Computer Ciphers

1. Find the decimal representation of the binary number 11000111.

2. Find the binary representation of the decimal number 123.

3. About how many binary digits does the decimal number $10^{17} = 100,000,000,000,000,000$ have?

4. Add the binary numbers 101 and 111. Check your work by converting to decimal, then adding, then converting back to binary.

5. On page 247 of Singh’s *The Code Book*, the message HELLO and the key DAVID are converted to ASCII, then binary, then added to produce ciphertext. Check Singh’s math.

6. Encrypt the message HELLO using the key 541, a prime number.
7. See if you can decode the following tweet.

Codebreaker
@MarketplaceTech

54 68 61 74 20 69 73 20 61 6c 6c 2e 20 4d 6f 72 65 20 73 6f 6f 6e 2e 20 4d 75 63 68 2c 20 6d 75 63 68 20 6d 6f 72 65 2e 20 53 6f 66 6e 2e 20

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