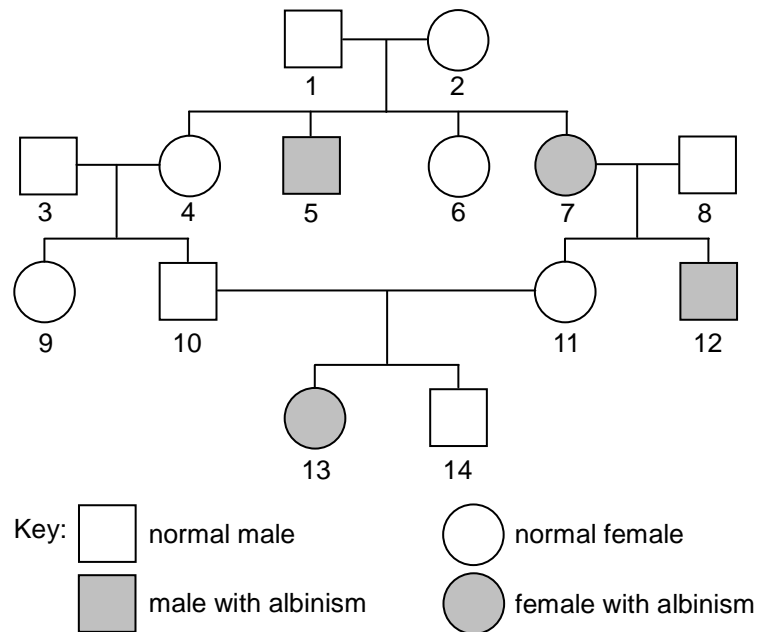


-- Question --

People with albinism cannot produce the pigment melanin, so they have very pale skin, hair and eyes. The ability to produce melanin is controlled by a pair of alleles on autosomes. The pedigree below shows the inheritance of albinism in a family.



- a** Deduce, with reasons, whether the allele for albinism is dominant or recessive. (Marks will *not* be awarded for genetic diagrams.) (4 marks)
- b** State the possible genotype(s) of individual 8. Define the symbols you use. (2 marks)
- c** What is the chance of inheriting albinism in the next child of individuals 10 and 11? Explain with a genetic diagram. (4 marks)

-- Answer --

- a** Since individual 13 is an albino, she must have received at least one allele for albinism from either parent. 1m
 Since individuals 10 and 11 are normal, each of them must possess at least one normal allele. 1m
 Therefore, at least one of individuals 10 and 11 is heterozygous. 1m
 Since only the dominant character is shown in the heterozygous condition, the normal allele must be dominant and the allele for albinism must be recessive. 1m

OR

- Since individual 5 / 7 is an albino, he / she must have received at least one allele for albinism from either parent. 1m
 Since individuals 1 and 2 are normal, each of them must possess at least one normal allele. 1m
 Therefore, at least one of individuals 1 and 2 is heterozygous. 1m
 Since only the dominant character is shown in the heterozygous condition, the normal allele must be dominant and the allele for albinism must be recessive. 1m
- b** Let A represent the normal allele and a represent the allele for albinism. 1m
 The genotype of individual 8: Aa 1m

c

