First name : _____ Last name : _____

Question 1 10 pt

The 200-base long sequence given below, from the genome of a Bacterium, is the coding strand immediately downstream from a promoter.

```
5′taccagtaga cgcctacgaa taaccaacca accaaccggt
  tatgcaccag gctaaacgaa tgccacatgg caaaacgtaa
  tggtatccga cggctctgga gtaagcagac acacgtcact
  atggattggc tggcctgcgt ccgaaaattc ctgaaaaatt
  gccccacaca agctccttag gcgggactcc ctcaaattag 3′
```

Indicate the length in amino acids of the protein encoded by the sequence as given

_____ amino acids

From now on we consider 1 and **only 1 mutation at the time** : mutations do not accumulate.

Indicate the length in amino acids of the protein when at the position 44 G → C

_____ amino acids

Indicate the length in amino acids of the protein when at the position 72 A → T

_____ amino acids

Indicate the length in amino acids of the protein when stuttering between positions 72 to 75 adds one A : caaaacg → caaaaacg

_____ amino acids

Indicate the length in amino acids of the protein when at the position 78 T → A

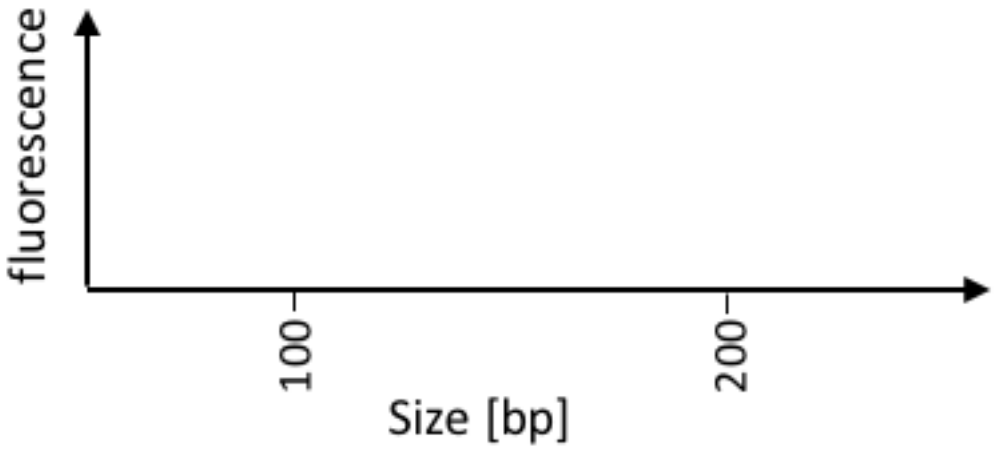
_____ amino acids

Chose 15-nucleotid long primers to PCR amplify the whole sequence given above :

5’ _____ 3’

5’ _____ 3’

After the PCR has been completed with fluorescent primers, the PCR product is analyzed by capillary electrophoresis. Draw the expected result :



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