Storing the Human Genome

It has been estimated that the human genome consists of 3 billion nitrogen base pairs. How much room would all the genetic information in a single cell take up if were printed in a book the size of a typical novel?

What do you Think???

How many copies OF YOUR SELECTED novel will be required to print the entire human genome? _____

Procedure

1. Use the data table below. 2. Select a random page from a novel. 3. Follow the directions in the table and record your calculations.

	Directions	Letters and Numbers
A	Count the number of characters (letters, punctuation marks, and spaces) across one line of your selected page.	
B	Count the number of the lines on the page.	
C	Calculate the number of characters on the page. (Multiply A x B)	
D	Let one nitrogen base equal one character. Knowing that DNA is made of nitrogen base pairs, divide C by 2.	
E	Record the number of pages in your novel.	
F	Calculate the number of base pairs in your novel. (Multiply E x D)	
G	Calculate the number of books the size of your novel needed to hold the entire human genome. (Divide 3 billion by F.)	

Analysis Questions

1.   How many books the size of your novel would be needed to store the human genome?

2.   Were you surprised by the result? Explain.

3.   How many books the size of your novel would be needed to store a typical bacterial genome? Assume there are 3 MILLION base pairs in the genome of a bacterium.