# Topic 1.1 Test (Science 10)

## SUMMARY:

Concepts 1-4 in the textbook (can skip concept 5)

## LEARNING MAP CRITERIA:

| Relevance | Extending | Proficient | Developing | Emerging |
|---|---|---|---|---|
| ☑ | Describe how the structure of DNA makes it well suited for DNA replication.<br><br>List some similarities and differences between RNA and DNA. | Describe the process and purpose of DNA replication. | Label the structures and components of DNA (double helix, nucleotide, nitrogenous base, phosphate group, sugar, adenine, thymine, cytosine, guanine).<br><br>Given the code of a template strand of DNA, write the complementary strand. Recognize that complementary nitrogenous bases are connected by hydrogen bonds.<br><br>Differentiate between chromatin and chromosomes. | Understand that nucleic acids (DNA and RNA) contain the information for all living things, and that it is inherited by future generations.<br><br>Recognize that DNA is located in the cell nucleus. |
| ☑ | Explain (accurately, and in detail) how DNA is transcribed into mRNA and translated into amino acids.<br><br>Describe how the structure and location of DNA is linked to the processes of transcription and translation. | Identify and differentiate between genes and alleles, with examples.<br><br>Explain the relationship between genes, alleles, proteins, and traits.<br><br>Given the code of a template strand of DNA, write the mRNA code and the amino acid sequence with its associated protein. | Define and recognize examples of: gene, allele, trait, protein.<br><br>Recognize that DNA codes for the amino acid sequence in proteins. | Recognize that DNA is involved in determining traits. |
| | ~~Utilize understanding of chromosomes to draw: chromosomes that are not homologous, chromosomes that are homologous, missing parts of an incomplete karyotype.~~ | ~~Explain how homologous chromosomes are alike and different. Identify homologous pairs of chromosomes from a drawing.~~ | ~~Determine the number of chromosomes in a karyotype.~~<br><br>~~Use the karyotype to determine the sex of an individual.~~<br><br>~~Define autosome and sex chromosome.~~ | ~~Recognize that human sperm/egg cells have 23 chromosomes each and body cells have 46 chromosomes each.~~<br><br>~~Describe the processes of mitosis, meiosis, and fertilization in terms of DNA quantity. (mitosis: same; meiosis: DNA halved; fertilization: DNA doubled)~~ |

## VOCABULARY:

*(Disclaimer: This is not meant to be an exhaustive list. Vocabulary words may appear on the test that are not in this list.)*

- DNA
- Nucleotide
- Adenine
- Thymine
- Guanine
- Cytosine
- Uracil
- Double helix
- Chromatin
- Chromosome
- Karyotype
- Genome
- Gene
- Allele
- DNA replication
- Transcription
- Translation
- mRNA
- tRNA
- rRNA
- Nucleus
- Ribosome
- Codon
  - Start codon
  - Stop codon
- Anti-codon
- Amino Acid
- Protein

## PRIMARY STUDY MATERIAL:

- Topic 1.1 Powerpoint (slides 1-62)
- Topic 1.1 in textbook (pgs 8-21)
- Topic 1.1 Checking Your Understanding Questions (pg 21 in textbook; answer key on website)
- Amoeba Sisters videos:
  - DNA, Chromosomes, Genes, and Traits
  - Alleles and Genes (stop at 4:35)
  - Protein Synthesis
- DNA Replication Worksheet
- Transcription and Translation Worksheets