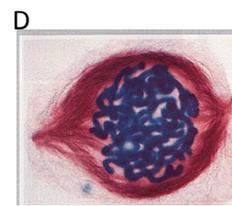
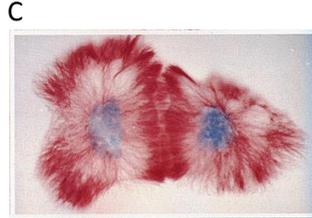
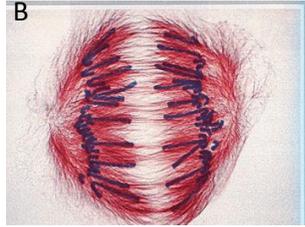
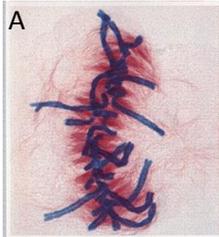


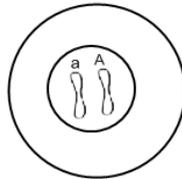
BIOLOGY SEMESTER 2 REVIEW

The Cell Cycle

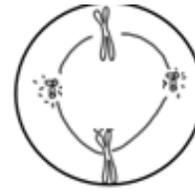
1. The cell cycle of a normal has 4 major stages (G1, S, G2 and mitosis). What is the cell doing in each of these phases?
2. Sometimes cells enter a phase called G0. What happens here?
3. A) Which of the 4 phases of the cell cycle are considered part of interphase? B) In one sentence summarize what happens in interphase.
4. What kinds of cells result from **mitosis**? How much DNA do they have compared to the original parent cell?
5. The human cells below are going through mitosis. A) Which phase of mitosis is each of the 4 cells in? B) How many chromosomes are there in each cell?



6. Given that the parent G1 cell looks like this: mitosis or meiosis.



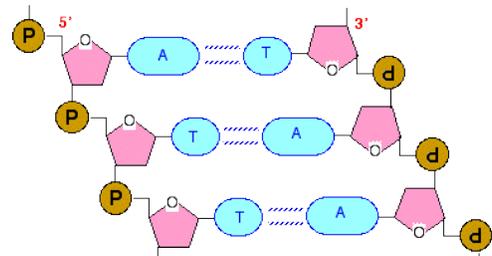
Determine if the cells below are going through



7. Describe crossing over. When is it most likely take place?
8. Describe a nondisjunction.
9. How would a karyotype of a **boy** with **trisomy 21** look different than a normal girl karyotype?
10. Compare and contrast a human somatic cell and gamete?

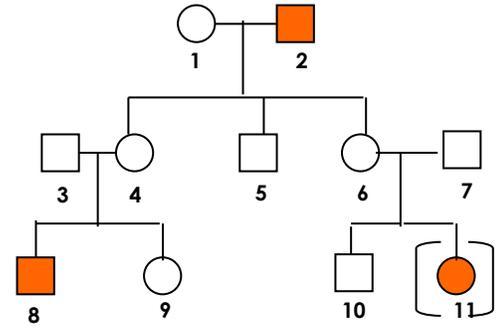
DNA and RNA structure

11. Why does the cell need both DNA and RNA?
12. Compare and contrast the structure and function of DNA and RNA.
13. DNA and RNA are both made of repeating monomers called nucleotides. What are the three parts to a nucleotide?
14. To the right is a picture of DNA. Label the following:
 - a. Sugar
 - b. Phosphate
 - c. Base
 - d. Hydrogen bond
 - e. Covalent bond
15. The leading strand of DNA reads TAC GGT GTA AGT
 - a. How will the mRNA read?
 - b. How will the tRNA read?
 - c. What will the amino acid sequence be?(you will need to use a codon chart)
16. Protein synthesis happens in two steps: Transcription and Translation. Describe what happens in each step. Be sure to talk about DNA, mRNA, complementary base pairs, RNA polymerase, ribosomes tRNA, codons, anticodons and amino acids.



Genetics

- What is a genotype? What is a phenotype? How are they related?
- In a rabbits, brown fur (B) is dominant over white fur (b). If two rabbits heterozygous for brown fur were crossed, what percent of their offspring would you expect to be white?
- In a cross between a homozygous brown bunny and a white bunny, what percent would you expect to be white?
- The family tree to the right traces a still unnamed genetic disorder through a family. Based on the patterns you see in the tree, is the genetic disorder dominant or recessive? Explain.
- Colorblindness is an **x-lined** trait that is **recessive**. What are the possible genotype for A) a colorblind female? B) a colorblind male C) a normal male D) a normal female
- How would you write the genotype of a male that has an X-linked dominant trait? Are this man's sons or daughters more likely to have such a disorder? Explain.
- What are the possible genotypes for the following blood types?
 - A blood
 - B blood
 - AB blood
 - O blood
- Is it possible for a mother who has AB blood to have a child with O blood? Explain.
- What is gene linkage? Why does it explain how some traits (like freckles and red hair) are more often inherited together?
- What is the difference between incomplete dominance and co dominance?
- Hair color and eye color are examples of polygenic inheritance. What is polygenic inheritance? Why can it lead to so many different phenotypes?



Evolution

- Define evolution.
- Describe two methods used to establish evolutionary relationships. In other words, how could you determine if two species are closely related?
- Which type of traits can and cannot be passed on to offspring?
- Give an example of three adaptations to an environment.
- Describe how genetic variation arises in a population. How do new genes and traits come about?
- Describe the process of evolution through natural selection. Include the ideas of competition, mutation, and inheritance in your response.
- Give an example of natural selection.
- Compare and contrast natural selection and artificial selection.
- Give an example of how an environmental change could cause evolution.

Body Systems

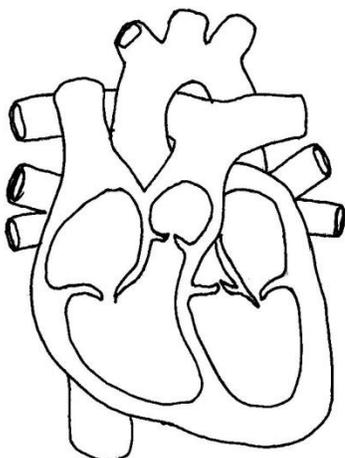
The picture to the right is of your respiratory system. Use the words below to correctly label the picture.

- Bronchial tube
- Pharynx

- trachea
- alveoli

c. Larynx

f. Capillaries



- What is the function of the alveoli?
- What is the function of the capillaries?
- What are the major structures of the excretory system?
- What are the major functions of the excretory system?
- What is a nephron?
- Label and color code the heart in the diagram below. Use red for oxygenated blood and blue for deoxygenated blood. Draw arrows to show how blood flows.

