Do not write outside the box

1 (a) What is meant by:

a *homozygous* genotype

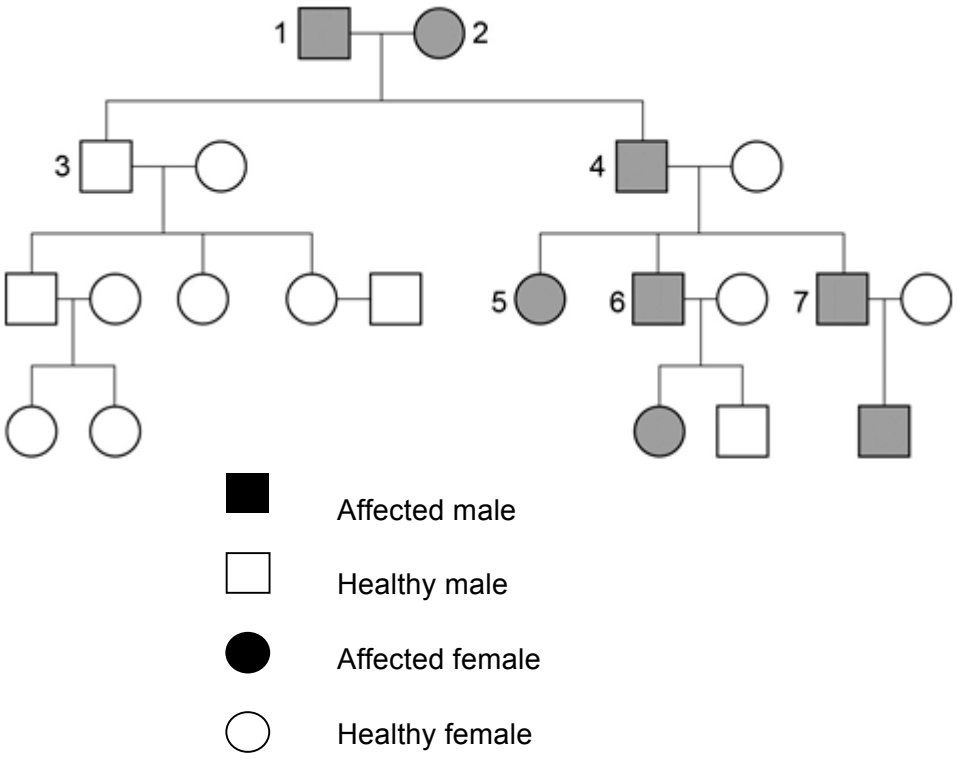
Two alleles (for a gene) are the same or both alleles are dominant or recessive [1 mark]

(1 mark)

a *heterozygous* genotype?

Two alleles (for a gene) are different or there is one dominant and one recessive allele [1 mark]

3 The diagram below shows the family tree of a family with an inherited disorder a genetic disorder.



3(a) Is the allele for the disorder dominant or recessive?

dominant [1 mark]

(1 mark)

3 (b) Explain the reasons for your answer. You may use a genetic diagram to help you.

Because person 1 and person 2 have a child with the disease and a child without [1 mark]

So they must be heterozygous / have 1 dominant and 1 recessive allele. [1 mark]

If it was recessive all children would have disease [1 mark]

3(c) Person 4 may have a different genotype to person 6.

Explain why.

Person 4 may have 2 dominant alleles or a dominant and recessive allele [1 mark]

because both parents had I dominant allele (they had the disease) [1 mark]

and 1 recessive allele because they passed this to person 3 who does not have the disease [1 mark]

person 6 must have 1 dominant allele and 1 recessive allele as [1 mark]

they have 1 child with disease and 1 without. [1 mark]

Quite an involved question here, but worth having a go. You will be allowed some flexibility in how you explain this, but be careful to say clearly what you mean.

(3 marks)