

Binary: The Language of Computers – Chapter 2

Write out the powers of 2 and the decimal equivalent of each. Continue up to 8

Power of 2	2	2	2	2	2	2	2	2 ¹	2 ⁰
Decimal Equivalent								2	1

What are the only two values for a bit? _____ What do you call 8 bits? _____

What do you get with a million mosquitos? _____

Fill in the following Table (Hexadecimal values are extra credit)

Decimal Value	Binary Value	Hexadecimal Value	Decimal Value	Binary Value	Hexadecimal Value
0			10		
1			11		
2			12		
3			13		
4			14		
5			15		
6			16		
7			17		
8			18		
9			19		

Convert the following either to decimal or binary values without a calculator (Hexadecimal values are extra credit)

Decimal	Binary	Hexadecimal	Decimal	Binary	Hexadecimal
25				1101101	
	1010101010		125		
		6F			FF
34			210		
	1100110011			11110000	
254			96		
	11111111			1010111	

Convert the following to ASCII binary code: **BITS!**

How long does it take to download an image file that is 1.5MB using a standard dial-up connection (55kbps). Show all work and circle your final answer.

How long does it take to download this same file using a broadband connection with a throughput of 1.5Mbps? Show all work and circle your final answer.

Based on your calculation how many times faster is broadband compared to dial-up.