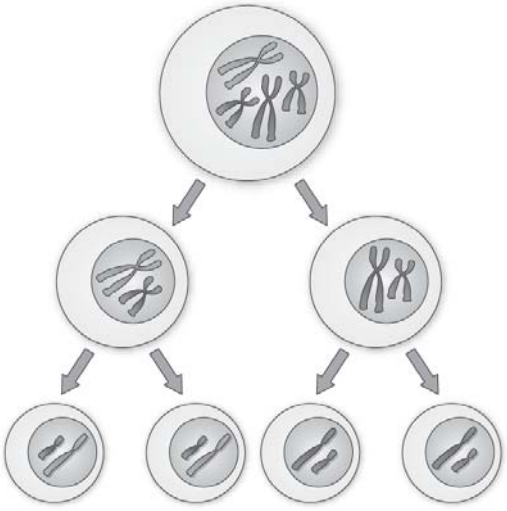

CALIFORNIA STANDARD SET 3

Genetics (Mendel's Laws)

3 A multicellular organism develops from a single zygote, and its phenotype depends on its genotype, which is established at fertilization. As a basis for understanding this concept:

3.a *Students know* how to predict the probable outcome of phenotypes in a genetic cross from the genotypes of the parents and mode of inheritance (autosomal or X-linked, dominant or recessive).

3.b *Students know* the genetic basis for Mendel's laws of segregation and independent assortment.

3.c* *Students know* how to predict the probable mode of inheritance from a pedigree diagram showing phenotypes.

3.d* *Students know* how to use data on frequency of recombination at meiosis to estimate genetic distances between loci and to interpret genetic maps of chromosomes.

WHAT IT MEANS TO YOU

You may look more like one of your parents than the other, or you may be a perfect blend of both of your parents. If you've ever wondered why, the answers lie within Mendel's Laws. These laws explain how the inheritance of different traits follows the rules of probability. So even if both of your parents are very tall with dark hair, there may be a chance that you are short with light hair.

STANDARD	CHAPTERS	PUPIL EDITION
3.a	6, 7	183–187, 200–203
3.b	6	177–179, 183–187
3.c*	7	212–217
3.d*	7	209–211

SAMPLE QUESTIONS

1.

	F	*f*
f		
f		

Flower color in a certain plant species is determined by one gene with two alleles. The allele for pink flowers *(F)* is dominant and the allele for white flowers *(f)* is recessive. According to the parent genotypes in the Punnett square above, what is the probability of an offspring with white flowers? **3.a**

A 25%

B 50%

C 75%

D 100%

2. Different gametes have different sets of chromosomes because homologous chromosomes are divided between gametes by **3.b**

A genetic linkage.

B independent assortment.

C crossing over.

D external fertilization.

Answers: 1b, 2b,