Writing Excellence answers to **Inheritance predictions** questions

Inheritance predictions QUESTION
Question: Huntington's disease is a genetic disorder in humans. It is caused by a dominant allele (H). The normal allele is recessive (h). In the pedigree chart the phenotype ratio of Huntington's disease in the children of parents 9 and 10 is not the same as the predicted ratio in the Punnett square Give reasons why the predicted ratio in the Punnett square and the observed ratio in the children may NOT be the same.

ANSWER	
1. describe the purpose of **Punnett squares**	Punnett squares predict probable offspring genotypes and therefore the expected phenotypes based on the alleles in the gametes of the parents.
2. describe the purpose of a **pedigree chart.**	Pedigree charts give the observed (actual) phenotypes of the offspring and parents.
3. explain fertilisation as a **random event**	Since each fertilisation is a random event, it is by 50:50 chance whether the offspring inherits which allele from both parents.
4. link **phenotype of offspring to allele they have inherited** (use example from question)	From the pedigree chart, the **offspring of number 10** that have inherited the dominant H allele has Huntington's (number 16, 18 and 19) and the offspring that have inherited the recessive h allele and does not have the disease. (number 17)
5. give phenotypes of offspring in **pedigree chart** and number of each	In the pedigree chart **3 of the 4** offspring have the disease. So 75% have inherited the H dominant allele from parent 10
6. compare to phenotypes predicted in **Punnett square** and number of each	but only 2 out of 4 offspring would have been predicted from the Punnett square, so 50% of the offspring.

NOTE: The white column is how your answer would appear on your test paper so make sure you **write out complete sentences**. The grey area is just to help you structure your answer and would not appear in the question.