1) How the Chinese Remainder Method works
If both functions of x are divisible by n_1 and by $n_2$and relatively prime, x is a multiple of n_1, n_2
We create a table with $f(x) = (x\ (mod\ n_1), x\ (mod\ n_2))$. This allows us to have a table of values where we find $a_1, a_2, \ldots a_n$ and look at the table constructed by the given size (should be no bigger than $n_1 * n_2$) where $f(x) = (a_1, a_2)$

2) $\frac{1}{2} + \frac{1}{3} + \frac{1}{5} = \frac{31}{30}$
The inverse of $\frac{31}{30}$ is $\frac{30}{31}$ and the smallest integer larger than that fraction is 1 so you obtain

$$\frac{31}{30} = 1 + EGF\left(\frac{31}{30} - 1\right)$$
$$= 1 + \frac{1}{30}$$

In this way, each child gets 1 pie each, then $\frac{1}{30}$ of the last pie is split. This is compared to the previous breakdown of $\frac{31}{30} = \frac{1}{2} + \frac{1}{3} + \frac{1}{5}$ where each child gets $\frac{1}{2}$,$\frac{1}{3}$, and $\frac{1}{5}$ of a pie making the splitting of 30 pies easier and bigger pieces. The greedy algorithm is not a good way to divide the pizza as the last pie is cut so small, it makes it impractical to accomplish.

3)
a) (2, mod 3), (6 mod 7)

$f(1) = (1,1)$	$f(2) = (2,2)$	$f(3) = (0,3)$	$f(4) = (1,4)$	$f(5) = (2,5)$
$f(6) = (0,6)$	$f(7) = (1,0)$	$f(8) = (2,1)$	$f(9) = (0,2)$	$f(10) = (1,3)$
$f(11) = (2,4)$	$f(12) = (0,5)$	$f(13) = (1,6)$	$f(14) = (2,0)$	$f(15) = (0,1)$
$f(16) = (1,2)$	$f(17) = (2,3)$	$f(18) = (0,4)$	$f(19) = (1,5)$	$f(20) = (2,6)$

$$x_2 = x_1 + 3 * 7$$

2 lowest integers are 20, 41

b) (1, mod 3), (4, mod 7)
Using the table above we see that 4 and 25 have this property

c) (0, mod 3), (2, mod 7)
Using the table above, we see that 9 and 30 have the properties described.