

SIMPLIFYING FRACTIONS

Steps:

1. Find the _____ of both the numerator and the denominator.
2. _____ the numerator and denominator using the GCF.
3. _____ values that equal one.
4. Check that it is in _____ form.

Example #1:

Simplify $\frac{6}{8}$

Example #2:

Simplify $\frac{4}{24}$

Fractions are in simplest form if...

1. the numerator & denominator are one number apart

$$\frac{3}{4}, \frac{5}{6}, \frac{11}{12}, \frac{9}{10}, \frac{2}{3}$$

2. there is a 1 in the numerator

$$\frac{1}{5}, \frac{1}{9}, \frac{1}{87}, \frac{1}{2}$$

3. both numerator and denominator are prime

$$\frac{3}{5}, \frac{5}{11}, \frac{7}{19}, \frac{13}{17}$$

4. the denominator is prime

$$\frac{4}{7}, \frac{9}{13}, \frac{5}{41}, \frac{3}{11}$$

Pause and Try:

Simplify:

① $\frac{5}{20}$

② $\frac{60}{100}$

③ $\frac{6}{48}$

④ $\frac{18}{21}$

MULTIPLY FRACTIONS

fraction

numerator

denominator

of

cross simplify/cancel

Commutative Property of Multiplication:

When you are doing multiplication, it doesn't matter which order the numbers are in.

$$2 \times 3 \quad 3 \times 2$$

Example:

$$\frac{2}{3} \cdot \frac{3}{4}$$

Steps:

1. _____ simplify/cancel where you can.
2. Multiply _____ across.
3. Check that your _____ is simplified.



*** Remember: Any number over itself equals 1. ***

Example:

$$\frac{7}{12} * \frac{3}{14}$$

Together:

①. $\frac{4}{9} \cdot \frac{3}{4}$

②. $\frac{3}{8} \times \frac{11}{12}$

③. $\frac{1}{5} * \frac{1}{3}$

④. $\frac{5}{8} \left(\frac{3}{10} \right)$

Pause & Try:

①. $\frac{2}{3} * \frac{1}{2}$

②. $\frac{3}{4} \cdot \frac{4}{5}$

③. $\frac{2}{3} \times \frac{1}{5}$

④. $\frac{2}{25} \left(\frac{5}{6} \right)$

MULTIPLY MIXED NUMBERS

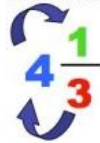
improper fraction

mixed number

product

Steps:

1. Convert the mixed number to an _____ fraction. (Check your notes!)



2. _____ simplify/cancel where you can.

3. Multiply _____ across.



4. Check that your _____ is simplified.

*** Remember: Any number over itself equals 1. ***

Example: $1\frac{1}{2} \cdot 2\frac{2}{3}$

Together:

①. $1\frac{1}{5} * 1\frac{2}{3}$ ②. $2\frac{3}{4} \times 1\frac{1}{12}$

③. $5\frac{5}{9} * \frac{7}{10}$ ④. $4\frac{2}{3} \left(\frac{3}{14}\right)$

Pause & Try:

①. $2\frac{1}{2} \cdot 1\frac{2}{5}$ ②. $4\frac{1}{3} * 2\frac{1}{2}$

③. $\frac{7}{8} \times 2\frac{1}{3}$ ④. $\frac{2}{25} \left(\frac{5}{6}\right)$

DIVIDING FRACTIONS

divisor

dividend

quotient

reciprocal

Multiplicative Inverse:

When we multiply a number by its "multiplicative inverse" or reciprocal, we get 1.

$$8 \times \square = 1$$

Steps:

1. _____ the first number in the problem.
2. _____ the operation to multiplication.
3. _____ the second number. (Write its reciprocal)

Dividing fractions is the same as multiplying by the reciprocal or multiplicative inverse. *



Dividing fractions is easy as pie!
Flip the second fraction and multiply!

Examples:

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

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

Together:

1. $\frac{1}{5} \div \frac{3}{4}$
2. $\frac{3}{4} \div \frac{9}{10}$
3. $10 \div \frac{5}{12}$
4. $3 \div \frac{3}{4}$

Pause & Try:

1. $\frac{4}{5} \div \frac{2}{3}$
2. $\frac{1}{4} \div \frac{2}{3}$
3. $9 \div \frac{4}{9}$
4. $7 \div \frac{1}{2}$



DIVIDING MIXED NUMBERS

Dividing fractions is easy as pie! Flip the second fraction and multiply!

Steps:

1. Convert the mixed number to an _____ fraction.
2. _____ the first number in the problem.
3. _____ the operation to multiplication.
4. _____ the second number.



Dividing fractions is the same as multiplying by the reciprocal or multiplicative inverse. *

Examples:

$$2\frac{1}{4} \div \frac{3}{8}$$

$$3\frac{5}{6} \div 1\frac{2}{3}$$

Together:

1. $2\frac{2}{3} \div \frac{1}{2}$
2. $6\frac{1}{5} \div 2\frac{1}{3}$
3. $1\frac{3}{7} \div \frac{2}{3}$
4. $8\frac{1}{4} \div 1\frac{1}{2}$

Pause & Try:

1. $3\frac{3}{4} \div \frac{1}{4}$
2. $10\frac{1}{2} \div 3\frac{3}{4}$
3. $2\frac{1}{6} \div \frac{3}{4}$
4. $6\frac{4}{5} \div 2\frac{1}{8}$

ADD/SUBTRACT DECIMALS

sum

difference

Steps: (Think money!)



1. Line up your _____

The decimal or place value are IMPORTANT!

2. Bring the decimal point straight _____.

3. Add _____ to fill in place value if necessary.

4. Add or Subtract.

Change whole numbers into decimals by adding a decimal point and zeros after it.

Example: $1.23 + 0.87$

Example: $2.43 - 0.73$

Together:

① $1.25 + 1.35$

② $2 - 1.26$

③ $2.14 + 0.92$

④ $3.72 - 1.5$

Pause & Try:

① $0.73 + 0.86$

② $1.58 - 0.09$

③ $6 + 2.94$

④ $18.72 - 8.61$

MULTIPLYING DECIMALS

product

Steps:

1. Multiply like _____, ignore the decimals.
2. Count and _____ all the digits behind the original number's decimal points.
3. _____ and circle the same number of digits to place your decimal point in your _____ or answer.

Example: $12.35 * 5.2$

Together:

①. $7.371 \cdot 56.8$

②. $2.7(1.3)$

Pause & Try:

①. 9.47×3.38

②. $142.1 * 2.34$

DIVIDING DECIMALS

divisor

dividend

quotient

$$\begin{array}{r} \text{Quotient} \\ \text{Divisor} \overline{) \text{Dividend}} \end{array}$$

$$\begin{array}{c} 15 \div 3 = 5 \\ \swarrow \quad \downarrow \quad \searrow \\ \text{dividend} \quad \text{divisor} \quad \text{quotient} \end{array}$$

Steps: Dividing Decimals by WHOLE #s

1. _____ the decimal in the quotient!
(Bring the decimal straight UP!)
2. Divide. (Check your notes!) _____
3. Keep going until there is _____ remainder!

Example:

$$5 \overline{) 33.5}$$

Steps: Dividing Decimals by DECIMALS

1. Start with the divisor, move the decimal _____ to the right to make it a whole number.
2. Move the decimal in the dividend _____ to the right the same number of spaces.
3. Bring the decimal straight _____!
4. Divide. _____
5. Keep going until there is _____ remainder!

Example: Over-Over-UP

$$0.7 \overline{) 36.47}$$

Together:

①. $3.6 \div 24$

②. $3.3 \div 1.1$

Pause & Try:

①. $38.7 \div 9$

②. $16.9 \div 1.3$