1-26-2016

FRACTIONS & EXPONENTS

FRACTION A NUMBER IN THE FORM $\frac{A}{B}$

WHERE A IS ANY ~~INTEGER~~ REAL NUMBER
AND B IS ANY ~~INTEGER~~ REAL NUMBER EXCEPT ~~ZERO~~

(RATIONAL #'S – A AND B MUST BE INTEGERS)

A IS CALLED THE NUMERATOR (NUMBER)
B IS CALLED THE DENOMINATOR (DENOMINATION)

EXAMPLES OF FRACTIONS:

$\frac{1}{3}$ (ALSO RATIONAL)

$\frac{\sqrt{3}}{2}$ (IRRATIONAL)

$\frac{1}{1}$

MIXED INTEGER AND FRACTION

$1\frac{1}{2} \Leftrightarrow 1+\frac{1}{2} \Leftrightarrow \frac{3}{2} \Leftrightarrow 1.5$

MIXED FRACTION DECIMAL

ENTERING FRACTIONS ON CALCULATOR (AND CONVERTING)

d/c: $\boxed{a\,\frac{b}{c}}$ AND F↔D: $\boxed{\leftarrow}$

ENTERING A FRACTION

$\frac{1}{2}$ → [1] [a b/c] [2] → 1⌟2

[2nd] [F↔D] [←] → 0.5

ENTERING A MIXED FRACTION

$1\frac{1}{2}$ → [1] [a b/c] [1] [a b/c] [2] → 1_1⌟2

[2nd] [F↔D] [←] → 1.5

MIXED TO PROPER FRACTION

$1\frac{1}{2}$ → [1_1⌟2]

[2nd] [d/c] [a b/c] → 3⌟2

ADDING FRACTIONS (FORMULA)

$$\frac{A}{B} + \frac{C}{D} = ?$$

MONEY EXAMPLE

NUMBER → 3 (25¢) ← DENOMINATION

\+ 4 (5¢)

?

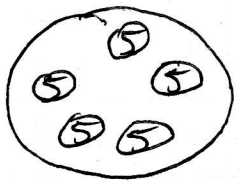
(25¢) = $\frac{1}{4} = \frac{25}{100}$

(5¢) = $\frac{5}{100} = \frac{1}{20}$

$\frac{3}{4}$

$+ \frac{4}{20}$

?



$$\begin{array}{r} 3\ \textcircled{5} \\ +\ 4\ \ \textcircled{5} \\ \hline \end{array} \qquad \begin{array}{r} 15\ \textcircled{5} \\ +\ 4\ \textcircled{5} \\ \hline 19\ \textcircled{5} \end{array}$$

$\frac{19}{20} = 0.95$

$\frac{95}{100} = 95\%$

FORMULA APPROACH

$$\frac{A}{B} + \frac{C}{D} = ?$$

GET DENOMINATORS THE SAME

$$\frac{A}{B}\cdot\frac{D}{D} + \frac{C}{D}\cdot\frac{B}{B} = \frac{AD+CB}{BD}$$

$$\boxed{\frac{A}{B} + \frac{C}{D} = \frac{AD+BC}{BD}}$$

$$\frac{3}{4} + \frac{4}{20} = \frac{3\cdot 20 + 4\cdot 4}{4\cdot 20} = \frac{76}{80} = 0.95$$

SUBTRACTION OF FRACTIONS

$$\boxed{\frac{A}{B} - \frac{C}{D} = \frac{AD-BC}{BD}}$$

$$\frac{3}{4} - \frac{4}{20} = \frac{3\cdot 20 - 4\cdot 4}{4\cdot 20} = \frac{44}{80} = 0.55$$

$$= \frac{11}{20}$$

MULTIPLICATION OF FRACTIONS

$$\frac{A}{B} \cdot \frac{C}{D} = \frac{A \cdot C}{B \cdot D}$$

$$\frac{2}{3} \cdot \frac{6}{8} = \frac{2 \cdot 6}{3 \cdot 8} = \frac{12}{24} = 0.5$$

DIVISION OF FRACTIONS

$$\boxed{\frac{A}{B} \div \frac{C}{D} = \frac{AD}{BC}}$$

COPY · DOT · FLIP

$$\frac{A}{B} \cdot \frac{D}{C} = \frac{AD}{BC}$$

COPY DOT FLIP

WHY?

$$\frac{\frac{A}{B}}{\frac{C}{D}} \cdot \frac{D/C}{D/C} = \frac{\frac{AD}{BC}}{\frac{CD}{CD}} = \frac{AD}{BC}$$

$$\frac{1}{4} \div \frac{3}{2} = \frac{1 \cdot 2}{3 \cdot 4} = \frac{2}{12} = \frac{1}{6} = 0.1666\overline{6}$$

$$\frac{1}{4} \cdot \frac{2}{3} = \frac{2}{12} = \frac{1}{6} = 0.1666\overline{6}$$