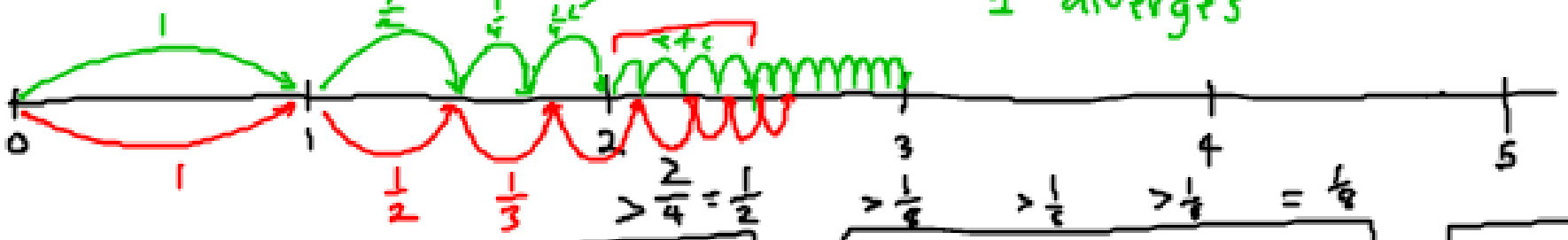
$2/4 = 1/2$ $\quad 4/8 = 1/2$ $\quad 8/16 = 1/2$

$$S_1 = 1 + \frac{1}{2} + \left[\frac{1}{4} + \frac{1}{4}\right] + \left[\frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8}\right] + \left[\frac{1}{16} + \cdots\right]$$

$S_1 = \infty$ $\quad$ S_1 "diverges"



$$S_2 = 1 + \frac{1}{2} + \left[\frac{1}{3} + \frac{1}{4}\right] + \left[\frac{1}{5} + \frac{1}{6} + \frac{1}{7} + \frac{1}{8}\right] + \left[\frac{1}{9} + \cdots\right]$$

$> \frac{2}{4} = \frac{1}{2}$ $\quad > \frac{1}{8} \quad > \frac{1}{8} \quad > \frac{1}{8} \quad = \frac{1}{2}$

$S_2 = \infty + 1$ $\quad S_2 > S_1$ $\quad S_2$ "diverges plus one"

Let $f(n) = n^2$, and g is child of f.

What is $g(10)$?

→ true for any child

$$g(10) = f(1) + f(2) + f(5) + f(10)$$

Now fill in using $f(n) = n^2$.

$$g(10) = 1 + 4 + 25 + 100$$

$$= 130$$