

July 1, 2015

Composite $35 = 5 \cdot 7$ Prime Numbers

Relatively Prime when their GCD is "one".

$12 = 2 \cdot 6$ But not Relatively Prime

$= 2 \cdot 2 \cdot 3$

$\frac{12}{12} = \frac{2 \cdot 2 \cdot 3}{2 \cdot 2 \cdot 3}$

↓ "one"

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

$\frac{2(x + 2)}{2} = x + 2$ ← Relatively Prime

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6.3 - Rational Numbers

↓ Fractions

① Fundamental Principle of Fractions

$\frac{a}{b} \cdot \frac{c}{c} = \frac{a}{b} \cdot 1 = \frac{a}{b}$

Examples

$\frac{3}{4} \cdot \frac{6}{6} = \frac{18}{24}$ (numerator denominator)

Equivalent Fractions

What is Equality?

$x = 6$ Equivalent Value

$x = x$ true
 $6 = 6$ true

$\$100.00 = 100 \text{ of } 1 \text{ dollar}$

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$\frac{3}{4}$ Means what?

How the whole has been cut up

$\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \text{whole} = \frac{4}{4} = 1$

3 of 4 of the whole

$\frac{1}{2} + \frac{1}{2} = \text{whole} = \frac{2}{2} = 1$

$\frac{1}{1} = 1$

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$\frac{3}{4} \cdot \frac{2}{2} = \frac{6}{8}$

$\frac{3}{4}$ [Diagram: 4 equal parts, 3 shaded]

Same

$\frac{6}{8}$ [Diagram: 8 equal parts, 6 shaded]

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$\frac{24}{36} = \frac{2 \cdot 2 \cdot 2 \cdot 3}{2 \cdot 2 \cdot 3 \cdot 3}$

$= 1 \cdot 1 \cdot \frac{2}{3} \cdot 1$

$= \frac{2}{3}$

So, $\frac{24}{36}$ is equivalent to $\frac{2}{3}$

What is the GCD = 12

$\frac{24}{36} = \frac{2}{3} \cdot \frac{12}{12}$

IPI

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$\frac{5}{8} \cdot \frac{1}{1}$

"one" → Relatively Primes

$\frac{5}{8} \cdot \frac{3}{3} = \frac{15}{24}$

Equivalent

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Operations on Fractions

① Multiplication

$\frac{a}{b} \cdot \frac{c}{d} = \frac{ac}{bd}$

*Note: No "one" to divide out!

Ex.

① $\frac{3}{8} \cdot \frac{7}{11} = \frac{21}{88}$

② $\frac{1}{8} \cdot \frac{9}{7} = \frac{9}{56} = \frac{9}{14} \cdot \frac{1}{4}$

$= \frac{1}{7} \cdot \frac{9}{2} = \frac{9}{14}$

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② Division

$\frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \cdot \frac{d}{c} = \frac{ad}{bc}$

Keep Change to Multiplication

Ex.

$\frac{5}{7} \div \frac{9}{10} = \frac{5}{7} \cdot \frac{10}{9} = \frac{50}{63}$

$\frac{6}{11} \div \frac{2}{5} = \frac{6}{11} \cdot \frac{5}{2} = \frac{15}{11}$

$\frac{6}{11} \cdot \frac{5}{2} = \frac{30}{22} = \frac{15}{11}$

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$\frac{3}{8} \div \frac{4}{15} = \frac{3}{8} \cdot \frac{15}{4} = \frac{45}{32}$

K Numerator
 C Division (÷)
 F Denominator

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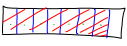
③ Addition (Subtraction) of Like Denominators

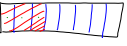
$\frac{a}{b} \pm \frac{c}{b} = \frac{a \pm c}{b}$

are Common or "Like"

Ex.

$\frac{7}{8} + \frac{3}{8} = \frac{7+3}{8} = \frac{10}{8} = \frac{5}{4}$

$\frac{7}{8}$ 

$\frac{3}{8}$ 

↓

Improper Fraction is when the Numerator is greater than the Denominator.

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