Chapter 16
Section 2

Allele Frequencies

Scientists wondered if _____ alleles were more _____ than recessive alleles.

Hardy and Weinberg showed that the _____ of alleles and the ratio of heterozygous and homozygous does not _____ from one _____ to the next.

It only changes if there is something that acts on one like a _____ dominant.

Hardy-Weinberg principle-- states that the _____ of alleles in a population do not change _____ evolutionary forces act on a _____.

HW holds true if a population is _____ enough that its members will not mate with _____ AND as long as evolutionary forces are not _____.

Five principles of evolution:

Mutation
Gene Flow
Nonrandom mating
Genetic drift
Natural Selection

Mutation

Most genes only mutate 1 to 10 times per _____ cell divisions.

Mutation though is the _____ of variation.

Gene Flow

The movement of individual _____ into or out of a population.

Gene flow occurs because _____ or emigrants add or _____ alleles.

Nonrandom Mating

Some individuals prefer to mate with others that line _____ or are of their own _____.

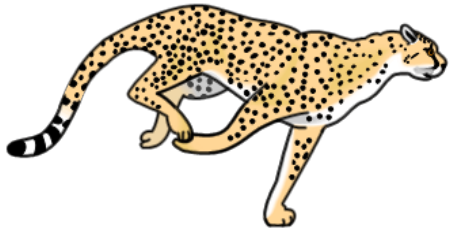
Interbreeding

The entire population of Old Order Amish of Pennsylvania (17,000) are descended from only a few _____. As a result 13% of the people are _____ recessive for a rare allele that is a disease with a combination of dwarfism and _____ fingers.

Since the early 1770's
_____ cases have been
reported this is about as
many as the rest of the world

Genetic Drift

A fire or landslide can reduce a large population to a _____ group. This can have a major effect on a population.



Natural Selection

The frequency of an allele will change_____ on the allele's effects on _____ and reproduction.

Natural Selection acts on _____ not on _____ because it does not change actual alleles.

Rare _____ alleles cannot be affected until the traits are showed.

This would mean that _____ individuals will have to mate to create homozygous _____ alleles.

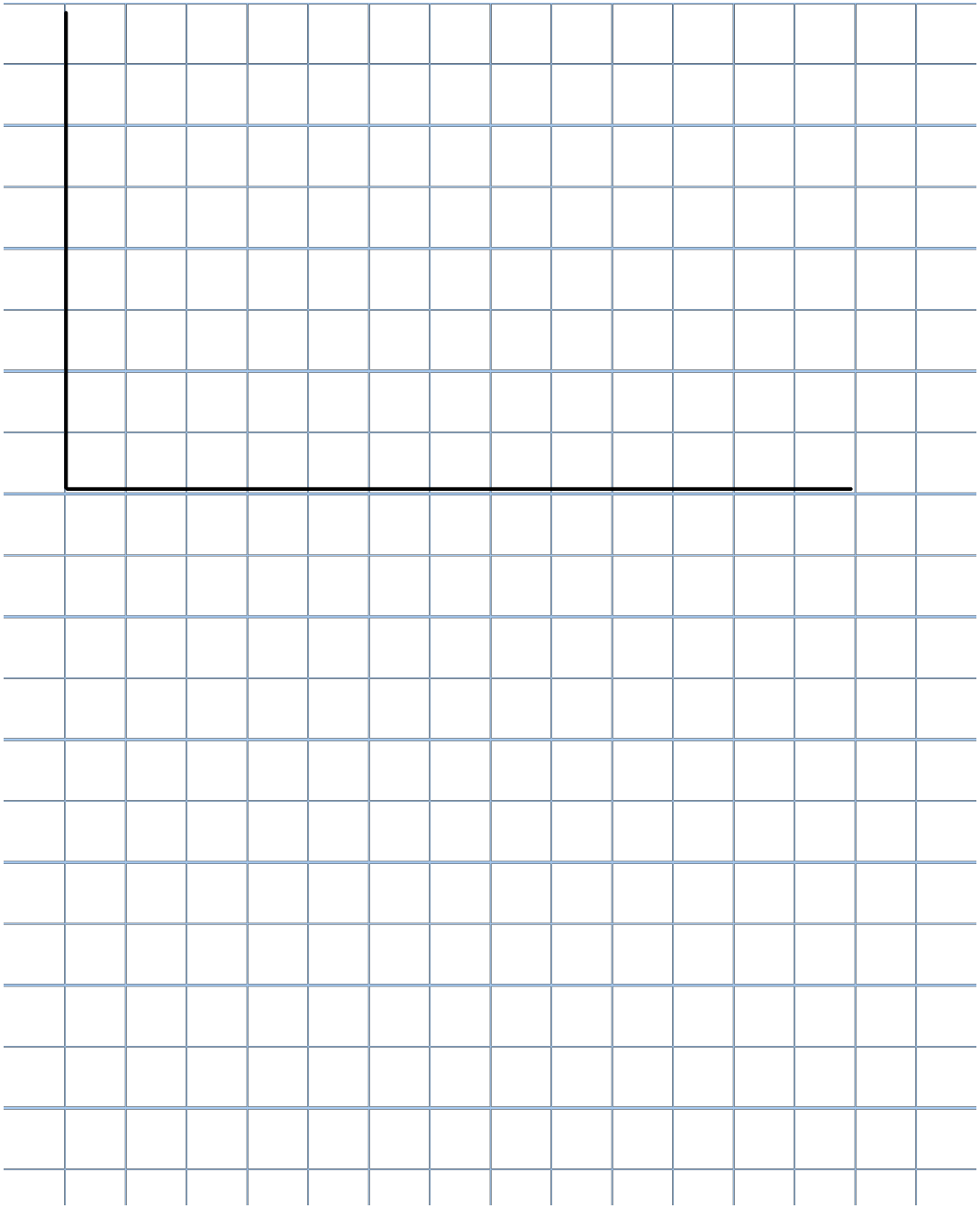
For example hemophilia has the potential of causing _____ from uncontrolled _____.

This would remove the homozygous person from the _____, but since heterozygotes do not _____ hemophilia they are not _____ and so that condition still exist.

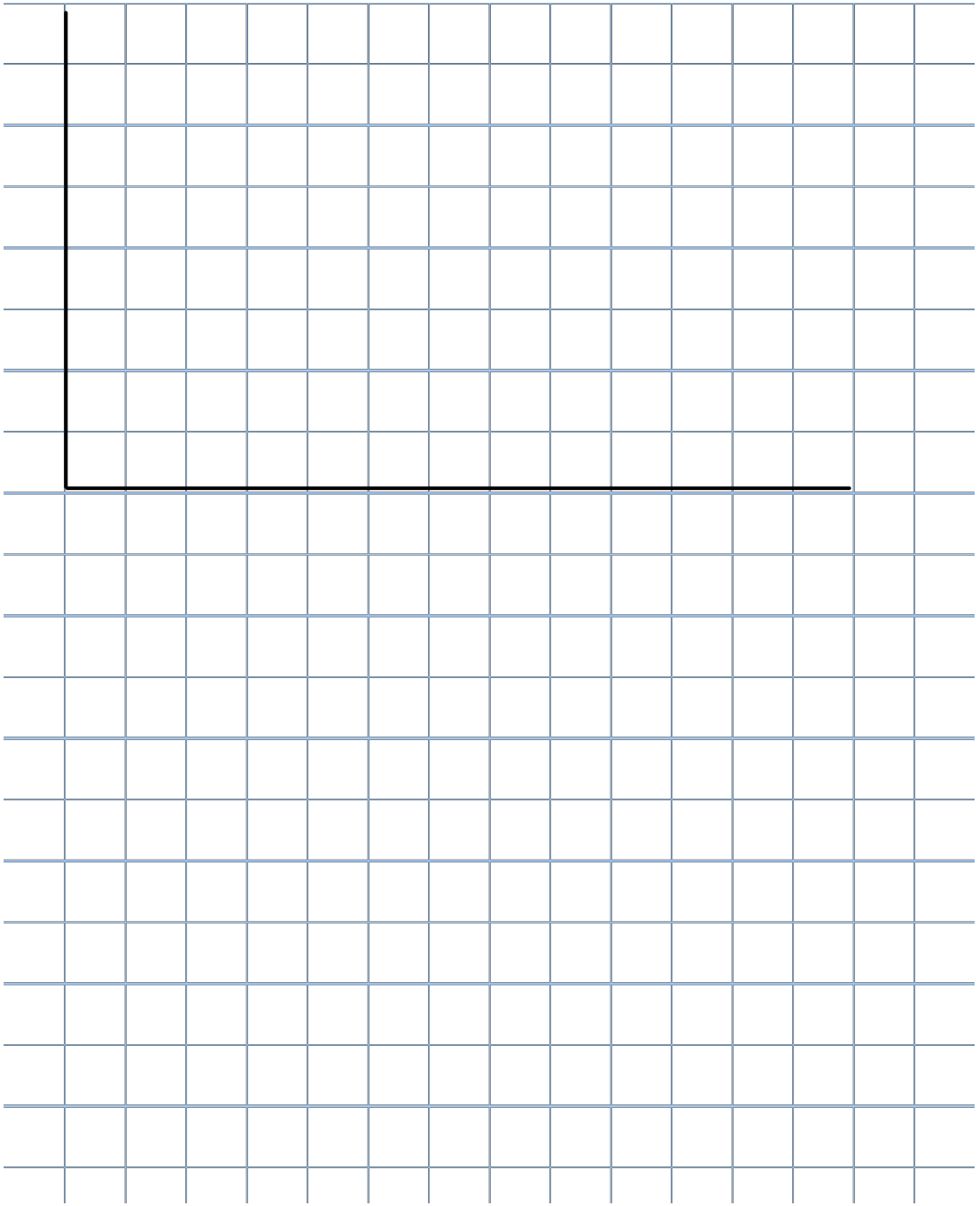
If a recessive allele is homozygous in only 1 out of 100 then ____ out of 100 will be heterozygotes. So _____ selection can only act on 1 out of every 19 _____ that carry the allele.

Polygenic _____- a trait that influenced by several genes like human _____ and hair color.

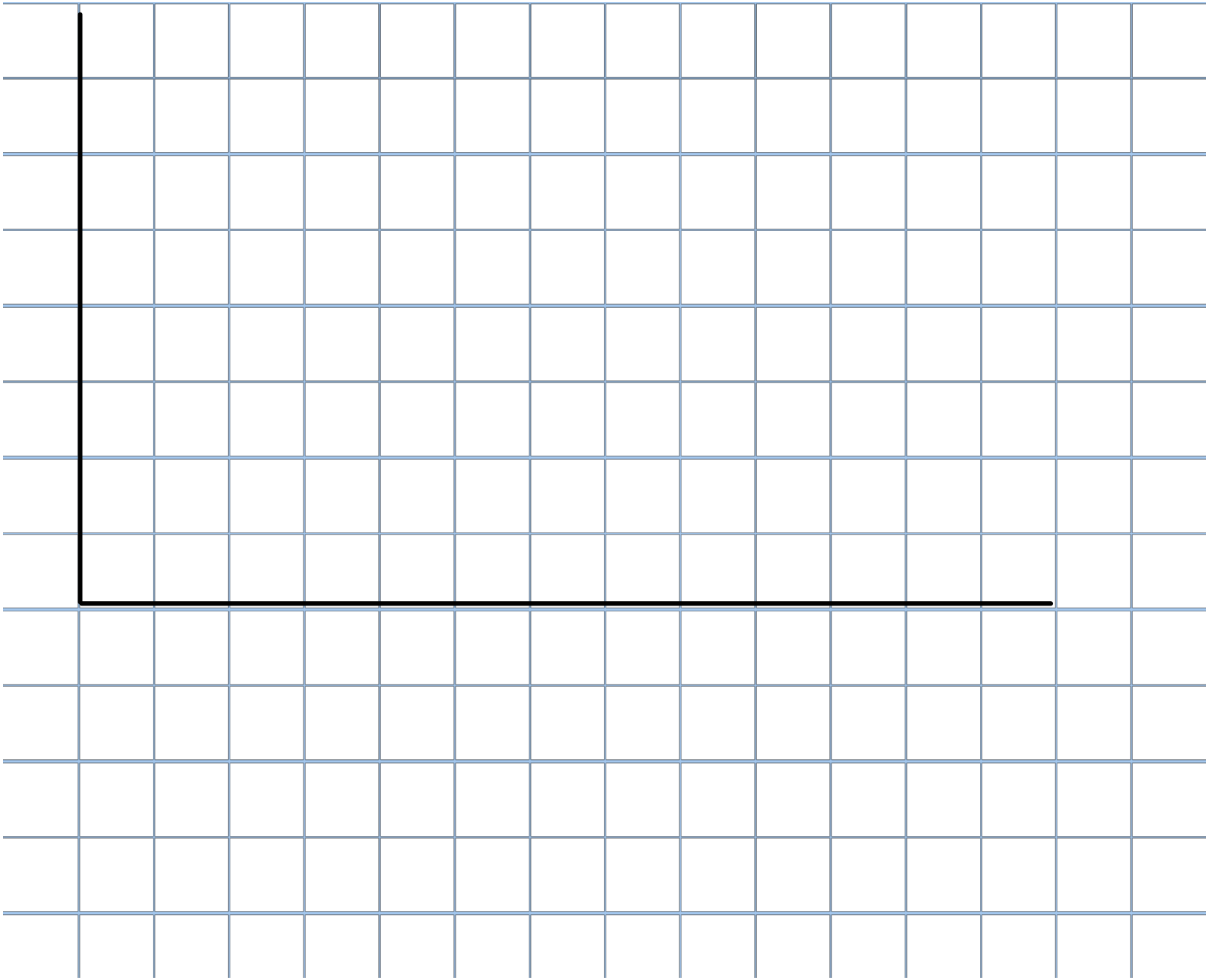
Polygenic traits exhibit a range _____ around an average.



Normal distribution----
hill-shaped _____ with the average as the summit.



When selection eliminates one _____ and the selection moves on one _____ this is called directional selection. This is also _____ by single-gene traits



When selection eliminates extremes at both ends of the ____, then the frequency of the intermediate increase. This is called _____ selection.