



CHEMISTRY ONLINE
— **TUITION** —

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BIOLOGY

INHERITANCE AND HARDY-WEINBERG PRINCIPLE

| | |
|-----------------|-----------------------|
| Level & Board | AQA (A-LEVEL) |
| TOPIC: | INHERITANCE AND HARDY |
| PAPER TYPE: | SOLUTION - 2 |
| TOTAL QUESTIONS | 5 |
| TOTAL MARKS | 26 |

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Inheritance and Hardy-Weinberg Principle - 2

1.

(a) The term "phenotype" refers to the observable physical properties of an organism; these include the organism's appearance, development, and behavior. An organism's phenotype is determined by its genotype, which is the set of genes the organism carries, as well as by environmental influences upon these genes.

(b) Epistasis

(c)

AAbb: white

aaBB: yellow

2.

(a)

AaBb, Aabb, aaBb, aabb

White, (white), yellow, green

2 : 1 : 1

(b)

$$q^2 = 0.64$$

$$q = 0.8$$

$$p = 1 - 0.8 = 0.2$$

$$2pq = 2 \times 0.2 \times 0.8 = 0.32$$

32%

3.

(a)

Bb / suitable equivalent

Both parents have bar eyes, but have some offspring with round

eyes, so parents must be carriers of recessive allele for round eyes

(b) 3: 1

(c)

Fertilization is random

OR

Fusion of gametes is random

Small / not large population / sample

Selection advantage / disadvantage / lethal alleles

(d)

χ^2 / chi squared

4.

(a) Both alleles expressed in the phenotype if both are present

(b)

$$255/2 = 127.5$$

$$127.5 + 85 = 212.5$$

$$212.5/850 = 0.25$$

$$\text{frequency} = 0.25$$

(c)

$$q = 0.2$$

$$p = 0.8$$

$$2pq = 2 \times 0.2 \times 0.8 = 0.32$$

$$0.32 \times 950 = 304$$

5.

(a) linkage is when there are 2 or more genes on the same chromosome

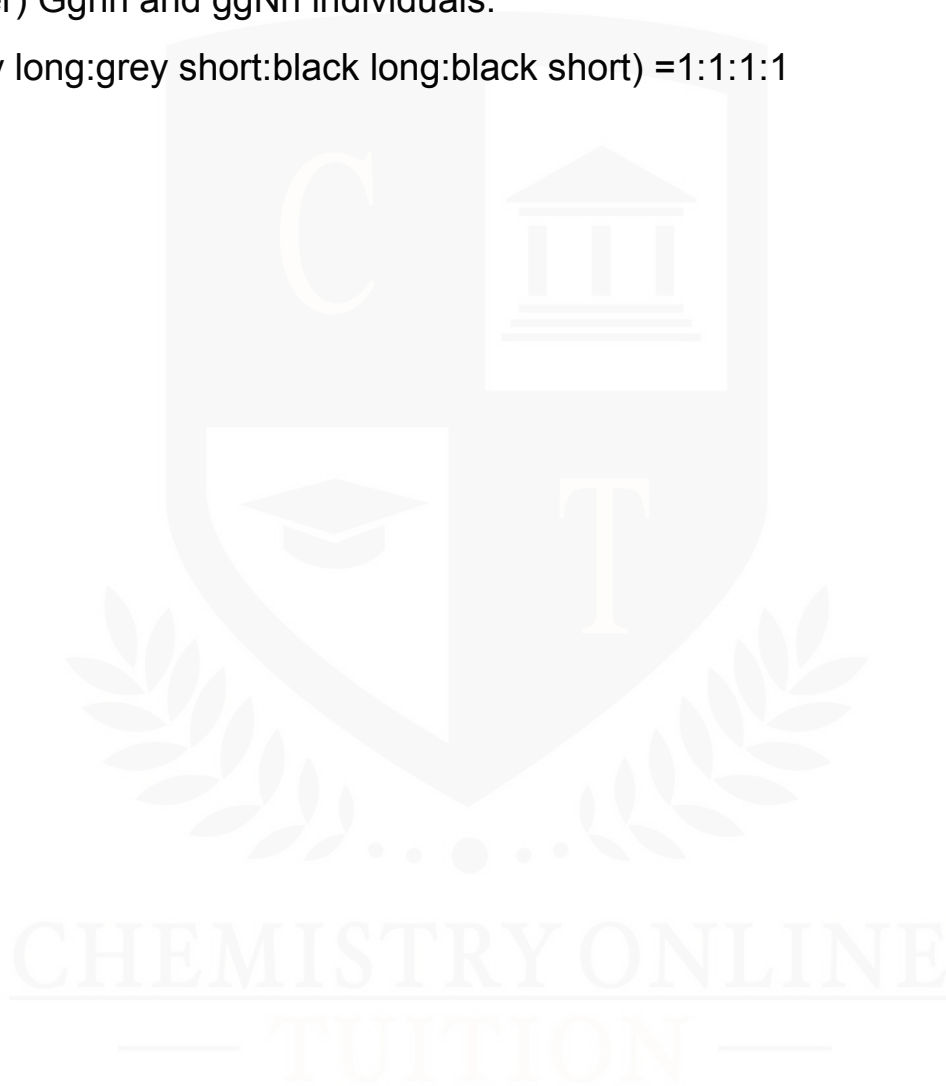
(b) GN and gn linked

GgNn individual produces mainly GN and gn gametes

Crossing over produces some / few Gn and gN gametes

So few(er) Gggn and ggNn individuals.

(c) (Grey long:grey short:black long:black short) =1:1:1:1



I am Sorry !!!!!



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- Founder & CEO of Chemistry Online Tuition Ltd.
- Completed Medicine (M.B.B.S) in 2007
- Tutoring students in UK and worldwide since 2008
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