



YEAR 11

Genetics and Inheritance

Three sections. Draw the Punnett square for every cross in section B, even when you can see the answer: the marks in an exam are for the square.

Name: _____ Date: _____ Score: _____

A. The words you need

Gene, allele, genotype, phenotype. Learn these four and most of the topic follows.

- 1 What is a gene?

- 2 What is a chromosome made of?

- 3 What is an allele?

- 4 What does homozygous mean?

- 5 What does heterozygous mean?

- 6 What is the difference between genotype and phenotype?

- 7 How many chromosomes are in a human body cell?

- 8 How many chromosomes are in a human gamete?

- 9 What does it mean for an allele to be dominant?

B. Crosses

Alleles of one parent across the top, the other down the side.

- 1 Two parents are both Bb. Draw a Punnett square and give the ratio of genotypes.
- 2 For those parents, what fraction of children would be expected to be bb?
- 3 For those parents, what percentage would show the dominant characteristic?
- 4 A BB parent and a bb parent have children. Give the genotype of all of them.
- 5 A Bb parent and a bb parent have children. Give the expected ratio.
- 6 What percentage of those children would be expected to show the recessive characteristic?
- 7 Cystic fibrosis is recessive. Two parents carry one copy each and neither has the condition. What are their genotypes, and what is the chance a child has it?

C. Sex and variation

XX and XY, and where variation comes from.

- 1 Which pair of sex chromosomes does a human female have?
- 2 Which pair does a human male have?
- 3 Which parent determines the sex of the child, and why?
- 4 What percentage of children would be expected to be male?
- 5 Give one characteristic caused only by genes.
- 6 Give one characteristic caused only by the environment.

7 Give one characteristic caused by both.
