STATION 1
VOCABULARY

Make sure you know what each of these words mean. If you know, check the box. If you don't, ask someone in your group and write down the definition

- ☐ Amino acid — Building block for protein
- ☐ Asexual reproduction — Type of reproduction that requires only one parent
- ☐ Binary fission — Type of asexual reproduction that occurs in bacteria
- ☐ Blastocyst — A set of cells that is created through mitosis after a zygote is formed
- ☐ Budding — Type of asexual reproduction where a cell grows a bud that pinches off to be a separate cell
- ☐ Cell Cycle — A series of events for cell reproduction (interphase, mitosis, cytokinesis)
- ☐ Centromere — Links together a pair of sister chromatids
- ☐ Chromatid — One half of a replicated chromosome
- ☐ Chromatin — Condensed form of DNA
- ☐ Chromosome — Condensed form of chromatin (a long DNA molecule)
- ☐ Daughter cell — Cells that result from the division of a parent cell
- ☐ Diploid — contains paired chromosomes
- ☐ DNA — a molecule that contains the genetic code for organisms
- ☐ Embryonic stage — first 8 weeks of an offspring developing after fertilization
- ☐ Fertilization — When the male & female gametes fuse their nuclei together to create a zygote
- ☐ Fetal stage — Last 30 weeks of offspring development
- ☐ Fragmentation — Type of asexual reproduction where an organism breaks into 2+ parts to develop a new individual
- ☐ Gametes — An organism's reproductive cells
- ☐ Grafting — Type of artificial vegetative propagation
- ☐ Haploid — Has a single set of chromosomes (half the # of regular cells)
- ☐ Meiosis — Type of cell division to produce gametes
- ☐ Mitosis — Type of cell division to produce identical daughter cells
- ☐ Nucleotide — Building block of DNA
- ☐ Parent cell — A cell that can divide into 2+ daughter cells
- ☐ Sexual reproduction — Type of reproduction that requires 2 parents
- ☐ Spindle fibre — Structure in a cell used to move chromosomes
- ☐ Spores — Type of reproductive cell that can develop into a new individual
- ☐ Vegetative Propagation — Type of asexual reproduction where the roots, stems, or leaves of an existing plant grows into a new plant
- ☐ Zygote — A cell that is formed after a sperm cell & egg cell fuse their nuclei together "1st cell of a new offspring"

STATION 2
DNA

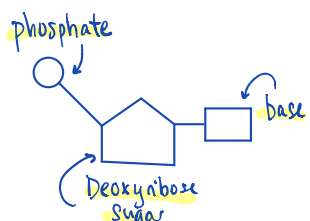
What does the acronym 'DNA' stand for?

Deoxyribose Nucleic Acid

What is the complimentary base pair for the following strand of DNA?

A C T G A T G G C G A T T A A T C G C
T G A C T A C C G C T A A T T A G C G

Draw and label a nucleotide.



What is the role and purpose of DNA?

- Stores the genetic information of an organism
- The code is used to create amino acids & proteins

STATION 3
ASEXUAL REPRODUCTION

1. What are the advantages of asexual reproduction?
   - Only one parent needed
   - It requires less energy
   - It's fast
2. What are the disadvantages of asexual reproduction?
   - It creates no genetic variation
     ↳ less diversity within a population
3. Identify how the following organisms are able to asexually reproduce:
   a. Bacteria: Binary fission
   b. Yeast: Budding
   c. Starfish: Fragmentation
   d. Mold: Spore formation
   e. Strawberries: Vegetative propagation
4. Describe what would happen to a population that reproduces through asexual reproduction if a new disease were to enter into the population.
   The population may not be able to fight off the disease
   ↳ could result in the entire population to be wiped out as they are all genetically identical

STATION 4
CELL CYCLE

1. Identify the three main stages of the cell cycle.
   Interphase
   Mitosis
   Cytokinesis
2. Identify which phase of the cell cycle each of the following statements is describing:
   a. DNA condenses into chromosomes
      Prophase
   b. Cell grows and develops
      Interphase
   c. Nuclear membrane reappears around the chromosomes
      Telophase
   d. DNA is copied
      Interphase
   e. Chromosomes line up across the middle of the cell
      Metaphase
   f. Duplicated chromosomes are pulled apart to the opposite ends of the cell
      Anaphase

STATION 5
SEXUAL REPRODUCTION

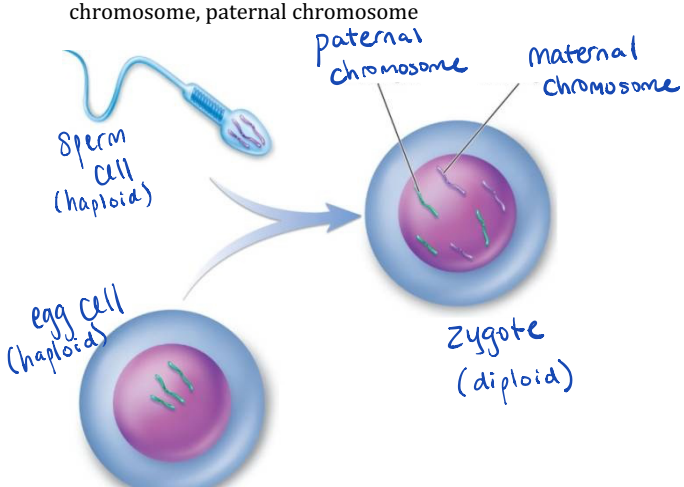
1. Determine how many chromosomes are in the gametes and body cells of the following organisms:

Organism	Number of chromosomes in the gametes	Number of chromosomes in the body cells
Dog	39	78
Housefly	6	12
Cow	30	60
Deer	35	70

2. What process must cells undergo in order to produce gametes?

   Meiosis

3. Label the following diagram with the following terms: sperm cell, egg cell, zygote, haploid, diploid, maternal chromosome, paternal chromosome



STATION 6
MEIOSIS

1. Which stage of meiosis does each of the following statements describe?
   a. Nuclear membrane starts to disappear and homologous chromosomes pair

      Prophase I

   b. DNA condenses into chromosomes

      Prophase I

   c. Two nuclei are formed

      Telophase I

   d. Chromosomes separate and move to opposite ends of the cell

      Anaphase II

   e. Homologous chromosomes line up in two lines in the middle of the cell

      Metaphase I

   f. DNA exists as chromosomes but not as homologous pairs

      Prophase II

2. In order for chromosomes to move, they need help from structures in the cell.
   a. Which structure helps these chromosomes move in the cell?

      Spindle fibres

   b. Where do these structures attach to on the chromosome?

      On the chromosome's centromere

3. What is the end result of meiosis?

   4 different haploid gametes