

GREGOR MENDEL

The Father of Genetics

- He was born in _____ in Austria.
- He became a monk and worked in the monastery _____.
- He became fascinated with _____ plants that grew there.
- Mendel's experiments with peas were able to show that _____ are discrete units that keep their separate identities when passed from _____ to _____.
- Mendel observed _____ in his pea plants (7 to be exact).

HEREDITY:

TRAITS:

CROSS:

GENES:

ALLELES:

HOMOZYGOUS:

HETEROZYGOUS:

GENOTYPE:

PHENOTYPE:

DOMINANT:

RECESSIVE:

Why did Mendel use pea plants for his experiments?

What 7 traits did Mendel study in his pea plants?

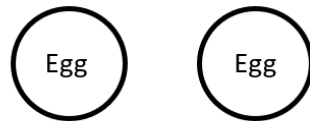
WORDS TO KNOW

PUNNETT SQUARES:

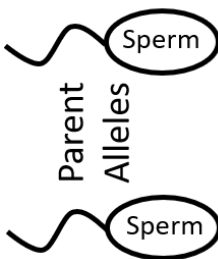
A Punnett square is used to show possible _____ of a genetic cross.

- monohybrid cross:
- dihybrid cross:

Parent Alleles



Genotypes of possible offspring	Genotypes of possible offspring
Genotypes of possible offspring	Genotypes of possible offspring



Parent Alleles

THINGS

TO KNOW:

☞ Dominant alleles are represented with uppercase letters.

Ex. AA, Aa

☞ Recessive alleles are represented with lowercase letters.

Ex. aa, Aa

☞ An organism's genotype might be:

- ☐ Homozygous dominant
TT
- ☐ Heterozygous
Tt
- ☐ Homozygous recessive
tt

Follow these steps:

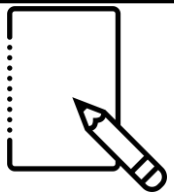
1. Use the information provided to determine the parent (P) genotypes (letters).

2. Each parent can only pass one allele to their offspring. Split each parent's alleles.

3. Cross each allele (top and across) to complete each quarter of the Punnett square.

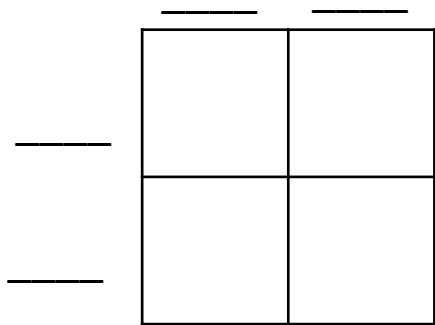
4. Use the square to determine the phenotype for each genotype in each square.

5. Calculate the probability of each phenotype. This can be displayed as a percentage, fraction or ratio.

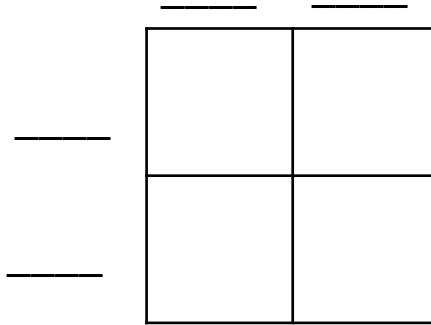


PRACTICE PROBLEMS:

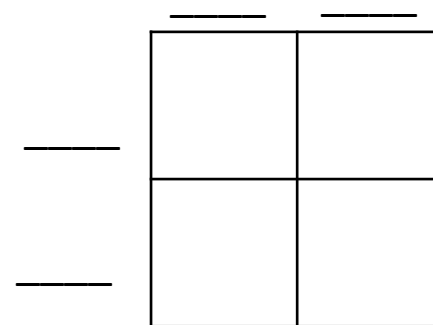
HOMOZYGOUS-HOMOZYGOUS



HETEROZYGOUS- HETEROZYGOUS



HETEROZYGOUS-HOMOZYGOUS

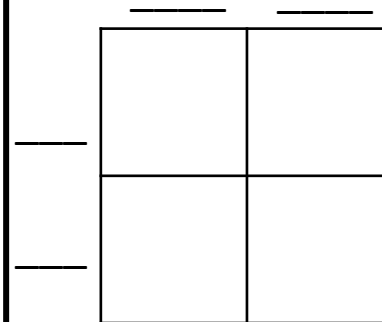


Describe each of the following as a genotype (g) or phenotype (p):

1. red hair
2. Hh
3. yy
4. wrinkled peas
5. freckles

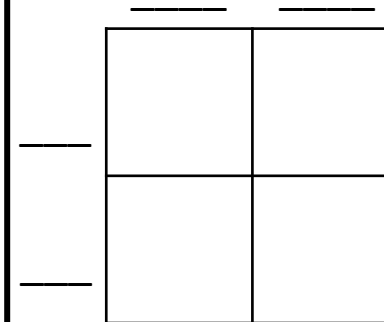
Describe each of the following as homozygous dominant, homozygous recessive or heterozygous:

1. yy
2. Hh
3. MM
4. Xx
5. gg



What is the phenotypic ratio of their offspring?

What percent of the offspring will have dimples?



What is the phenotypic ratio of their offspring?

What percent of the offspring will have freckles?