Chapter 6 Lesson 2 Part 2

Sexual Reproduction and Meiosis

SPI 0707.4.1

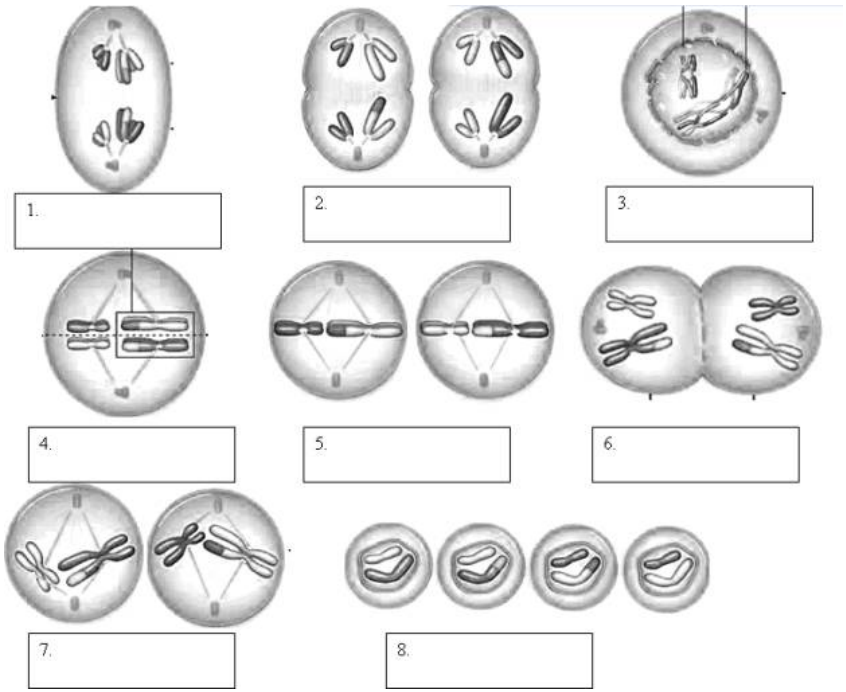
Classify methods of reproduction as sexual or asexual.

SPI 0707.1.4

Sequence a series of diagrams that depict chromosome movement during cell division.

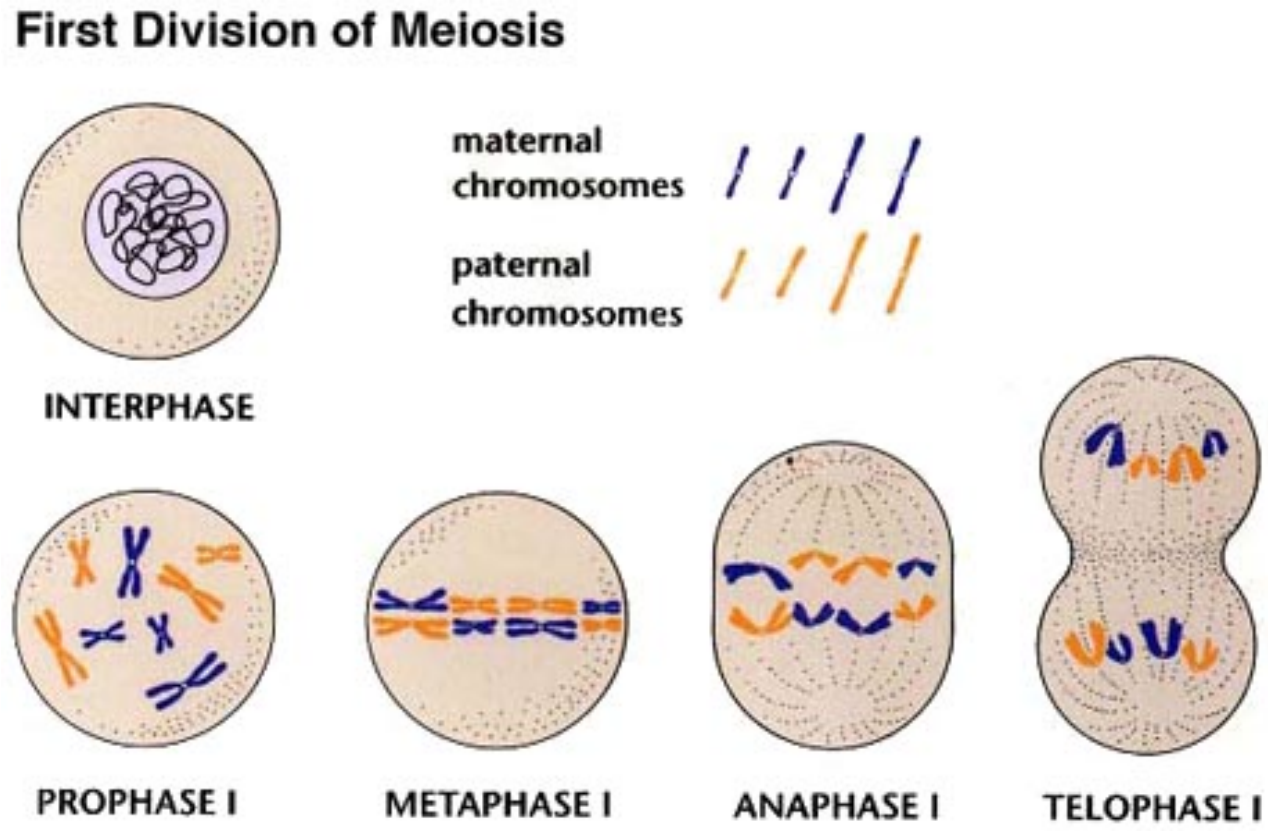
What mastery looks like

Label the following pictures:



Meiosis and sex cells

- During meiosis, two divisions of the nucleus occur.
- These divisions are called meiosis I and meiosis II.
- Draw these diagrams with the appropriate tab.



Meiosis 1

- Interphase:
  - the cell replicates its chromosomes
  - each chromosome has two sister chromatids held together by a centromere

- Prophase 1:
  - chromosomes coil up and a spindle forms
  - homologous chromosomes come together matched gene by gene forming a tetrad
  - Crossing Over may occur when chromatids exchange genetic material
  - this occurs two or three times per pair of homologous chromosomes
  - Crossing Over results in new combinations of alleles on a chromosomes

- Metaphase 1:
  - the centromere of each chromosome becomes attached to a spindle fiber
  - the spindle fibers pull the tetrads to the equator of the spindle
  - homologous chromosomes are lined up side by side as tetrads

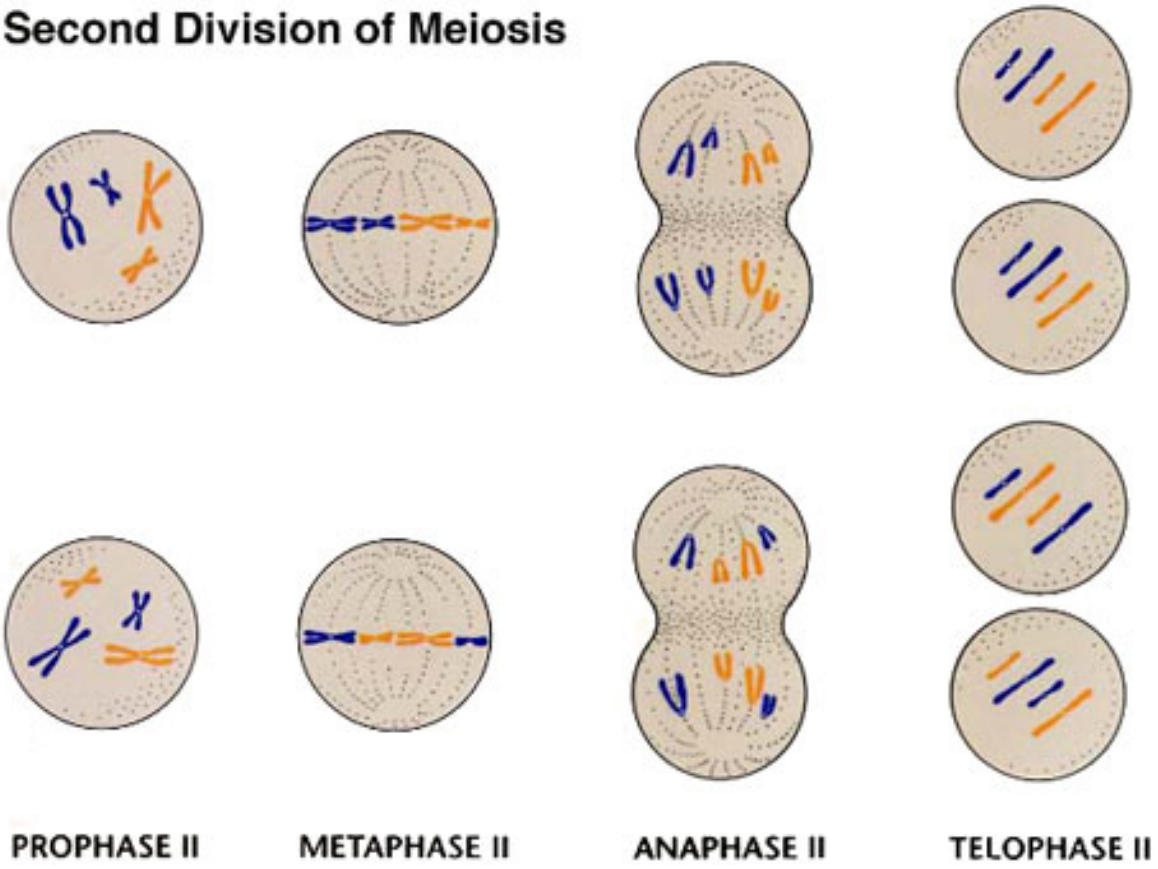
Meiosis I

- Anaphase 1:
  - homologous chromosomes separate and move to opposite ends of the cell
  - centromeres do not split
  - this ensures that each new cell will receive only one chromosome from each homologous pair

- Telophase 1:
  - the spindle breaks down and the chromosomes uncoil
  - the cytoplasm divides to yield two new cells
  - each cell has half the genetic information of the original cell because it has only one homologous chromosome from each pair

Meiosis and sex cells

- During meiosis, two divisions of the nucleus occur.
- These divisions are called meiosis I and meiosis II.
- Draw these diagrams with the appropriate tab.



Meiosis II

- Prophase II:
  - a spindle forms in each of the two new cells and the fibers attach to the chromosomes

- Metaphase II:
  - the chromosomes are pulled to the center of the cell and line up randomly at the equator

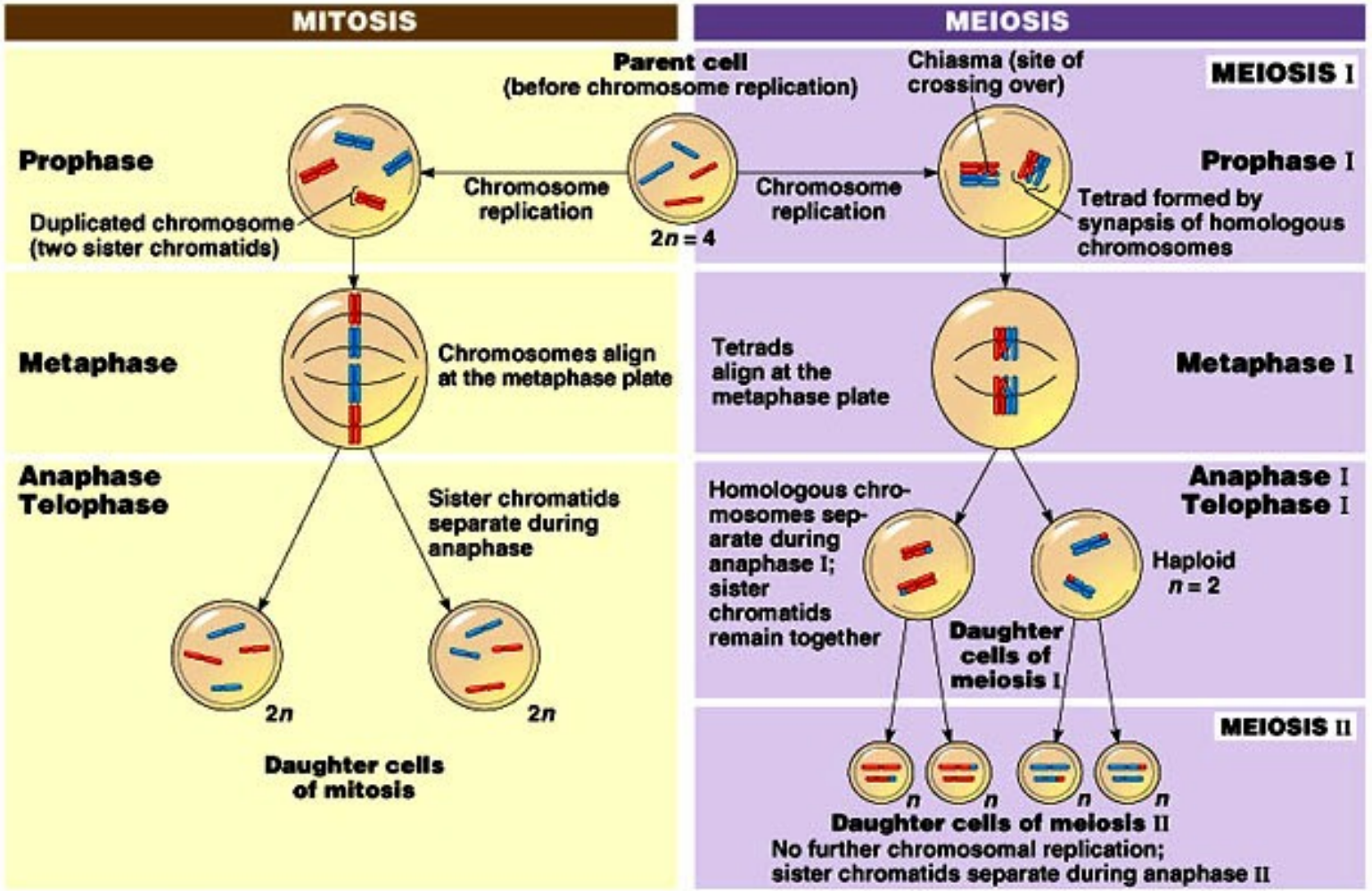
- Anaphase II:
  - the centromere of each chromosome splits -the sister chromatids separate and move to opposite poles

Meiosis II

- Telophase II:
  - nuclei reform
  - the spindles break down -the cytoplasm divides
  - identical to mitosis (Meiosis II)

- What Meiosis produces:
  - four haploid sex cells from one original diploid cell
  - each haploid cell contains one chromosome from each homologous pair
  - haploid cells will become gametes transmitting genes to offspring

MITOSIS VS MEIOSIS



Meiosis

- https://www.youtube.com/watch?v=rB_8dTuh73c

Summary of meiosis

Meiosis I	2 cells form
Meiosis II	Both cells form 2 cells

Each of the cells has one-half the number of chromosomes in its nucleus that was in the original Nucleus.

Mistakes in meiosis

- Meiosis occurs many times in reproductive organs.
- Mistakes can happen. In plants, mistakes are common. In animals, they are less common.
- These mistakes can produce sex cells with too many or too few chromosomes.
- Sometimes zygotes produced from these sex cells die.
- If the zygote lives, every cell in the organism that grows from that zygote usually will have the wrong number of chromosomes.
- These organisms may not grow normally.

Exit Ticket

- Complete mitosis/meiosis venn diagram.