

ASK WHY

$= \varphi(5) \cdot \varphi(3)$

φ or Φ $\varphi(15) = 8 \Rightarrow 1, 2, 4, 7, 8, 11, 13, 14$
 $\varphi(18) = 6 = \varphi(9) \cdot \varphi(2)$

n	mod 3	mod 5
1	1	1
2	2	2
4	1	4
7	1	2
8	2	3
11	2	1
13	1	3
14	2	4

$\varphi(1) + \varphi(3) + \varphi(5) + \varphi(15)$
 $= 15$

Wow! That's neat!

- Harmonic series diverges
 $1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \dots$

- Child of $\phi(n)$ is the identity

$$\{5\} = \phi(15) + \phi(5) + \phi(3) + \phi(1)$$

- $a(n) = \frac{\sigma(n)}{n}$ is unbounded

- Multiplicativity !!

Still wondering about...

- Why is this true?



- How to compute $f(a-b)$ from $f(a)$ & $f(b)$ when a & b not relatively prime
"collisions"

- Importance of seeing numbers as primes, composites, and different subcategories of composite #s
- Arithmetic can be deep

$$\bullet \quad 2 \cdot 24 + 1 = 49$$

$$7 \cdot 24 + 1 = 169$$

$$15 \cdot 24 + 1 = 361$$

What's going on?

- Connections between mod world & "collisions" ?