

27 Which statements describe the sex chromosomes in human gametes?

- 1 Egg cells contain either an X or a Y chromosome.
- 2 Egg cells contain only X chromosomes.
- 3 Sperm cells contain either an X or a Y chromosome.
- 4 Sperm cells contain only Y chromosomes.

A 1 and 3 **B** 1 and 4 **C** 2 and 3 **D** 2 and 4

29 A female with red-green colour blindness has a child with a male who does **not** have red-green colour blindness. The child is male.

What is the chance of this child having red-green colour blindness?

A 0% **B** 25% **C** 50% **D** 100%

32 The photograph shows a speckled chicken.

Speckled chickens have white feathers and black feathers.



When a chicken with only white feathers and a chicken with only black feathers are crossed, all of the offspring are speckled.

What would be the expected phenotypic ratio if a speckled chicken was crossed with a chicken with only white feathers?

- A** all offspring have only white feathers
- B** all offspring are speckled
- C** 1 white feathers only : 1 speckled
- D** 3 white feathers only : 1 speckled

30 What are alleles?

- A** a pair of chromosomes
- B** different versions of the same gene
- C** the total number of genes on one chromosome
- D** two genes side by side on the same chromosome

31 Polydactyly in cats is a dominant condition that causes affected cats to be born with extra toes.

What is the probability of two cats that are heterozygous for polydactyly having an offspring with **no** extra toes?

- A** 0.125 **B** 0.25 **C** 0.50 **D** 0.75

32 Which statement describes red-green colour blindness?

- A** It is an example of codominance.
B It is more common in females than in males.
C It only occurs in males.
D The recessive allele is located on an X chromosome.

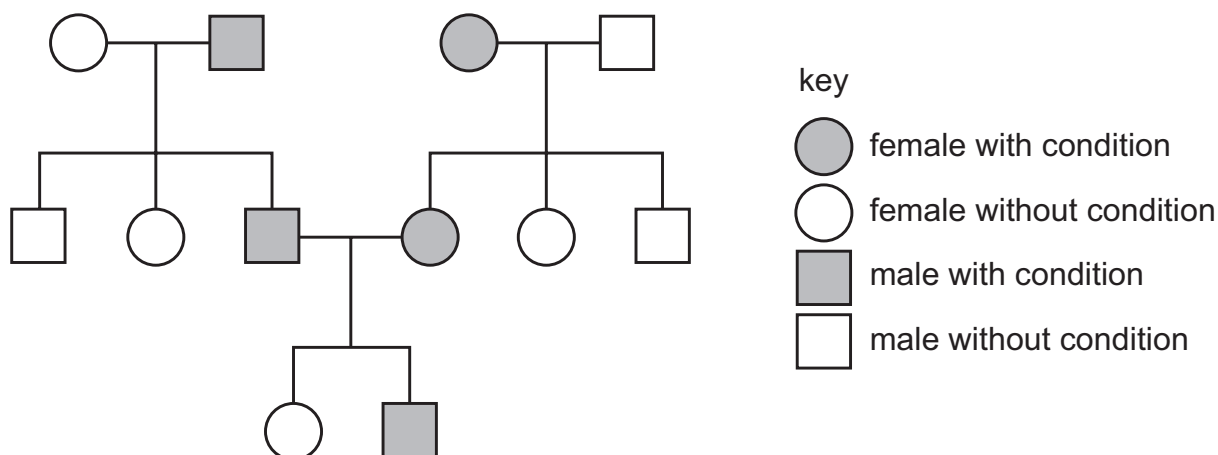
30 A farmer bred together male cattle with white hair and female cattle with red hair. All the offspring produced had roan hair (a mixture of red and white).

He then repeatedly bred together two roan cattle, and the offspring were in the ratio of 1 red : 2 roan : 1 white.

What explains why the farmer obtained this ratio?

- A** The red phenotype is dominant to the white phenotype.
B The roan phenotype is an example of codominance.
C The roan phenotype is dominant to the red phenotype and the white phenotype.
D The white phenotype is dominant to the red phenotype.

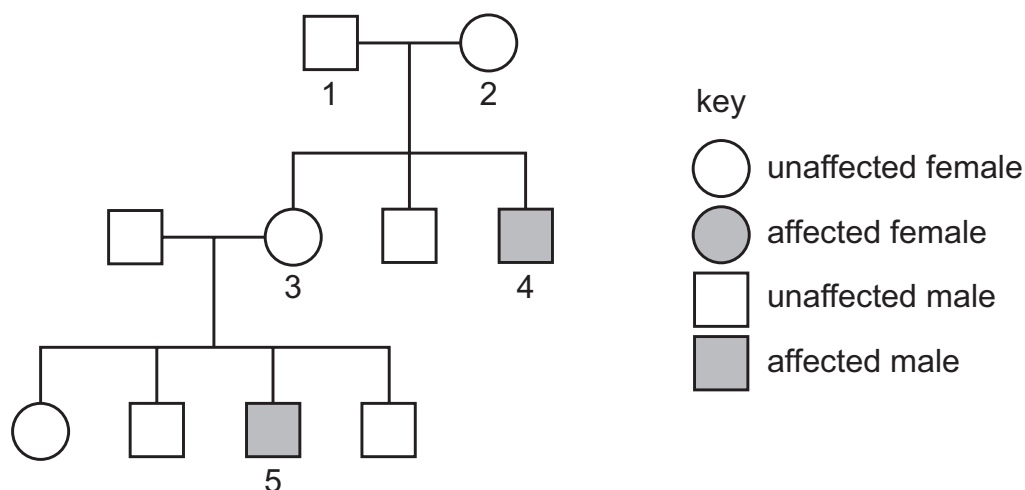
31 The diagram shows the inheritance of a genetic condition in one family.



What can be concluded about this genetic condition?

- A** The alleles for the condition must be codominant.
- B** It is caused by a dominant allele.
- C** It is caused by recessive alleles.
- D** The alleles for the condition must be sex-linked.

32 The diagram shows the inheritance, in one family, of a sex-linked recessive disease.



Which individuals in the diagram are heterozygous for this disease?

- A** 1 and 2
- B** 1 only
- C** 2 and 3
- D** 4 and 5

32 A man with blood group A and genotype $I^A I^O$ has a child with a woman who has blood group B and genotype $I^B I^O$.

What is the probability of the child having blood group O?

- A** 0.00
- B** 0.25
- C** 0.50
- D** 1.00