

Self-test questions

Topic 3

- 1 Two base substitution mutations occur in the same gene. What is a possible consequence of this event?
 - A Amino acids in two polypeptides coded for by the gene are changed.
 - B Two amino acids coded for by the gene are changed.
 - C All the codons between the two mutations are altered.
 - D All the codons from the first mutation onward are altered
- 2 Which statement best describes homologous chromosomes?
 - A They come from the same parent.
 - B They pair up during meiosis.
 - C They contain identical alleles.
 - D They do not separate during meiosis.
- 3 How many chromatids would be present in a human cell just before cell division?
 - A 46
 - B 92
 - C 23
 - D 69
- 4 A cell with a diploid number of 14 chromosomes undergoes meiosis. What will be the product at the end of meiosis?
 - A 4 cells each with 14 chromosomes
 - B 2 cells each with 7 chromosomes
 - C 4 cells each with 7 chromosomes
 - D 2 cells each with 14 chromosomes
- 5 What is the usual cause of Down syndrome?
 - A trisomy in chromosome 21
 - B 21 pairs of chromosomes
 - C failure of sex chromosomes to separate
 - D fertilisation of the ovum by two sperm cells
- 6 The allele for red hair is recessive to the allele for black hair. What colour hair will a person have if she inherits a gene for red hair from her father and a gene for black hair from her mother?
 - A red hair
 - B black hair
 - C brown hair
 - D blonde hair
- 7 A hemophiliac man marries a woman who is homozygous for the normal allele. If they have a son, what are the chances that he will be affected?
 - A 0%
 - B 25%
 - C 50%
 - D 100%

- 8 Which feature of a genetic pedigree chart might show that a characteristic is sex linked?
- A Boys and girls only inherit the characteristic from their mother.
 - B Equal numbers of boys and girls inherit the characteristic.
 - C Boys are more commonly affected than girls.
 - D The number of boys and girls affected decreases over several generations.
- 9 A couple have three children whose blood groups are O, AB and A. What are the genotypes of the couple?
- A $I^A I^A$ and $I^B I^B$
 - B I^A and ii
 - C $I^A i$ and $I^B i$
 - D $I^A I^B$ and ii
- 10 The polymerase chain reaction is used to:
- A separate fragments of DNA according to their size
 - B link together fragments of DNA
 - C amplify small amount of DNA
 - D deduce the father of a child