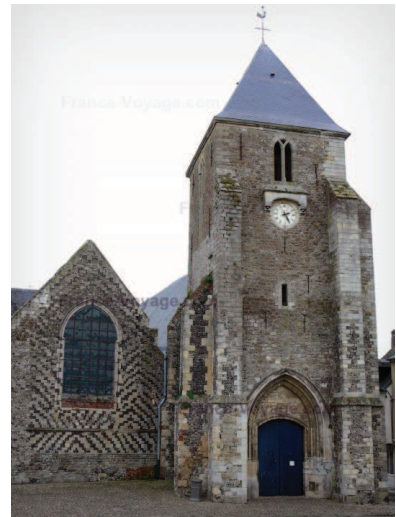


Not adding

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Let's say a set (*un ensemble*) of counting numbers has **no additions** if no two of the numbers in it add up to a third.* For example, $\{2, 3, 5\}$ has an addition since $2 + 3 = 5$. Also, $\{2, 4\}$ has an addition since $2 + 2 = 4$ (you can add one of the numbers to itself). But $\{9, 10, 11\}$ has no additions since when you add any two of these numbers you get a number that is bigger than any in the set.

1. The Meyer family has 5 children with different ages, all less than 10. The set of their ages has no additions. The youngest child is 1. What are the ages of the other four children?
2. The Kennedy family has 8 children with different ages, none older than 10. The set of boy's ages has no additions and the set of girl's ages has no additions. Two of the boys are 4 and 5. How old are the girls? How old are the boys?
3. The abbey church at St.-Valery-sur-Somme has a clock which rings only rarely (so as not to disturb the tranquility!). The hours at which it rings form a set of even numbers which have no additions, when counted on the clock (meaning, for example, $6 + 10 = 4$). What is the largest number of times it could ring each day?



* This is usually called a **sum-free set** (*un ensemble sans somme*).

4. How many different sets with no additions can you make using only the numbers $\{1, 2, 3, 4\}$?

5. How many different sets with no additions can you make using only the numbers $\{1, 2, 3, 4, 5\}$?

6. What do you think are the largest sets with no additions that you can make using the numbers $\{1, \dots, 100\}$?

