Go to:  http://learn.genetics.utah.edu/content/begin/tour/

Click on “What is DNA?” at the top and go through the animation. Answer the questions.

1) What is DNA?
2) The complete set of instructions for making a human being is found where?
3) What do genes tell the cell to make?

Click on “What is a gene?” at the top and go through the animation. Answer the questions.

4) How many genes do humans have?
5) What is the function of the protein hemoglobin?
6) How is sickle-cell anemia caused?
7) What are some other proteins that genes code for?

Click on “What is a chromosome?” at the top and go through the animation. Answer the questions.

8) How long would the DNA in one human cell be?
9) How is DNA packaged to fit into the small space of a cell nucleus?
10) How many chromosomes are in a human cell?
11) Why are there “pairs” of chromosomes? Where do they come from?
12) Describe the sex chromosomes.

Click on “What is a protein?” at the top and go through the animation. Answer the questions.

13) What is the role of proteins in transmitting pain messages?
14) Describe structural proteins.
15) “There are proteins involved in the making of proteins.” Explain this sentence.

Click on “What is heredity?” at the top and go through the animation. Answer the questions.

16) Give an example of the environment acting on the expression of a genetic trait.
17) Where do we get our traits?
18) Explain how each child born to the same parents will have a different combination of chromosomes.

Click on “What is a trait?” at the top and go through the animation. Answer the questions.

19) What is a trait?
20) List the types of traits that exist.
21) Give an example of how an environmental factor can influence a trait.
22) Briefly explain how the Hitchhiker’s Thumb trait is determined using the following words: allele, dominant, recessive, homozygous, heterozygous.
Go to:  [http://nobelprize.org/educational_games/medicine/dna_double_helix/](http://nobelprize.org/educational_games/medicine/dna_double_helix/)

Click on “Play DNA Game”; Click “next” and reading each page, continue to click next until you come to the game.; Click on organism #1 and match the base pairs as fast as you can!  It is hard!

Click Next and then click on each organism until you identify the one that belongs to chromosome #1;  continue playing the game with the other two chromosomes, filling in the chart below.

<table>
<thead>
<tr>
<th>Chromosome #</th>
<th>How many chromosomes?</th>
<th>How many base pairs?</th>
<th>How many genes?</th>
<th>What is the organism?</th>
</tr>
</thead>
<tbody>
<tr>
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