INKBIOLOGY FLASHCARDS

Inheritance and population genetics

Unit B16 · 22 cards · fronts and backs

Print double-sided, flipping on the long edge, and each answer lands behind its question. Cut along the card borders.

Definitions in mark-scheme wording, and the misconceptions that lose marks. These cards and each lesson's whole-lesson check run on the website with spaced-repetition scheduling, at inkphysics.co.uk/biology/flashcards.

DEFINITION

Define: Homologous pair.

MEIOSIS: TWO DIVISIONS, AND WHY NO TWO GAMETES COME OUT THE SAME

DEFINITION

Define: Diploid.

MEIOSIS: TWO DIVISIONS, AND WHY NO TWO GAMETES COME OUT TH

DEFINITION

Define: Haploid.

MEIOSIS: TWO DIVISIONS, AND WHY NO TWO GAMETES COME OUT THE SAME

DEFINITION

Define: Bivalent.

MEIOSIS: TWO DIVISIONS, AND WHY NO TWO GAMETES COME OUT TH

DEFINITION

Define: Reduction division.

MEIOSIS: TWO DIVISIONS, AND WHY NO TWO GAMETES COME OUT THE SAME

DEFINITION

Define: Crossing over.

MEIOSIS: TWO DIVISIONS, AND WHY NO TWO GAMETES COME OUT TH

DEFINITION

Define: Chiasma.

MEIOSIS: TWO DIVISIONS, AND WHY NO TWO GAMETES COME OUT THE SAME

DEFINITION

Define: Recombinant.

MEIOSIS: TWO DIVISIONS, AND WHY NO TWO GAMETES COME OUT TH

DEFINITION

Having chromosomes in homologous pairs, written 2n.

DEFINITION

Two chromosomes of the same length carrying the same genes at the same loci, one from each parent, though not necessarily the same alleles.

DEFINITION

The structure formed when a homologous pair comes together in prophase I: two chromosomes, four chromatids.

DEFINITION

Having one chromosome from each homologous pair, written n.

DEFINITION

The exchange of equivalent sections of DNA between non-sister chromatids of a homologous pair during prophase I.

DEFINITION

A division that halves the chromosome number. Meiosis I is one; meiosis II is not.

DEFINITION

A chromatid, or an offspring, carrying a combination of alleles that neither parental chromosome carried.

DEFINITION

The visible point at which two non-sister chromatids cross during a bivalent's crossover.

SPOT THE ERROR

Say what is wrong with this claim:

Meiosis is mitosis done twice, so learning it means learning the same four stages again with roman numerals attached.

MEIOSIS: TWO DIVISIONS, AND WHY NO TWO GAMETES COME OUT THE SAME

DEFINITION

Define: Genotype.

MONOHYBRID INHERITANCE: GENETIC DIAGRAMS THAT SCORE

DEFINITION

Define: Phenotype.

MONOHYBRID INHERITANCE: GENETIC DIAGRAMS THAT SCORE

DEFINITION

Define: Homozygous.

MONOHYBRID INHERITANCE: GENETIC DIAGRAMS THAT SCORE

DEFINITION

Define: Heterozygous.

MONOHYBRID INHERITANCE: GENETIC DIAGRAMS THAT SCORE

DEFINITION

Define: Dominant.

MONOHYBRID INHERITANCE: GENETIC DIAGRAMS THAT SCORE

DEFINITION

Define: Recessive.

MONOHYBRID INHERITANCE: GENETIC DIAGRAMS THAT SCORE

DEFINITION

Define: Carrier.

MONOHYBRID INHERITANCE: GENETIC DIAGRAMS THAT SCORE

DEFINITION

The alleles an organism carries, for the gene or genes under discussion.

MONOHYBRID INHERITANCE: GENETIC DIAGRAMS THAT SCORE

SPOT THE ERROR

The second division really is mitosis in miniature; the first has no counterpart in mitosis at all. Homologous chromosomes pair, exchange lengths of DNA, and separate as whole chromosomes with centromeres intact. Every ratio later in the unit comes from that division.

MEIOSIS: TWO DIVISIONS, AND WHY NO TWO GAMETES COME OUT T

DEFINITION

Carrying two identical alleles of a gene.

MONOHYBRID INHERITANCE: GENETIC DIAGRAMS THAT SCORE

DEFINITION

The observable characteristics of an organism, produced by its genotype interacting with its environment.

MONOHYBRID INHERITANCE: GENETIC DIAGRAMS THAT SCORE

DEFINITION

An allele whose effect appears in the phenotype even when only one copy is present.

MONOHYBRID INHERITANCE: GENETIC DIAGRAMS THAT SCORE

DEFINITION

Carrying two different alleles of a gene.

MONOHYBRID INHERITANCE: GENETIC DIAGRAMS THAT SCORE

DEFINITION

An individual heterozygous for a recessive allele, so not showing the characteristic but able to pass the allele on.

MONOHYBRID INHERITANCE: GENETIC DIAGRAMS THAT SCORE

DEFINITION

An allele whose effect appears only when two copies are present.

MONOHYBRID INHERITANCE: GENETIC DIAGRAMS THAT SCORE

SPOT THE ERROR

Say what is wrong with this claim:

A 3 : 1 ratio means three out of every four offspring show the dominant characteristic.

MONOHYBRID INHERITANCE: GENETIC DIAGRAMS THAT SCORE

SPOT THE ERROR

Say what is wrong with this claim:

A significant chi-squared result is the one that supports your genetic hypothesis.

TWO GENES AT ONCE: 9 : 3 : 3 : 1, THE WAYS IT BREAKS, AND THE CH

DEFINITION

Define: Population.

HARDY-WEINBERG: WHAT ALLELES DO IN A POPULATION WHEN NOTHING

DEFINITION

Define: Gene pool.

HARDY-WEINBERG: WHAT ALLELES DO IN A POPULATION WHEN NOTH

DEFINITION

Define: Allele frequency.

HARDY-WEINBERG: WHAT ALLELES DO IN A POPULATION WHEN NOTHING

SPOT THE ERROR

Say what is wrong with this claim:

A dominant allele spreads through a population, because dominant alleles get passed on more.

HARDY-WEINBERG: WHAT ALLELES DO IN A POPULATION WHEN NOTH

SPOT THE ERROR

The test runs the other way round. Chi-squared measures how badly the observed numbers disagree with the ones the hypothesis predicted, so a large value is evidence against it. Proposing a 9 : 3 : 3 : 1 ratio, you want a small value and a difference that is not significant.

TWO GENES AT ONCE: 9 : 3 : 3 : 1, THE WAYS IT BREAKS, AND THE CHI-SQUARED TEST

SPOT THE ERROR

A ratio is a statement about probability, not a promise about a family. Each fertilisation independently has a 3 in 4 chance of the dominant phenotype, and only over large numbers does the count settle near 3 : 1. A pea plant obliges; three children need not.

MENDELIAN INHERITANCE: GENETIC DIAGRAMS THAT SCORE

DEFINITION

All the alleles of all the genes present in a population at a given time.

HARDY-WEINBERG: WHAT ALLELES DO IN A POPULATION WHEN NOTHING INTERFERES

DEFINITION

A group of organisms of the same species living in the same place at the same time and able to interbreed.

HARDY-WEINBERG: WHAT ALLELES DO IN A POPULATION WHEN NOTH

SPOT THE ERROR

Dominance describes what happens inside one heterozygote and says nothing about how common an allele is. Polydactyly is dominant and rare; blood group O is recessive and commonest. With no selection or mutation and random mating, frequencies do not change at all.

HARDY-WEINBERG: WHAT ALLELES DO IN A POPULATION WHEN NOTHING INTERFERES

DEFINITION

The proportion of all the alleles of a gene in a gene pool that are of one particular kind.

HARDY-WEINBERG: WHAT ALLELES DO IN A POPULATION WHEN NOTH