

#### Question 4 : Diamonds are forever

Gandoulf tells Nain Bleu how he can get some diamonds.

"Here is a magic treasure chest. There are 3 diamonds inside it.

Every time you hit the treasure chest:

- if the number of diamonds inside the chest is a multiple of 3, then 5 more diamonds are created;
- if not, then 1 diamond is destroyed.

And be warned! If the chest has more than 19 diamonds in it, then it disappears and so do all the diamonds."

**How many times must Nain Bleu hit the treasure chest so that he gets the maximum number of diamonds possible?**

**Justify your answer.**

