Everything About Fractions

Fraction: a part of a whole

$\frac{5}{8}$ ← Numerator = the # of parts you have

8 ← Denominator = ALL! (the pieces)

Whole Number = ALL 2, 3, 8

(always positive) .... 0 (smallest whole #)

Mixed Number = Whole Number with a fraction

$2\frac{5}{8}$

Improper Fractions = N ≥ D

Equivalent Fraction = fractions that have the same value

ex: $\frac{1 \times 9 \rightarrow 9}{2 \times 9 \rightarrow 18}$

ex: $\frac{4 * 6 \rightarrow 24}{9 ? \times 6 \rightarrow 54}$

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ex: $\frac{24 \div 6}{54 \div 6} = \frac{4}{9}$

ex: $\frac{108 \div 12}{144 \div 12} = \frac{9 \div 3}{12 \div 3} = \frac{3}{4}$

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ex: $\frac{97}{8}$ ↙ A fraction bar is the same as a division bar

Top Dog in the House

$$\begin{array}{r} 12 \\ 8\overline{)97} \\ \underline{8} \\ 17 \\ \underline{16} \\ 1 \end{array}$$

$12\frac{1}{8}$

ex: $3\frac{4}{5} = \frac{19}{5}$ (+4, ×5)

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ex: $\frac{39}{52} = \frac{3}{4}$ $\frac{9}{13} = \frac{36}{52}$

39 3 9 36
4 13

ex: $\frac{7}{10} = \frac{14}{20}$

$+ \frac{3}{4} = \frac{15}{20}$

$\frac{29}{20} = 1\frac{9}{20}$

$20\overline{)29}$ 1, 20, 9

ex: $5\frac{3}{4} = \frac{6}{8}$

$-2\frac{3}{8} = \frac{3}{8}$

$3\frac{3}{8}$

ex: $5\frac{14}{20} = 4\frac{34}{20}$

$-2\frac{15}{20}$

$2\frac{19}{20}$

ex: $3\frac{1}{2} \times 4$

* Make improper

$\frac{7}{2} \times \frac{4}{1} = \frac{14}{1}$

(14)

* Cross cancel

$1\frac{7}{8}\overline{)2\frac{5}{8}}$

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

Skip: $\frac{21}{8}$ Flip: $\div$ Flip: $\frac{15}{8}$

$\frac{\cancel{21}^{7}}{\cancel{8}_{1}} \times \frac{\cancel{8}^{1}}{\cancel{15}_{5}} = \frac{7}{5}$

$5\overline{)7}$ 1 remainder 2

$1\frac{2}{5}$

Rounding Decimals

9	Millionths
8	Hundred-thousandths
7	Ten-thousandths
6	Thousandths
5	Hundredths
4	Tenths
•	AND
3	Ones (aka "whole number")
2	Tens
1	Hundreds
,	Thousands
0	Ten-Thousands
9	Hundred-Thousands
8	Millionths
7	

digits after the decimal point end in "-ths"

There is NO "ONETHS" place = value.

Directions: ROUND to the place value

ex 1: 7,269.805 to the nearest hundredth.

7,269.81

Rule: 0-4 round down (so digit stays same)

5-9 round up (so digit goes up +1)

ex2: 7,269.805 to the nearest tenths.

7,269.8

when rounding to a decimal place value, STOP at the place value asked for!

ex3: 7,269.805 to the nearest hundreds.

7,300 ← When rounding to a whole number place value, STOP at the decimal point.

ex 4: 7,269.805 to the nearest tens.

7,270

ex5: 7,269.805 to the nearest whole number

7,270

Whiteboard Time!

ex1: 345.2582 to the nearest hundreds

A: 300

ex2: 91.65279 to the nearest ten-thousandths

A: 91.6528

Ex: 4,238.8049 to the nearest hundredths

A: 4,238.80

9/8/10 Decimals

9 Millionths
8 Hundred-thousandths
7 Ten-thousandths
6 Thousandths
5 Hundredths
4 Tenths
• "AND"
3 Ones
2 Tens
1 Hundreds
, Thousands
9 Ten-thousands
8 Hundred-thousands
7 Millions
, 6

ex: four and ninety-eight thousandths

98

4 • 0 9 8

303

ex: three hundred three thousandths

. 3 0 3

Comparing Decimals

ex: $.18 < .81$ "less than"*

$.7 > .09$ "greater than"

$\frac{70}{100} = \frac{7}{10}$ $\times 10$

$\frac{1}{100}$

Adding/Subtracting Decimals

ex: $.337 + 6.98 + 15.$

* Write vertically ↕
* Line up decimal pts

$$\begin{array}{r} {\scriptstyle 1\ \ 1\ \ \ \ } \\ 1.337 \\ 16.980 \\ 15.000 \\ \hline 22.317 \end{array}$$

← Add zeroes so the numbers end in the same place value

Multiplying Decimals

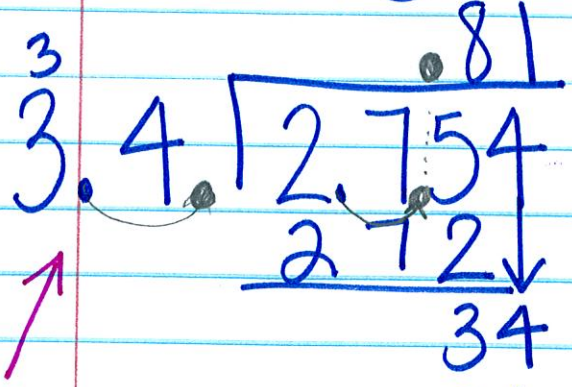
ex: 2.95×17.5

* multiply first w/o worrying about dec pt.

$$\begin{array}{r} {\scriptstyle 4\ \ 3\ \ \ \ } \\ 295 \\ 175 \\ \hline 1475 \\ 20650 \\ 29500 \\ \hline \end{array}$$

51.625

Dividing Decimals



The divisor must be a whole number before dividing

9/12/11 Multiplying/Dividing by Powers of 10

$10^1 = 10$

$10^2 = 10 \cdot 10 = 100$

$10^3 = 10 \cdot 10 \cdot 10 = 1{,}000$

$10^4 = 10 \cdot 10 \cdot 10 \cdot 10 = 10{,}000$

⋮ ⋮

$\times$ – move the decimal RIGHT	$\div$ – move the decimal LEFT
9.67×10^3	$9.67 \div 10^3$
9,670	.00967

* The exponent tells how many times to move the decimal point.