

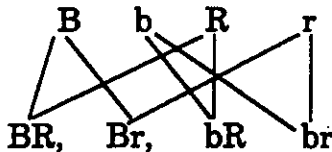
TWO-TRAIT PROBLEMS

In man, assume that brown eyes (BB or Bb) are dominant over blue (bb) and right-handedness (RR or Rr) over left-handedness. What are the possible genotypes and phenotypes for the F₁ offspring when both parents are hybrids for the above traits?

Both parents are heterozygous brown-eyed and right-handed.

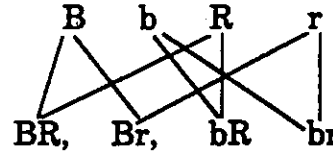
P₁ genotype

possible
gametes



P₁ genotype

possible
gametes



	BR	Br	bR	br
BR	BBRR	BBRr	BbRR	BbRr
Br	BBRr	BBrr	BbRr	Bbrr
bR	BbRR	BbRr	bbRR	bbRr
br	BbRr	Bbrr	bbRr	bbrr

F₁: Phenotypic ratio: (9:3:3:1)

9 brown-eyed, right-handed
 3 brown-eyed, left-handed
 3 blue-eyed, right-handed
 1 blue-eyed, left-handed

TWO-TRAIT PROBLEMS

3E

In problems 1-6, assume that in certain plants yellow fruit (YY or Yy) is dominant over green (yy) and disk-shaped (DD or Dd) is dominant over sphere-shaped (dd).

1. Give possible phenotypes for the F₁ for the following crosses:

(a) YyDd X YyDd _____

(b) YYdd X yyDD _____

(c) YyDd X yydd _____

(d) YyDd X Yydd _____

(e) YyDd X YyDD _____

(f) YyDD X yydd _____

2. A yellow disk-shaped fruit plant crossed with a green sphere-shaped gives all yellow disk-shaped F₁. State genotypes of parents.

3. If a yellow sphere-shaped fruit plant is crossed with a green disk-shaped plant, give the genotypes of parents when the F₁ is as follows:

1 yellow disk-shaped

1 yellow sphere-shaped

1 green disk-shaped

1 green sphere-shaped

Genotypes of parents:

4. A yellow disk-shaped parent and a green disk-shaped parent are crossed. State the genotypes of parents when the offspring produced are:

3 green disk-shaped

1 green sphere-shaped

3 yellow disk-shaped

1 yellow sphere-shaped

Genotypes of parents:

5. Give the genotypes of parents when both are yellow disk-shaped and produce the following:

10 green disk-shaped
5 green sphere-shaped
29 yellow disk-shaped
11 yellow sphere-shaped

Genotypes of parents:

6. If one parent were heterozygous yellow and homozygous disk-shaped and the other parent were homozygous green and heterozygous disk-shaped, give possible F_1 phenotypes.
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In problems 7-9, assume that in guinea pigs (BB or Bb) and short-haired (SS or Ss) are dominant over brown (bb) and long-haired (ss).

7. A guinea pig which is homozygous for black short-hair is crossed with one which is brown long-haired. State the genotypes of both parents.
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8. If the F_1 generation of the above are crossed with each other, what are the phenotypes of the F_2 ?
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9. Give the genotypes and the phenotypes of the offspring resulting from a cross of the F_1 in the above problem with its brown long-haired parent.
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10. Assume in rabbits that black (BB or Bb) and spotted-coat (SS or Ss) are dominant

over brown (bb) and solid-color (ss). If a brown-spotted rabbit is mated to one with a solid-coat and all of the resulting offspring are black-spotted, give the genotypes of the parents. 3E

11. If two of the F1 black-spotted rabbits in problem 10 were mated, give the phenotypic expression of the F2.
