

(a) Hydra

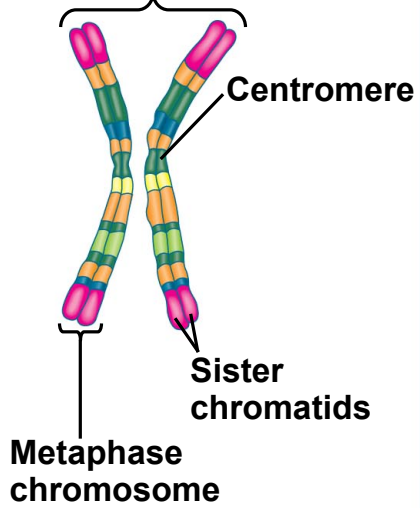
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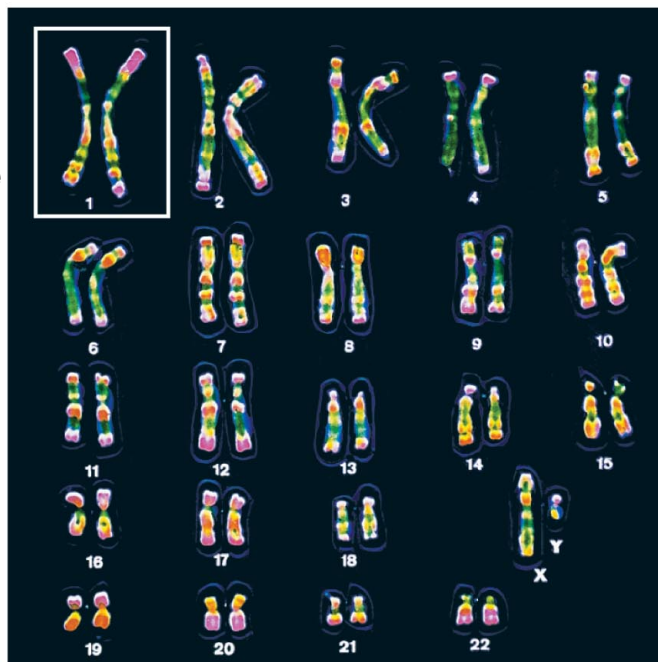
(b) Redwoods

1

Pair of homologous replicated chromosomes

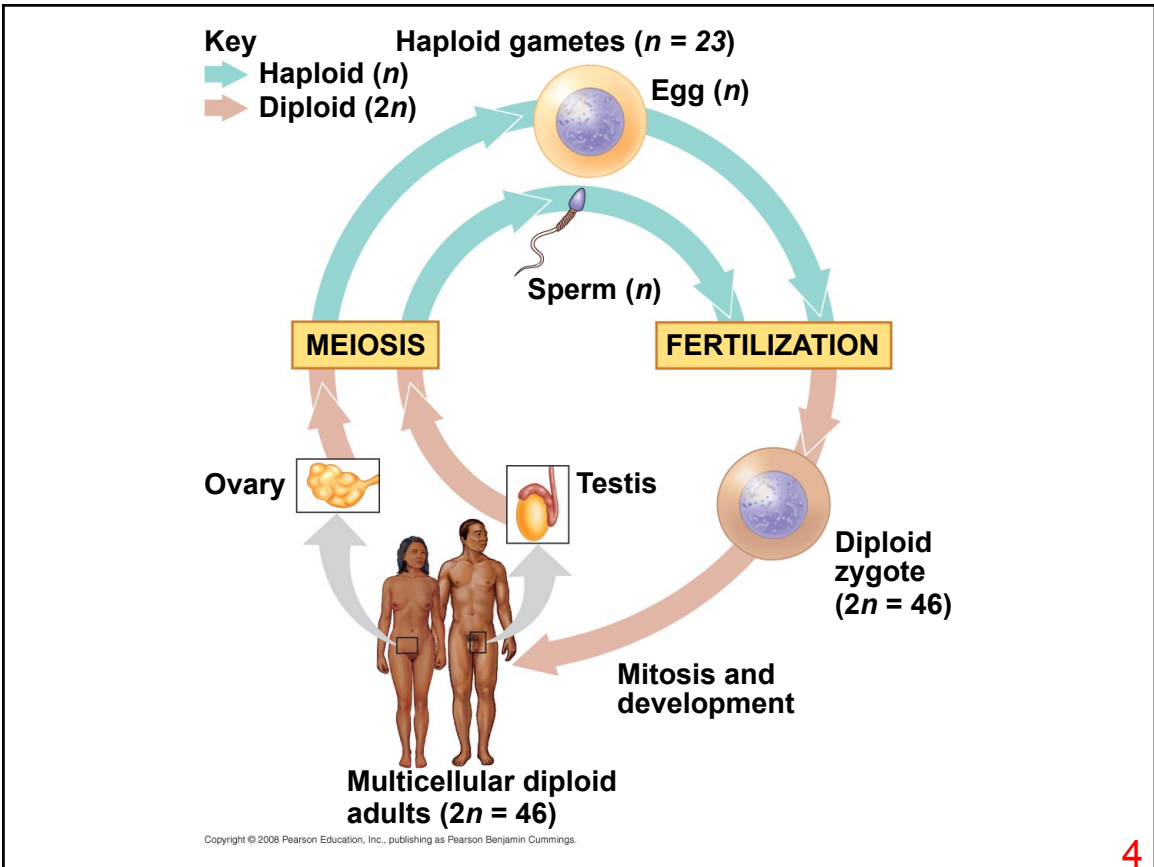
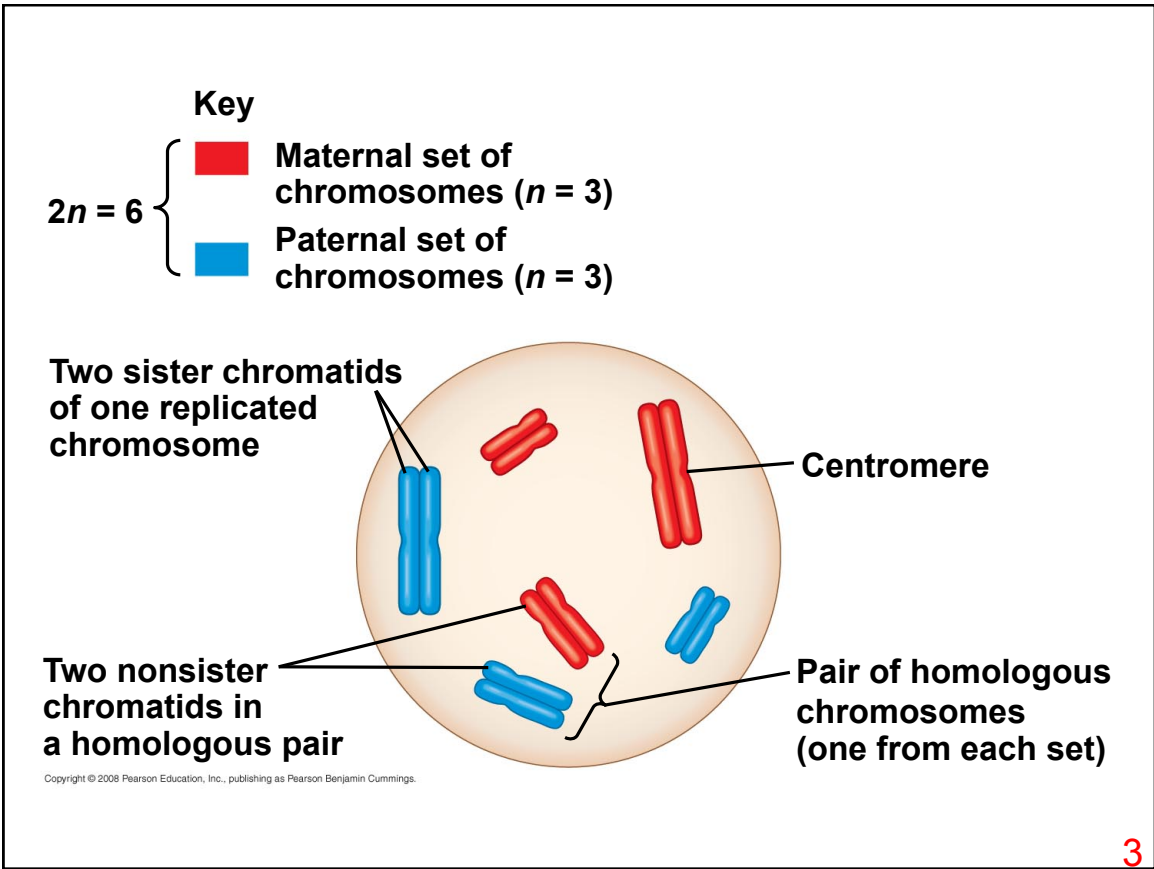


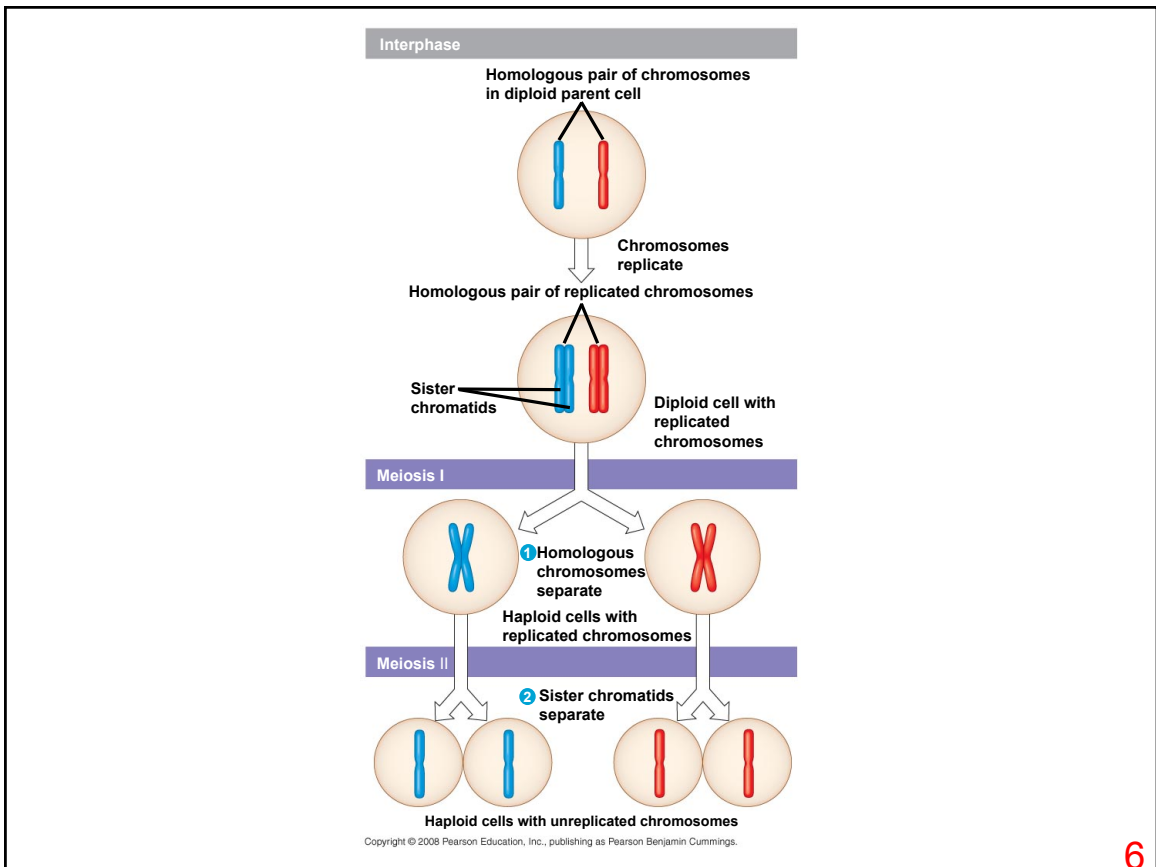
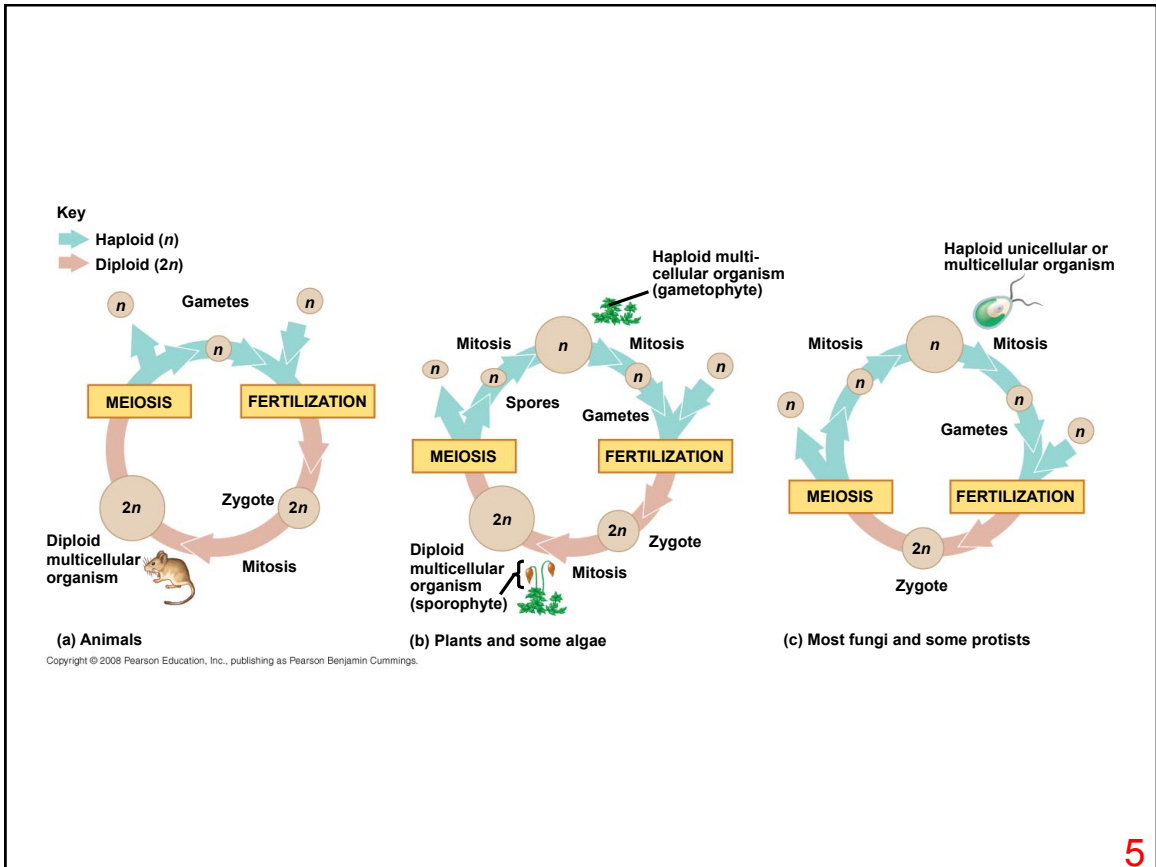
5 μ m

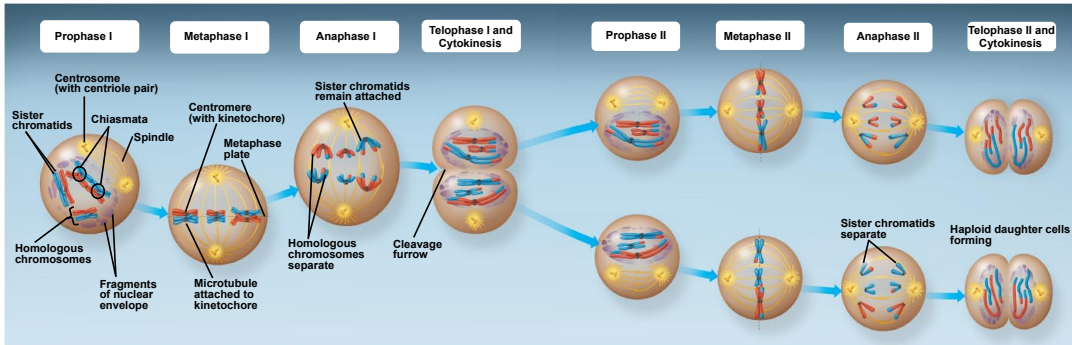


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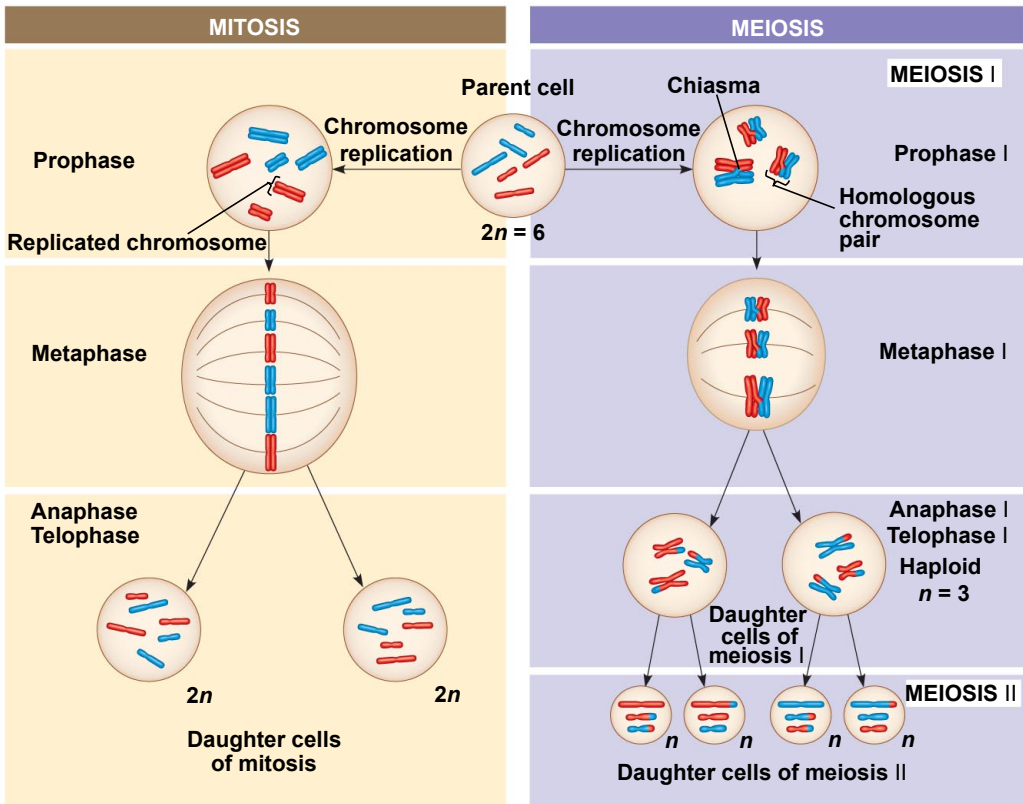
2







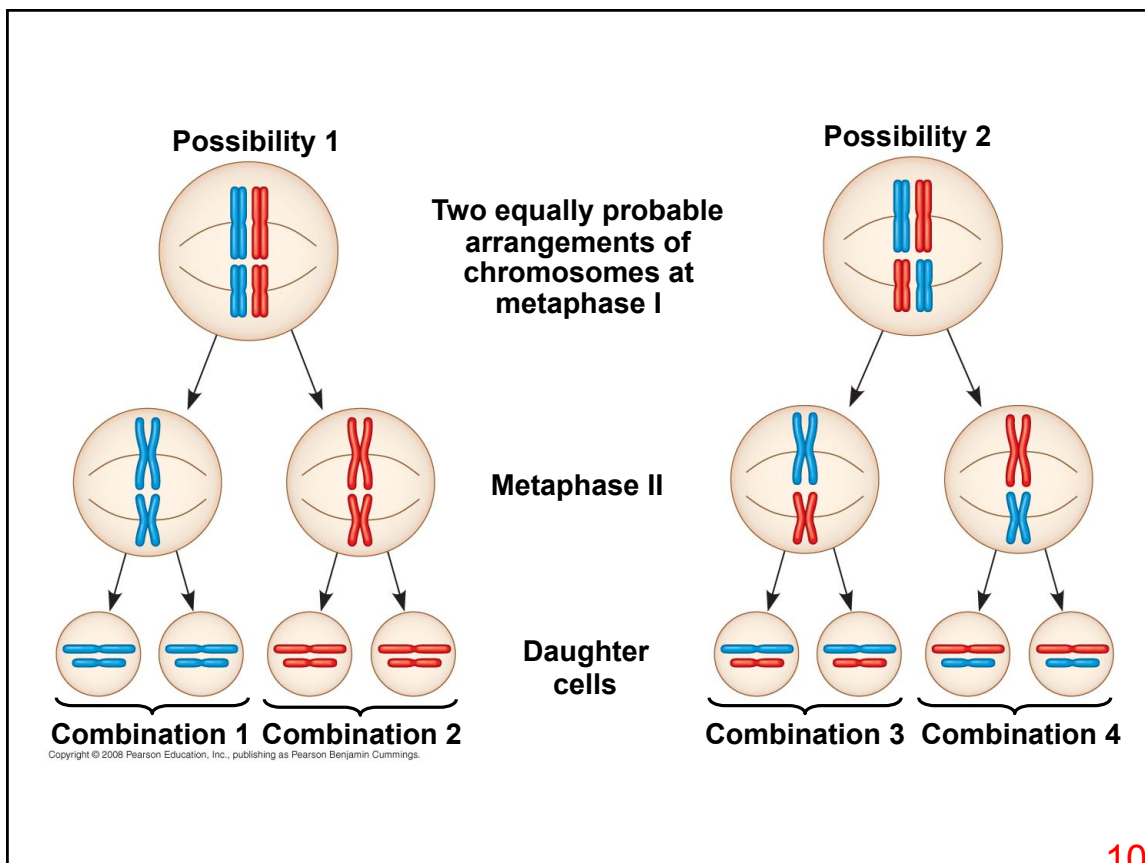
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SUMMARY		
Property	Mitosis	Meiosis
DNA replication	Occurs during interphase before mitosis begins	Occurs during interphase before meiosis I begins
Number of divisions	One, including prophase, metaphase, anaphase, and telophase	Two, each including prophase, metaphase, anaphase, and telophase
Synapsis of homologous chromosomes	Does not occur	Occurs during prophase I along with crossing over between nonsister chromatids; resulting chiasmata hold pairs together due to sister chromatid cohesion
Number of daughter cells and genetic composition	Two, each diploid ($2n$) and genetically identical to the parent cell	Four, each haploid (n), containing half as many chromosomes as the parent cell; genetically different from the parent cell and from each other
Role in the animal body	Enables multicellular adult to arise from zygote; produces cells for growth, repair, and, in some species, asexual reproduction	Produces gametes; reduces number of chromosomes by half and introduces genetic variability among the gametes

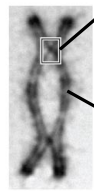
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**Prophase I
of meiosis**

**Pair of
homologs**

**Nonsister
chromatids
held together
during synapsis**



Chiasma

Centromere

Anaphase I

Anaphase II

**Daughter
cells**

Recombinant chromosomes

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