Wk 1 Mon

Number Line: $\mathbb{R}$ ← 0 $\sqrt{2}$ π →

$\mathbb{Z}$ = integers = $\{0, \pm 1, \pm 2, \pm 3, \dots\}$

$\mathbb{N} = \{1, 2, 3, \dots\}$

$x \in \mathbb{R}$ = … x is a real number

$\in$ is an element of

— $a^5 = a \cdot a \cdot a \cdot a \cdot a$

↑ this a represents a number.

— $\frac{a}{b} + \frac{c}{d} \overset{?}{=} \frac{a+c}{b+d}$

$\frac{5}{4}$

$\frac{1}{2} + \frac{3}{4} = \frac{1+3}{2+4} = \frac{4}{6} = \frac{2}{3}$

— Most Important Mind Fix:

Exponents Play Nicely w/ * & ÷

they do not play nicely w/ + & ÷

$\left(\frac{a}{b}\right)^5 = \frac{a^5}{b^5}$

$(a\cdot b)^m = a^m b^m$

$= a{\cdot}b\, a{\cdot}b\, a{\cdot}b\, a{\cdot}b\, a{\cdot}b\, a{\cdot}b$ — m —

$\underbrace{a \cdot a \cdot a \cdot a \cdot a \cdot a}_{a^m} \cdot \underbrace{b \cdot b\, b \cdot b\, b\, b}_{b^m}$

$(a+b)^5 \neq a^5 + b^5$

$(a-b)^5 \neq a^5 - b^5$

$(a+b)^2 = (a+b)(a+b)$

$= a^2 + 2ab + b^2$

$\frac{(a+b)^5}{(c+d)^5} = \left(\frac{a+b}{c+d}\right)^5$