When are we going to run out of food?

Current human population is estimated at 7.1 billion. As anyone knows we don't live to eat but we eat to live… However, the population is growing faster than food production. According to Malthus' theory, global population increases geometrically that is to say 1% per year, while food production increases arithmetically.

Little do people know that we waste one third of our food production every year! Indeed in 2019, 1.3 billion tonnes of food were produced in the world but still 852 million people were starving despite that it would be enough to feed 10 billion people. The waste of food will increase through time and will stabilize at 50% in 2042. We consider that a population is in a time of hunger when less than 75% is eating enough.

   a. What is tickling your mind after reading this short text?

   b. Let's call (Un) the geometric sequence giving human population in 2019+n years. Let n be a natural number, find the expression of Un in function of n, considering that the population rise is constant, then create an algorithm giving the year when the population exceeds 9.6 billion.

   c. How many tonnes do you need to feed 1 billion people?

   d. Let n be a natural number, calculate (Vn), the food increase, in function of the year n that you found in question b). Let's consider that the food production is increasing arithmetically by 0.017 billion tonnes each year.

   e. What will happen in 2050?

- **suite arithmétique** ~~d'évolution de la nourriture. En 2019/ 1,3 billion de~~ ~~tonnes produites (10 billions people)~~
- ~~gaspillage ⅓ par année (quantité réel en 2019 : 0.867 milliards de tonnes~~ ~~consommées)~~
- **suite géométrique** ~~d'augmentation de la population/ 2019 7.1 billion~~
- On considère que nous somme en périodes de famines lorsque il n'y a plus assez de nourritures pour nourrir … % de la population
- ~~852 millions de personnes "meurt de faim"~~

	2020	2050	1% progression per year
	7.1	9.6	
suite	7.1*1.01^30		

	2020	2050
produit	1.3	1,81
réel	0.836	1.2
suite	1.3+0.017x30	