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CHARLIE (Keep It Simple PT I)

$\frac{1}{2} = \frac{1}{10} + \frac{1}{20}$

$\frac{1}{3} = \frac{1}{4} + \frac{1}{12}$

$\frac{1}{3} = \frac{1}{7} + \frac{1}{21}$

$\frac{1}{4} = \frac{1}{5} + \frac{1}{20}$

$\frac{1}{10} + \frac{1}{20} = \frac{2\times1+1\times1}{20} = \frac{3}{20}$ ✗ Does the left hand side = Right hand side?

$\frac{1}{4} + \frac{1}{12} = \frac{3\times1+1\times1}{12} = \frac{4}{12} = \frac{1}{3}$ ✓

$\frac{1}{7} + \frac{1}{21} = \frac{3\times1+1\times1}{21} = \frac{4}{21}$ ✗

$\frac{1}{5} + \frac{1}{20} = \frac{4\times1+1\times1}{20} = \frac{5}{20} = \frac{1}{4}$ ✓

P.S This rule doesn't cover all possible solutions. But it will always work And Charlie will find a lot of correct answers if he uses this equation

To prove:
$\frac{1}{n} = \frac{1}{n+1} + \frac{1}{n(n+1)}$ (working on Right hand side)
TIMES BY N TO CONVERT INTO $\frac{1}{n(n+1)}$

$\frac{n+1}{n(n+1)} = \frac{1\times(n+1)}{n\times(n+1)}$

$= \frac{1}{n}$ PROVEN

ALISON (Keep It Simple PT II)

$\frac{1}{6} - \frac{1}{7} = \frac{1}{42}$

$\frac{1}{6} = \frac{1}{7} + \frac{1}{42}$

$\frac{1}{6} = \frac{1}{8} + \frac{1}{24}$

$\frac{1}{6} = \frac{1}{9} + \frac{1}{18}$

$\frac{1}{6} = \frac{1}{10} + \frac{1}{15}$

$\frac{1}{6} = \frac{1}{12} + \frac{1}{12}$ (This doesn't count.)

Same as

$\therefore \frac{1}{6} - \frac{1}{7} = \frac{1}{42}$

$\frac{1}{6} - \frac{1}{8} = \frac{1}{24}$

$\frac{1}{6} - \frac{1}{9} = \frac{1}{18}$

$\frac{1}{6} - \frac{1}{10} = \frac{1}{15}$

Yes, all unit fractions can be made like this and using this method.

UNIT FRACTIONS

−	$\frac{1}{6}$	$\frac{1}{7}$	$\frac{1}{8}$	$\frac{1}{9}$	$\frac{1}{10}$	$\frac{1}{11}$	$\frac{1}{12}$
$\frac{1}{6}$	$\frac{1}{6}-\frac{1}{6}$ = 0	$\frac{1}{6}-\frac{1}{7}$ = $\frac{1}{6\times7}$	$\frac{1}{6}-\frac{1}{8}$ = $\frac{2}{6\times8}$	$\frac{1}{6}-\frac{1}{9}$ = $\frac{3}{6\times9}$	$\frac{1}{6}-\frac{1}{10}$ = $\frac{4}{6\times10}$	$\frac{1}{6}-\frac{1}{11}$ = $\frac{5}{6\times11}$	$\frac{1}{6}-\frac{1}{12}$ = $\frac{6}{6\times12}$
$\frac{1}{7}$	/	$\frac{1}{7}-\frac{1}{7}$ = 0	$\frac{1}{7}-\frac{1}{8}$ = $\frac{1}{7\times8}$	$\frac{1}{7}-\frac{1}{9}$ = $\frac{2}{7\times9}$	$\frac{1}{7}-\frac{1}{10}$ = $\frac{3}{7\times10}$	$\frac{1}{7}-\frac{1}{11}$ = $\frac{4}{7\times11}$	$\frac{1}{7}-\frac{1}{12}$ = $\frac{5}{7\times12}$
$\frac{1}{8}$	/	/	−	$\frac{1}{8}-\frac{1}{9}$ = $\frac{1}{8\times9}$	$\frac{1}{8}-\frac{1}{10}$ = $\frac{2}{8\times10}$	$\frac{1}{8}-\frac{1}{11}$ = $\frac{3}{8\times11}$	$\frac{1}{8}-\frac{1}{12}$ = $\frac{4}{8\times12}$
$\frac{1}{9}$	/	/	/	−	$\frac{1}{9}-\frac{1}{10}$ = $\frac{1}{9\times10}$	$\frac{1}{9}-\frac{1}{11}$ = $\frac{2}{9\times11}$	$\frac{1}{9}-\frac{1}{12}$ = $\frac{3}{9\times12}$
$\frac{1}{10}$	/	/	/	/	−	$\frac{1}{10}-\frac{1}{11}$ = $\frac{1}{10\times11}$	$\frac{1}{10}-\frac{1}{12}$ = $\frac{2}{10\times12}$
$\frac{1}{11}$	/	/	/	/	/	−	$\frac{1}{11}-\frac{1}{12}$ = $\frac{1}{11\times12}$
$\frac{1}{12}$	/	/	/	/	/	/	−

Charlie's Calculations

Algebraic Statements
$\frac{1}{n} - \frac{1}{m} = \frac{m-n}{n\times m}$ where both n and m are integers, $n<m$ and $n>0$