

Topic 1.1: DNA is the foundation for the unity and diversity of living things.**Directions:**

This topic begins on page 8. It is a good practice to read the chapter first before attempting to answer the questions in this worksheet. Be aware that not every possible test question is covered by this worksheet. Any material in the chapter may appear on a test. Answer each question as completely as you can. Any unfamiliar bold words in the chapter are defined in the margins nearby. Be sure to know the definitions!

Starting Points:

1. Turn to page 9 in the text book, and choose one of the Starting Points questions to answer

Key Terms:

2. The following words can be found in BOLD throughout this topic and their definitions will appear in the margin. Write their definitions below.

DNA

Complementary bases

Chromosome

Allele

Population

Nucleotide

Protein

Homologous chromosome

Karyotype

Nitrogenous base

Chromatin

Gene

Species

3. DNA is genetic material that _____ information and is responsible for _____ amongst all living things.
4. What are the two types of nucleic acids? What are they made of?
5. What three things are nucleotides made up of?

6. What forms the sides of the DNA “ladder?” What forms the rungs?

7. Suppose you have a short sequence of DNA like below. Fill in the other half of each pair.

A	T	G	G	C	T

8. Nitrogenous bases that always bond together are called _____ bases.

9. Describe the function of DNA.

10. The _____ is the complete DNA sequence for an organism. For a human genome, that means about three billion _____.

11. During most of the cell cycle, _____ exists as strands of _____. Later, the chromatin condenses into distinct _____ chromosomes .

12. What are chromosomes? How many pairs does a human have?

13. How do sex chromosomes determine the genetic sex of an individual?

14. What are the remaining 22 pairs of chromosomes called?
15. Chromosomes that are similar in features like length are called _____ and are not identical. Each contains _____ or sections of DNA that contain genetic information on _____ of specific _____.
16. Different forms of the same genes account for differences in _____.
17. Describe how a karyotype is created.
18. Describe the process of DNA replication.
19. How do species diversity, genetic diversity and ecosystem diversity differ?

20. _____ are responsible for the variation among individuals in a _____. This genetic diversity in a population is a result of _____ to genes in a species. As well, genetic diversity in a _____ is always greater than in a population because separate _____ usually have different types of _____.
21. New species are formed from genetic _____ as well as other factors.
22. How many species have scientists identified on Earth? How many are there estimated to be?
23. The largest scale biodiversity is _____ diversity. This is the variety of ecosystems in the _____. The two components of a biosphere are _____ and _____ factors.
24. What are biotic factors?
25. What are abiotic factors? List some examples of abiotic factors.

Name:

Date:

/40

%

Student Inquiry:

You can choose to skip this student inquiry question and write the unit test instead. If you do choose to do the student inquiry, you don't need to write the unit test as the inquiry will count as your mark for the unit.

1. Read about the Human Genome Project on page 19. The very last sentence on that page says that the HGP raises many social, legal, and ethical questions. Research what those social, legal, and ethical questions are and present your findings in a one page report. Include a title page, and be sure to cite your sources.

Marking Rubric

Area	Beginning (C-) 0-5 marks	Developing (C—C+) 6-7 marks	Mastering (B) 8 marks	Extending (A) 9-10 marks
Inquiry Question	Does not meet criteria, unclear question, information does not support question.	Minimally meets criteria, somewhat clear question, some information not related to question.	Meets all criteria, thoughtful question, sufficient information relating to question, shows insight.	Meets all criteria with a clear, concise and thoughtful question, abundance of information and material related to question. Thought-provoking and insightful.
Research Skills	Used few or no sources, little evidence or examples, did not cite sources.	Used minimal sources, some evidence or examples, citations incomplete.	Used several reliable sources, used appropriate evidence and examples, cited all sources.	Used an abundance of reliable primary and secondary sources, used interesting and insightful supporting evidence and examples, properly cited all sources.
Time management and organization	Time not used well. Easily distracted. Work is disorganized and difficult to understand.	Time could have been used more efficiently. Sometimes distracted. Work is somewhat disorganized.	Managed time well. Mostly on task. Work is organized and understandable.	Managed time very well. Always on task and helpful to others. Work is well organized, understandable, and thoughtful.
Presentation of information and creativity	Presentation is choppy and disjointed, has little or no flow. Shows little or no creativity.	Concepts and ideas are loosely connected, lacks clear transitions. Some originality present.	Most information presented in logical sequence, transitions from idea to idea are adequate. Presented in a creative way that shows personal interest.	Information presented in a clear, logical, and thoughtful way. Transitions smoothly from idea to idea. Presented with originality and creativity that shows a deep personal connection.