\frac{2}{15}\times\frac{3}{8}=$	8) $\frac{1}{9}\div\frac{5}{6}=$

Topic	Adding Mixed Numbers	
Notes	Use the following steps for adding mixed numbers. ✓ Add whole numbers of the mixed numbers. ✓ Add the fractions of each mixed number. ✓ Find the Least Common Denominator (LCD) if necessary. ✓ Add whole numbers and fractions. ✓ Write your answer in lowest terms.	
Example	***Add mixed numbers***. $1\frac{1}{2}+2\frac{2}{3}=$ Rewriting our equation with parts separated, $1+\frac{1}{2}+2+\frac{2}{3}$ Add whole numbers: $1+2=3$ Add fractions: $\frac{1}{2}+\frac{2}{3}=\frac{3}{6}+\frac{4}{6}=\frac{7}{6}=1\frac{1}{6}$, Now, combine the whole and fraction parts: $3+1+\frac{1}{6}=4\frac{1}{6}$	
Your Turn!	1) $9\frac{1}{2}+5\frac{3}{4}=$	2) $4\frac{3}{2}+2\frac{1}{6}=$
	3) $6\frac{3}{4}+3\frac{5}{28}=$	4) $4\frac{2}{5}+6\frac{2}{4}=$
	5) $4\frac{6}{7}+5\frac{3}{5}=$	6) $3\frac{1}{6}+1\frac{2}{7}=$
Find more at bit.ly/2M4oABB	7) $4\frac{5}{9}+2\frac{2}{7}=$	8) $7\frac{1}{9}+5\frac{2}{6}=$

Topic	Subtracting Mixed Numbers	
Notes	Use the following steps for subtracting mixed numbers. ✓ Convert mixed numbers into improper fractions. $a\frac{c}{b}=\frac{ab+c}{b}$ ✓ Find equivalent fractions with the same denominator for unlike fractions (fractions with different denominators) ✓ Subtract the second fraction from the first one. ✓ Write your answer in lowest terms and convert it into a mixed number if the answer is an improper fraction.	
Example	***Subtract***. $9\frac{1}{2}-5\frac{1}{4}=$ Convert mixed numbers into fractions: $9\frac{1}{2}=\frac{9\times2+1}{2}=\frac{19}{2}$ and $5\frac{1}{4}=\frac{5\times4+1}{4}=\frac{21}{4}$, these two fractions are "unlike" fractions. (they have different denominators). Find equivalent fractions with the same denominator. Use this formula: $\frac{a}{b}-\frac{c}{d}=\frac{ad-bc}{bd}$ $\frac{19}{2}-\frac{21}{4}=\frac{(19)(4)-(21)(2)}{2\times4}=\frac{76-42}{8}=\frac{34}{8}$, the answer is an improper fraction, convert it into a mixed number. $\frac{34}{8}=4\frac{2}{8}=4\frac{1}{4}$	
Your Turn! **Find more at** bit.ly/3aD3KDG	1) $3\frac{3}{4}-1\frac{1}{2}=$	2) $2\frac{4}{9}-1\frac{2}{3}=$
	3) $5\frac{1}{6}-2\frac{5}{12}=$	4) $5\frac{1}{3}-1\frac{3}{4}=$
	5) $4\frac{5}{6}-1\frac{1}{8}=$	6) $7\frac{3}{4}-1\frac{2}{3}=$
	7) $9\frac{5}{6}-5\frac{1}{5}=$	8) $4\frac{1}{4}-3\frac{7}{9}=$

Topic	Multiplying Mixed Numbers
Notes	✓ Convert the mixed numbers into fractions. $a\frac{c}{b} = a + \frac{c}{b} = \frac{ab+c}{b}$ ✓ Multiply fractions and simplify if necessary. $\frac{a}{b} \times \frac{c}{d} = \frac{a \times c}{b \times d}$ ✓ If the answer is an improper fraction (numerator is bigger than denominator), convert it into a mixed number.
Example	***Multiply*** $2\frac{1}{2} \times 4\frac{1}{3}$ Convert mixed numbers into fractions: $2\frac{1}{2} = \frac{2\times2+1}{2} = \frac{5}{2}$ and $4\frac{1}{3} = \frac{4\times3+1}{3} = \frac{13}{3}$ Multiply two fractions: $\frac{5}{2} \times \frac{13}{3} = \frac{5\times13}{2\times3} = \frac{65}{6}$ The answer is an improper fraction. Convert it into a mixed number: $\frac{65}{6} = 10\frac{5}{6}$

Your Turn!		
	1) $2\frac{2}{3} \times 1\frac{2}{3} =$	2) $4\frac{1}{5} \times 2\frac{2}{3} =$
	3) $3\frac{3}{5} \times 3\frac{2}{3} =$	4) $3\frac{1}{2} \times 4\frac{1}{3} =$
	5) $5\frac{3}{4} \times 2\frac{1}{5} =$	6) $6\frac{3}{7} \times 9\frac{1}{4} =$
Find more at bit.ly/3aPy7XJ	7) $4\frac{4}{5} \times 3\frac{2}{3} =$	8) $5\frac{1}{6} \times 3\frac{1}{4} =$

Topic	Dividing Mixed Numbers	
Notes	✓ Convert the mixed numbers into improper fractions. $a\frac{c}{b} = a + \frac{c}{b} = \frac{ab + c}{b}$ ✓ Divide fractions and simplify if necessary.	
Example	***Solve.*** $1\frac{1}{2} \div 3\frac{1}{8} =$ Converting mixed numbers to fractions: $1\frac{1}{2} \div 3\frac{1}{8} = \frac{3}{2} \div \frac{25}{8}$ Keep, Change, Flip: $\frac{3}{2} \div \frac{25}{8} = \frac{3}{2} \times \frac{8}{25} = \frac{3\times8}{2\times25} = \frac{24}{50} = \frac{12}{25}$	
Your Turn!	1) $6\frac{1}{2} \div 2\frac{1}{4} =$	2) $3\frac{1}{3} \div 2\frac{3}{5} =$
	3) $2\frac{3}{4} \div 1\frac{1}{2} =$	4) $6\frac{2}{3} \div 4\frac{3}{4} =$
	5) $1\frac{1}{3} \div 8\frac{2}{3} =$	6) $8\frac{1}{4} \div 4\frac{1}{2} =$
	7) $2\frac{4}{5} \div 3\frac{2}{9} =$	8) $8\frac{3}{4} \div 2\frac{5}{8} =$
Find more at bit.ly/2KLPk9k	9) $4\frac{1}{6} \div 2\frac{5}{3} =$	10) $4\frac{3}{8} \div 4\frac{1}{4} =$