Topic 1.1 Test (Science 10)

**Summary:**

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

**Learning Map Criteria:**

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| --- | --- | --- | --- | --- |
| Relevance | Extending | Proficient | Developing | Emerging |
| ☑ | Describe how the structure of DNA makes it well suited for DNA replication. 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).Given the code of a template strand of DNA, write the complementary strand. Recognize that complementary nitrogenous bases are connected by hydrogen bonds. 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. 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.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. Explain the relationship between genes, alleles, proteins, and traits. 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. 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.~~~~Use the karyotype to determine the sex of an individual.~~ ~~Define autosome and sex chromosome.~~  | ~~Recognize that human sperm/egg cells have 23 chromosomes each and body cells have 46 chromosomes each.~~~~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