

B/B; B/b

B/b; b/b

All b/b

Pure brown Pure brown

Pure white Pure white

 B/B B/B

 B/B B/b

Pure white

Hybrid brown



**2a**. Homozygous is the possession of two similar alleles. Heterozygous is the possession of different alleles for the same gene.

**2b**. B/B.

**2c**. B/b.

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**3a**. Let B = Black and b = red.

|  |  |  |
| --- | --- | --- |
|  | B | b |
| b | B/b | b/b |
| b | b/B | b/b |

The ratio of different genotypes is:

 1 B/b : 1 b/b

**3b**. only two phenotypes: black and red.

**3c**. 1 brown : 1 red.

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**4a**. Let D = dimple and d = no dimple

|  |  |  |
| --- | --- | --- |
|  | D | d |
| D | D/D | D/d |
| d | d/D | d/d |

The genotype of the child is d/d

**4b**. Each parent has the genotype of a D/d

**4c**. The chance the next child will have no dimples is ¼ or 25%

The chance the next child will have dimples is ¾ or 75%

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**5.**

|  |  |  |
| --- | --- | --- |
|  | T  | t |
| T  | T/T | T/t |
| t | t/T | t/t |

Possible genotypes are: T/T, T/t and t/t

Possible phenotypes are: tall and short.

**6.** non-barking dog has the genotype b/b; barking dog has the genotype B/b.

|  |  |  |
| --- | --- | --- |
|  | B | b |
| b | B/b | b/b |
| b  | b/B | b/b |

The chance of non-barking dog is 2/4 or 50%.