Meiosis:

Homologous chromosomes:

Diploid:

Haploid:

Gamete:

Zygote:

Meiosis – The Process:

Two phases:

1) Meiosis I

   Reduction division:

2) Meiosis II

Interphase:
**MEIOSIS I:**

**Prophase I:**

- Synapsis:
  - Crossing over:
    - Chiasmata (chiasma):

  Results in:

**Metaphase I:**

- Metaphase plate:
- Independent assortment:

\[ 2^n \rightarrow 2^{23} = \]

**Anaphase I:**

- What separates?

- Sister chromatids are?

**Telophase I & Cytokinesis:**

- Results in:

  - Are these cells diploid or haploid?

**MEIOSIS II:**

- No interphase → No DNA replication
Prophase II:

Metaphase II:
What lines up on the metaphase plate?

Anaphase II:
What separates?

Telophase II & Cytokinesis:
Results in:
Are these cells diploid or haploid?

Spermatogenesis:

Oogenesis:
Before birth till puberty:
Puberty:
Fertilization:

Karyotype (Fig. 8.19):
Allows:
Accidents during meiosis:

**Nondisjunction** (Fig. 8.21 A & B):

If nondisjunction occurs, gametes result in either:

\[ n + 1 = \]
\[ n - 1 = \]

If a \((n + 1)\) or \((n - 1)\) gamete unites with a normal gamete, the resulting zygote (Fig. 8.22):

- **Trisomy** \((2n + 1)\):
- **Monosomic** \((2n - 1)\):

During which meiotic phase would nondisjunction occur?

What is trisomy 21?

Why is it believed that females tend to contribute more to chromosomal abnormalities than males?

Why is there a greater incidence of Downs babies with older females than younger ones?

Birth defects & cancer are the result of?

Chromosomal alterations include:
- Deletions:
- Duplications:
- Inversions:
- Translocations:

If nondisjunction occurs on the sex chromosomes, it can lead to:
- \(XXY\) = Klinefelter's syndrome => 1:2000
- \(XYY\) = Normal male => 1:2000
- \(XXX\) = Metafemale => 1:1000
- \(XO\) = Turner syndrome => 1:5000