Topic _____ Date _____

2. Homozygous – both alleles are same
Heterozygous – both alleles are different

The pattern of inheritance of monogenic traits may occur in :

a) AUTOSOMAL DOMINANT INHERITANCE –

PARENTS –
Male – Genotype – Aa , (Affected male)
Female – Genotype – aa ; (Normal female)

♂ \ ♀	a	a
A	Aa	Aa
a	aa	aa

CHILDREN
Genotype – 1:1
Phenotype – 50% affected (50-normal)

b) AUTOSOMAL RECESSIVE INHERITANCE –

PARENTS –
Male – Genotype – Bb (carrier male)
Female – Genotype – Bb (carrier female)

♂ \ ♀	B	b
B	BB	Bb
b	Bb	bb

CHILDREN
Genotype – 1:2:1
Pheno" – 25% affected (25-normal, 50-carriers)

c) X-CHROMOSOME (SEX CHROMOSOME) – LINKED INHERITENCE

PARENTS –
Male – Genotype – XY (Normal male)
Female – Genotype – X^cX (carrier female)

♂ \ ♀	X	X^c
X	XX	XX^c
Y	XY	X^cY

CHILDREN
Genotype – 1:1:1:1
Phenotype – 50% males affected

GENETIC DISEASES IN HUMANS

Aneuploidy :– abnormal number of chromosomes
most common – trisomy – three copies of chromosome instead of normal two
Down's syndrome ← trisomy 21 → autosomal aneuploidy
trisomy 18 → Edward's syndrome.

EUGENICS :– science of improving human house race based on genetics.
objective – to limit the production of people who are unfit to live in the society.