

Name: _____

Math 8 Unit 1 ~ Operations on Fractions Summary

Adding Fractions	Subtracting Fractions	Multiplying Fractions	Dividing Fractions
<ul style="list-style-type: none"> - need a common denominator - write equivalent fractions with the common denominator (whatever you do to the bottom you must do to the top!) - add numerators only - denominator stays the same 	<ul style="list-style-type: none"> - need a common denominator - write equivalent fractions with the common denominator (whatever you do to the bottom you must do to the top!) - subtract numerators only - denominator stays the same 	<ul style="list-style-type: none"> - do not need a common denominator - multiply numerator and denominator by denominator - can multiply then simplify, or simplify then multiply 	<ul style="list-style-type: none"> - do not need a common denominator - multiply by the reciprocal (re "flip" rocal) - can multiply then simplify, or simplify then multiply
<p>General Rules:</p> <ol style="list-style-type: none"> 1) When working with mixed numbers, write as improper fractions first! 2) Any whole number can be written as a fraction with denominator 1! 3) Write all final answers as mixed numbers or proper fractions in lowest terms! 			
<p>Example:</p> $2\frac{1}{4} + 1\frac{2}{3}$	<p>Example:</p> $3\frac{1}{2} - \frac{3}{4}$	<p>Example:</p> $2\frac{2}{5} \times 5\frac{1}{4}$	<p>Example:</p> $6\frac{1}{2} \div 3\frac{1}{2}$

Simplify Fractions

Simplify each fraction to its lowest terms.

$$\frac{25}{40} =$$

$$\frac{12}{21} =$$

$$\frac{6}{15} =$$

$$\frac{5}{10} =$$

$$\frac{10}{15} =$$

$$\frac{3}{21} =$$

$$\frac{3}{21} =$$

$$\frac{12}{24} =$$

$$\frac{5}{10} =$$

$$\frac{12}{28} =$$

$$\frac{20}{30} =$$

$$\frac{4}{6} =$$

$$\frac{6}{18} =$$

$$\frac{18}{27} =$$

$$\frac{6}{9} =$$

$$\frac{9}{21} =$$

$$\frac{6}{18} =$$

$$\frac{5}{20} =$$

$$\frac{9}{15} =$$

$$\frac{15}{25} =$$

$$\frac{2}{4} =$$

$$\frac{18}{24} =$$

$$\frac{4}{8} =$$

$$\frac{9}{21} =$$

$$\frac{3}{9} =$$

$$\frac{15}{20} =$$

$$\frac{12}{14} =$$

$$\frac{4}{16} =$$

$$\frac{4}{8} =$$

$$\frac{6}{10} =$$

$$\frac{3}{6} =$$

$$\frac{2}{12} =$$

Converting Fractions

Name: _____

Date: _____

Convert each mixed fraction to an improper fraction.

$9\frac{1}{9} = \text{---}$

$3\frac{8}{9} = \text{---}$

$8\frac{7}{12} = \text{---}$

$7\frac{7}{9} = \text{---}$

$3\frac{11}{15} = \text{---}$

$3\frac{2}{5} = \text{---}$

$4\frac{2}{7} = \text{---}$

$7\frac{1}{3} = \text{---}$

$5\frac{1}{7} = \text{---}$

$2\frac{7}{10} = \text{---}$

$3\frac{4}{5} = \text{---}$

$4\frac{5}{7} = \text{---}$

$3\frac{3}{8} = \text{---}$

$6\frac{1}{8} = \text{---}$

$5\frac{5}{6} = \text{---}$

$7\frac{4}{15} = \text{---}$

$4\frac{2}{9} = \text{---}$

$9\frac{1}{6} = \text{---}$

$7\frac{5}{8} = \text{---}$

$1\frac{5}{9} = \text{---}$

$6\frac{4}{7} = \text{---}$

$8\frac{7}{15} = \text{---}$

$6\frac{1}{5} = \text{---}$

$8\frac{1}{12} = \text{---}$

$8\frac{1}{15} = \text{---}$

$7\frac{5}{12} = \text{---}$

$1\frac{3}{10} = \text{---}$

$6\frac{8}{15} = \text{---}$

$1\frac{9}{10} = \text{---}$

$4\frac{6}{7} = \text{---}$

$1\frac{1}{4} = \text{---}$

$1\frac{11}{12} = \text{---}$

$3\frac{4}{9} = \text{---}$

$3\frac{1}{10} = \text{---}$

$2\frac{1}{2} = \text{---}$

$4\frac{3}{5} = \text{---}$

$4\frac{7}{8} = \text{---}$

$6\frac{2}{15} = \text{---}$

$5\frac{3}{4} = \text{---}$

$5\frac{3}{7} = \text{---}$

Converting Fractions

Name: _____

Date: _____

Convert each improper fraction to a mixed fraction.

$\frac{32}{9} = \text{---}$

$\frac{67}{12} = \text{---}$

$\frac{116}{15} = \text{---}$

$\frac{34}{15} = \text{---}$

$\frac{25}{12} = \text{---}$

$\frac{41}{6} = \text{---}$

$\frac{53}{7} = \text{---}$

$\frac{25}{4} = \text{---}$

$\frac{127}{15} = \text{---}$

$\frac{21}{8} = \text{---}$

$\frac{15}{4} = \text{---}$

$\frac{33}{10} = \text{---}$

$\frac{25}{9} = \text{---}$

$\frac{38}{7} = \text{---}$

$\frac{99}{10} = \text{---}$

$\frac{44}{5} = \text{---}$

$\frac{53}{15} = \text{---}$

$\frac{41}{8} = \text{---}$

$\frac{64}{9} = \text{---}$

$\frac{57}{10} = \text{---}$

$\frac{16}{7} = \text{---}$

$\frac{56}{9} = \text{---}$

$\frac{21}{10} = \text{---}$

$\frac{67}{8} = \text{---}$

$\frac{12}{7} = \text{---}$

$\frac{83}{12} = \text{---}$

$\frac{36}{7} = \text{---}$

$\frac{19}{6} = \text{---}$

$\frac{13}{2} = \text{---}$

$\frac{22}{3} = \text{---}$

$\frac{23}{5} = \text{---}$

$\frac{20}{7} = \text{---}$

$\frac{76}{15} = \text{---}$

$\frac{85}{9} = \text{---}$

$\frac{80}{9} = \text{---}$

$\frac{41}{12} = \text{---}$

$\frac{6}{5} = \text{---}$

$\frac{107}{15} = \text{---}$

$\frac{63}{8} = \text{---}$

$\frac{37}{5} = \text{---}$

Greek Decoder

TO DECODE THE MESSAGE AT THE BOTTOM OF THE PAGE, FOLLOW THESE DIRECTIONS:

First, work any problem below and find your answer in the answer columns.

Then look for the GREEK LETTER of the answer in the coded message. Each time you see this GREEK LETTER, write the letter of that problem above it.

KEEP WORKING UNTIL YOU HAVE DECODED THE MESSAGE.



$\boxed{W} \frac{1}{2} + \frac{1}{4} =$	$\boxed{F} \frac{1}{2} + \frac{4}{5} =$	$\omicron 1\frac{1}{24}$	$\mu \frac{7}{12}$
$\boxed{D} \frac{5}{8} - \frac{1}{4} =$	$\boxed{S} \frac{7}{9} - \frac{1}{6} =$	$\eta 1\frac{4}{15}$	$\xi \frac{3}{8}$
$\boxed{Y} \frac{5}{6} + \frac{1}{3} =$	$\boxed{P} \frac{3}{10} + \frac{3}{4} =$	$\zeta 1\frac{3}{10}$	$\pi \frac{23}{30}$
$\boxed{I} \frac{3}{4} - \frac{1}{3} =$	$\boxed{M} \frac{7}{8} - \frac{1}{12} =$	$\delta \frac{3}{4}$	$\epsilon \frac{1}{8}$
$\boxed{U} \frac{2}{3} + \frac{3}{5} =$	$\boxed{L} \frac{7}{10} + \frac{1}{15} =$	$\nu \frac{19}{24}$	$\sigma 1\frac{1}{20}$
$\boxed{C} \frac{4}{5} - \frac{1}{4} =$	$\boxed{H} \frac{5}{6} - \frac{1}{10} =$	$\beta \frac{17}{24}$	$\tau \frac{5}{12}$
$\boxed{O} \frac{1}{3} + \frac{3}{8} =$	$\boxed{T} \frac{1}{6} + \frac{7}{8} =$	$\alpha \frac{11}{15}$	$\rho \frac{7}{10}$
$\boxed{V} \frac{5}{6} - \frac{1}{4} =$	$\boxed{E} \frac{4}{5} - \frac{1}{10} =$	$\iota \frac{7}{9}$	$\omega \frac{11}{20}$
$\boxed{A} \frac{1}{3} + \frac{4}{9} =$	$\boxed{G} \frac{1}{5} + \frac{5}{6} =$	$\kappa 1\frac{1}{6}$	$\psi \frac{1}{4}$
$\boxed{N} \frac{1}{2} - \frac{3}{8} =$	$\boxed{R} \frac{5}{12} - \frac{1}{6} =$	$\lambda 1\frac{1}{30}$	$\chi \frac{11}{18}$

SECRET MESSAGE

ο α ρ ζ τ ψ χ ο β π κ γ σ τ ω λ ι γ ρ χ

δ ρ ψ ρ α ρ η ξ τ ε λ ψ ρ ρ ω ρ β μ ρ ψ

ο δ β ο α β η χ ι ε ξ κ ρ ι ψ χ ι λ β.

Why did the Lumberjack quit his job?

TO FIND THE ANSWER TO THIS IMPORTANT QUESTION, FOLLOW THESE DIRECTIONS:

Work any problem below and find the correct answer in the answer column.

The number in front of the answer tells you where to put the letter of the problem in the row of boxes at the bottom of the page.

KEEP WORKING UNTIL YOU DISCOVER THE FOUR-WORD ANSWER.

$\begin{array}{r} \textcircled{\text{N}} \quad 6\frac{1}{2} \\ + 2\frac{5}{8} \\ \hline \end{array}$	$\begin{array}{r} \textcircled{\text{K}} \quad 5\frac{3}{4} \\ + 6\frac{1}{3} \\ \hline \end{array}$	$\begin{array}{r} \textcircled{\text{E}} \quad 6\frac{7}{10} \\ + 7\frac{3}{5} \\ \hline \end{array}$
$\begin{array}{r} \textcircled{\text{T}} \quad 9\frac{2}{3} \\ + 2\frac{7}{9} \\ \hline \end{array}$	$\begin{array}{r} \textcircled{\text{A}} \quad 5\frac{3}{4} \\ + 3\frac{7}{8} \\ \hline \end{array}$	$\begin{array}{r} \textcircled{\text{O}} \quad 7\frac{5}{8} \\ + 1\frac{1}{3} \\ \hline \end{array}$
$\begin{array}{r} \textcircled{\text{I}} \quad 2\frac{2}{3} \\ + 9\frac{4}{5} \\ \hline \end{array}$	$\begin{array}{r} \textcircled{\text{L}} \quad 9\frac{1}{2} \\ + 4\frac{3}{5} \\ \hline \end{array}$	$\begin{array}{r} \textcircled{\text{T}} \quad 7\frac{5}{6} \\ + 4\frac{11}{12} \\ \hline \end{array}$
$\begin{array}{r} \textcircled{\text{H}} \quad 5\frac{5}{6} \\ + 2\frac{3}{4} \\ \hline \end{array}$	$\begin{array}{r} \textcircled{\text{U}} \quad 1\frac{5}{8} \\ + 4\frac{3}{4} \\ \hline \end{array}$	$\begin{array}{r} \textcircled{\text{H}} \quad 2\frac{7}{8} \\ + 6\frac{5}{6} \\ \hline \end{array}$
$\begin{array}{r} \textcircled{\text{C}} \quad 5\frac{1}{6} \\ + 8\frac{8}{9} \\ \hline \end{array}$	$\begin{array}{r} \textcircled{\text{D}} \quad 2\frac{5}{6} \\ + 3\frac{2}{3} \\ \hline \end{array}$	$\begin{array}{r} \textcircled{\text{C}} \quad 3\frac{3}{4} \\ + 5\frac{3}{5} \\ \hline \end{array}$

ANSWERS

- ① $9\frac{17}{24}$
- ② $14\frac{3}{10}$
- ③ $9\frac{7}{20}$
- ④ $8\frac{23}{24}$
- ⑤ $6\frac{3}{8}$
- ⑥ $14\frac{1}{10}$
- ⑦ $6\frac{1}{2}$
- ⑧ $9\frac{1}{8}$
- ⑨ $12\frac{3}{4}$
- ⑩ $8\frac{7}{12}$
- ⑪ $9\frac{5}{8}$
- ⑫ $14\frac{1}{18}$
- ⑬ $12\frac{1}{12}$
- ⑭ $12\frac{7}{15}$
- ⑮ $12\frac{4}{9}$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----

Multiplying and Dividing Fractions

Find the value of each expression in lowest terms.

1. $\frac{1}{2} \times \frac{5}{4}$

6. $\frac{1}{4} \times \frac{5}{3}$

11. $\frac{10}{3} \times \frac{11}{6}$

2. $\frac{1}{6} \div \frac{8}{11}$

7. $\frac{11}{2} \div \frac{1}{2}$

12. $\frac{1}{2} \div \frac{1}{2}$

3. $\frac{1}{3} \div \frac{13}{9}$

8. $\frac{4}{3} \div \frac{11}{12}$

13. $\frac{14}{9} \times \frac{7}{10}$

4. $\frac{13}{4} \div \frac{1}{2}$

9. $\frac{1}{3} \times \frac{20}{9}$

14. $\frac{15}{8} \times \frac{7}{6}$

5. $\frac{17}{6} \div \frac{3}{5}$

10. $\frac{13}{7} \times \frac{14}{11}$

15. $\frac{3}{2} \div \frac{4}{9}$

Multiplying and Dividing Mixed Fractions

Find the value of each expression in lowest terms.

1. $3\frac{2}{7} \div 1\frac{1}{4}$

6. $1\frac{1}{3} \times 1\frac{2}{3}$

11. $1\frac{3}{8} \div 1\frac{1}{12}$

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

7. $1\frac{1}{3} \times 2\frac{1}{5}$

12. $2\frac{7}{8} \div 5\frac{1}{2}$

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

8. $2\frac{1}{7} \div 2\frac{1}{2}$

13. $3\frac{2}{3} \div 1\frac{1}{6}$

4. $6\frac{1}{2} \div 2\frac{2}{3}$

9. $1\frac{3}{11} \div 2\frac{1}{3}$

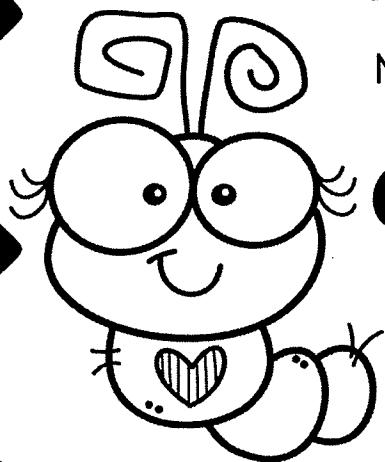
14. $1\frac{3}{8} \times 3\frac{1}{3}$

5. $2\frac{1}{10} \div 2\frac{3}{5}$

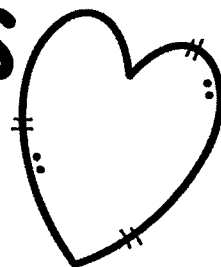
10. $3\frac{1}{2} \div 2\frac{3}{4}$

15. $1\frac{4}{11} \div 1\frac{1}{4}$

Name _____ Date _____



ORDER OF OPERATIONS With Fractions



Directions: Evaluate each expression using the order of operations. Color the answer on the color sheet the color at the bottom of each box.

1) $\frac{3}{5} \times (\frac{1}{4} + \frac{3}{4}) =$	2) $\frac{7}{9} + \frac{4}{5} \times \frac{4}{9} =$	3) $\frac{1}{8} \div \frac{1}{5} + \frac{1}{2} =$	4) $\frac{1}{4} \times \frac{5}{6} - \frac{1}{6} =$
Color orange.	Color yellow.	Color purple.	Color green.
5) $\frac{4}{5} \times \frac{1}{4} + \frac{3}{5} =$	6) $(\frac{2}{9} + \frac{1}{2}) \times \frac{2}{5} =$	7) $\frac{7}{8} \times (\frac{1}{6} + \frac{5}{6}) =$	8) $\frac{1}{9} \div \frac{1}{4} + \frac{1}{2} =$
Color blue.	Color pink.	Color red.	Color purple.
9) $\frac{3}{5} - \frac{1}{3} \times \frac{1}{2} =$	10) $\frac{1}{2} + \frac{1}{3} \times \frac{3}{4} =$	11) $\frac{3}{5} \times \frac{1}{2} - \frac{1}{5} =$	12) $\frac{2}{5} + \frac{1}{4} \times \frac{3}{5} =$
Color blue.	Color pink.	Color white.	Color purple.

Order of Operations with Fractions

Name: _____

Date: _____

Simplify each expression using the correct order of operations.

$$\frac{1}{3} \div \left(\frac{8}{9} - \frac{1}{9} + \frac{2}{5} \right)$$

$$\left(\left(\frac{2}{3} + \frac{4}{5} \right) \div \frac{7}{9} \right) \times \frac{1}{2}$$

$$\frac{2}{9} \div \left(\frac{2}{5} \times \frac{3}{8} + \frac{1}{3} \right)$$

$$\left(\left(\frac{1}{4} - \frac{1}{6} \right) \times \frac{8}{9} \right) \div \frac{7}{9}$$

$$\frac{2}{9} \times \left(\frac{3}{4} - \frac{1}{8} \div \frac{1}{2} \right)$$

$$\frac{8}{9} \div \left(\frac{1}{3} + \frac{5}{8} - \frac{1}{8} \right)$$

$$\frac{5}{6} \div \left(\frac{1}{9} + \frac{5}{8} - \frac{2}{3} \right)$$

$$\frac{3}{4} \times \left(\frac{4}{9} - \frac{3}{8} + \frac{1}{8} \right)$$

$$\frac{5}{9} - \frac{4}{9} \times \left(\frac{1}{4} + \frac{5}{6} \right)$$

Order of Operations with Fractions

Name: _____

Date: _____

Solve each expression using the correct order of operations.

$$\left(-\frac{1}{2}\right)^3 \times \left(\left(-\frac{2}{3}\right) \div \left(-\frac{5}{6}\right) - \frac{1}{2}\right)$$

$$\left(\frac{2}{3}\right)^2 \times \left(\frac{5}{6} \div \frac{2}{5} - \frac{1}{4}\right)$$

$$\left(\left(-\frac{3}{5}\right) \times \left(\frac{1}{2}\right)^2\right) \div \left(\left(-\frac{1}{8}\right) + \frac{3}{5}\right)$$

$$\left(\left(-\frac{1}{5}\right)^2 - \frac{2}{5} + \frac{1}{5}\right) \times \left(-\frac{7}{8}\right)$$