Journey Into Human DNA

Name:_____ Date:_____ Block:_____

Visit the following website to launch the interactive - http://www.pbs.org/wgbh/nova/body/journey-into-human-dna.html

Carefully read each slide to answer the questions below. Advance to the next slide by clicking the 

Slide 1 – Body

1. About **how many** cells does the human body contain? _____

2. Which type of human cell is the **exception**, and contains no nucleus and no DNA? _____

Slide 2 – Intestines

3. There are many different types of cells in the body, each with different functions. State the **functions** of the following types of cells:

Muscle cell - _____

Neuron - _____

Small Intestine cell - _____

Slide 3 – Cells

4. These cells and others in the body are _____ _____ of their parent cells. **How** were they formed? _____

5. What does it mean when cells *differentiate*? _____

6. The production of new types of cells is the **result** of what? _____

_____

Slide 4 – Nucleus

7. The nucleus acts as the cell's _____ _____.

8. What does the nucleus **regulate**? _____

_____

9. What is at the **heart** of the nucleus? _____

Slide 5 – The Human Genome

10. The human genome is comprised of _____ sets of _____ chromosomes, _____ chromosomes in all.

11. Each _____ contributes a set of chromosomes (to their child).

12. About _____ percent of the genome consists of sequences that don't code for proteins and have no known _____.

13. Within the rest of the genome are an estimated _____ genes.

Slide 6 – Chromosome

14. The chromosomes displayed in this interactive are in their most _____ state because they're about to _____.

15. Through what **process** do chromosomes (and cells) **divide**? _____

16. **Sketch** the chromosome in the space provided:

Slide 7 – Chromosome Banding

17. What do the dark bands of stained chromosomes indicate (show)? _____

_____

18. Each of the 23 chromosome types has a _____ banding pattern.

19. Scientists can _____ a chromosome based solely on its banding pattern.

Slide 8 – Gene

20. List two things that genes determine. _____

21. A single gene can range in length from as few as _____ DNA bases to as many as several _____.

Slide 9 – Chromatin Loops

22. About how much DNA is in the nucleus if you could **unravel** and stretch it out? _____

23. How can such a long molecule **fit** within the nucleus? _____

24. The coiling of chromatin causes the chromosome to resemble a _____.

Slide 10 – Chromatin Scaffold

25. What does *chromatin* refer to? _____

_____

Slide 11 – Nucleosome

26. What is a histone? _____

27. What is a nucleosome? _____

Slide 12 – Double Helix

28. Who was the **scientist** that took the famous photo 51 that helped James Watson and Francis Crick piece together the first accurate model of DNA? _____

29. What is "naked" DNA? _____

30. What does DNA's structure resemble? _____

Slide 13 – DNA Bases

31. List the four DNA bases in pairs: _____ pairs with _____

_____ pairs with _____

32. **Sketch** the bases shown on the slide:

Slide 14 – One Nucleotide

33. List the three parts of a **nucleotide**: _____, _____, _____

34. **Where** in the DNA "ladder" do the sugar and phosphate molecules occur? _____

Slide 15 – Molecular Structure

35. About how many **atoms** is a nucleotide made up of? _____

36. How many **sequences of bases** are in the human genome? _____