Student Name:_____
Date:_____

Binary to Decimal

This binary number... → **1 1 1 1 1 1 1 1** Equals this decimal number

2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0

128 + 64 + 32 + 16 + 8 + 4 + 2 + 1 = 255

This binary number... → **1 0 0 1 0 1 0 1** Equals this decimal number

2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0

128 + 0 + 0 + 16 + 0 + 4 + 0 + 1 = 149

Convert each binary number into a decimal number.

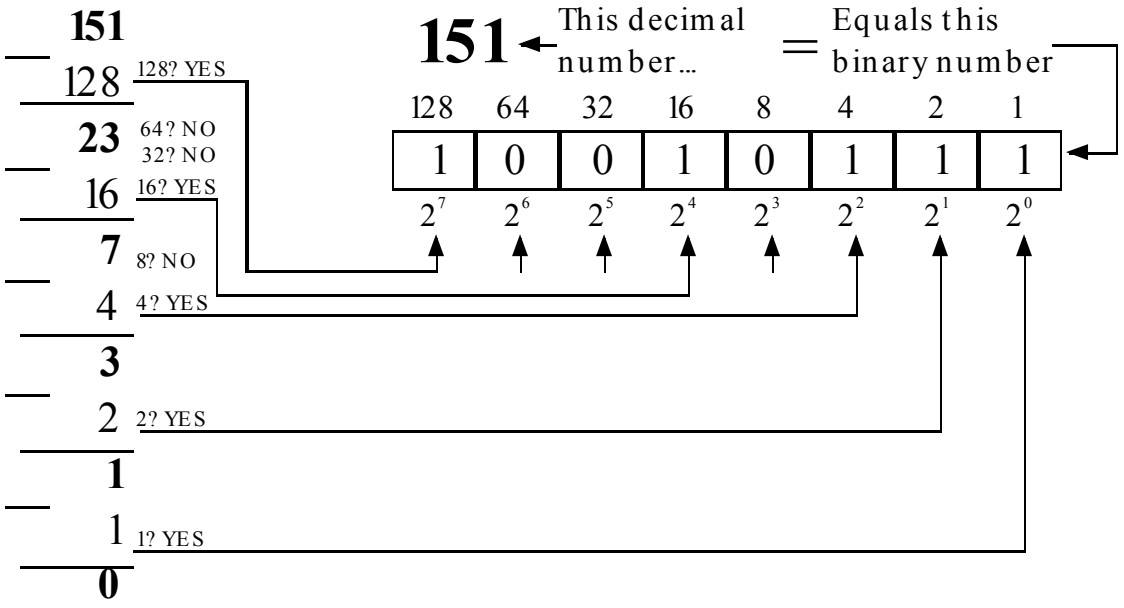
1. 1 1 0 0 1 0 0 1 = _____
2. 0 1 0 0 0 1 1 1 = _____
3. 1 0 0 0 0 1 1 0 = _____
4. 0 0 0 1 0 0 0 1 = _____
5. 10 0 0 1 0 0 0 = _____
6. 0 0 1 1 1 1 1 0 = _____
7. 0 1 0 1 0 1 0 1 = _____
8. 1 0 1 0 1 0 1 0 = _____
9. 0 1 1 0 1 1 1 0 = _____
10. 0 0 0 1 0 1 1 1 = _____
11. 1 1 1 1 1 0 0 0 = _____
12. 1 1 1 0 0 0 1 0 = _____
13. 0 0 0 1 1 1 0 1 = _____
14. 0 1 1 0 1 1 1 1 = _____
15. 1 0 0 1 0 1 1 1 = _____
16. 1 1 1 0 0 1 0 1 = _____

Binary to Decimal Key

1 1 0 0 1 0 0 1	201	0 1 1 0 1 1 1 0	110
0 1 0 0 0 1 1 1	71	0 0 0 1 0 1 1 1	23
1 0 0 0 0 1 1 0	134	1 1 1 1 1 0 0 0	248
0 0 0 1 0 0 0 1	17	1 1 1 0 0 0 1 0	226
1 0 0 0 1 0 0 0	136	0 0 0 1 1 1 0 1	29
0 0 1 1 1 1 1 0	62	0 1 1 0 1 1 1 1	111
0 1 0 1 0 1 0 1	85	1 0 0 1 0 1 1 1	151
1 0 1 0 1 0 1 0	170	1 1 1 0 0 1 0 1	229

Student Name:_____
Date:_____

Decimal to Binary



Convert each decimal number into a binary number.

1. 137 = _____
2. 128 = _____
3. 63 = _____
4. 213 = _____
5. 49 = _____
6. 111 = _____
7. 242 = _____
8. 192 = _____
9. 89 = _____
10. 2 = _____
11. 200 = _____
12. 171 = _____
13. 150 = _____
14. 27 = _____
15. 19 = _____
16. 189 = _____
17. 222 = _____
18. 79 = _____
19. 73 = _____
20. 136 = _____

Decimal to Binary Key

137	1 0 0 0 1 0 0 1	200	1 1 0 0 1 0 0 0	
128	1 0 0 0 0 0 0 0	171	1 0 1 0 1 0 1 1	
63	0 0 1 1 1 1 1 1	150	1 0 0 1 0 1 1 0	
213	1 1 0 1 0 1 0 1	27	0 0 0 1 1 0 1 1	
49	0 0 1 1 0 0 0 1	19	0 0 0 1 0 0 1 1	
111	0 1 1 0 1 1 1 1	189	1 0 1 1 1 1 0 1	
242	1 1 1 1 0 0 1 0	222	1 1 0 1 1 1 1 0	
192	1 1 0 0 0 0 0 0	79	0 1 0 0 1 1 1 1	
89	0 1 0 1 1 0 0 1	73	0 1 0 0 1 0 0 1	
2	0 0 0 0 0 0 1 0	136	1 0 0 0 1 0 0 0	

Student Name:_____
Date:_____

HEXADECIMAL CONVERSIONS

INSTRUCTIONS:
Convert the following numbers to their appropriate base forms. Record your answers in the spaces provided in the table.

BASE 10	BASE 2	BASE 16
243		
	10101100	
		AE
	110110	
131		
		3F
98		
	10010001	
146		
	11000011	
		4D
	11110001	
172		
		E2
	100100	
195		
		31
	1001111	
		7B
146		
		5A
	11100000	
223		

HEXADECIMAL CONVERSIONS

INSTRUCTIONS: Convert the following numbers to their appropriate base forms

BASE 10	BASE 2	BASE 16
243	**11110011**	**F3**
172	*10101100*	**AC**
174	**10101110**	*AE*
54	*110110*	**36**
131	**10000011**	**83**
63	**111111**	*3F*
98	**11000010**	**62**
145	*10010001*	**91**
146	**10010010**	**92**
195	*11000011*	**C3**
77	**1001101**	*4D*
241	*11110001*	**F1**
172	**10101100**	**AC**
226	**11100010**	*E2*
36	*100100*	**24**
195	**11000011**	**C3**
49	**110001**	*31*
79	*1001111*	**4F**
123	**1111010**	*7B*
146	**10010010**	**92**
90	**1011010**	*5A*
224	*11100000*	**E0**
223	**11011111**	**DF**

Student Name:_____

Date:_____

NUMBERING SYSTEMS EXAM

DIRECTIONS:
Circle the letter that corresponds to the one (1) best answer for each of the questions below.

Question 1: All functions of a computer are based upon the use and manipulation of numbers. Which number system is most native to a computer?

- **A. binary**
- **B. decimal**
- **C. hexadecimal**
- **D. octal**

Question 2: What is the decimal conversion of the binary number 11011001?

- **A. 221**
- **B. 193**
- **C. 217**
- **D. 192**

Question 3: What is the hexadecimal conversion of the decimal number 224?

- **A. F0**
- **B. E0**
- **C. 92**
- **D. 9E**

Question 4: What is the decimal conversion of the hexadecimal number 7F?

- **A. 115**
- **B. 134**
- **C. 201**
- **D. 127**

Question 5: What is the binary conversion of the hexadecimal number CB?

- **A. 10111001**
- **B. 11100001**
- **C. 11000100**
- **D. 11001011**

Question 6: Which binary number represents the decimal number 133?

- **A. 10001011**
- **B. 11000001**
- **C. 10000111**
- **D. 10000101**

Question 7: What is the hexadecimal equivalent of the decimal number 241?

A. E7
B. D3
C. F1
D. A9

Question 8: What is the decimal value of the binary number 11111111?

A. 0
B. 64
C. 192
D. 255

Question 9: What is the definition of a bit?

A. the section of a network that is bounded by bridges, routers, or switches
B. a binary digit used in the binary number system, either 0 or 1
C. the interface on an internetworking device, such as a router
D. the network areas within which data packets that have collided are propagated

Question 10: Which of the following phrases best describes the decimal numbering system?

A. It is also called the Base 100 Number System.
B. It is based on powers of 1.
C. It uses the 10 symbols 0 - 9.
D. It is the same as the ASCII numbering system.

Question 11: Which numbering system is based on powers of 2?

A. octal
B. hexadecimal
C. binary
D. ASCII

Question 12: What is the decimal number 151 in binary?

A. 10010111
B. 10010110
C. 10101011
D. 10010011

Question 13: What is the binary number 11011010 in decimal?

A. 218
B. 202
C. 222
D. 186

Question 14: Convert the decimal number 43 to Hex.

- **A. 2B**
- **B. 1F**
- **C. EF**
- **D. 1A**

Question 15: Hexadecimal is used to represent what kind of addresses?

- **A. IP**
- **B. Octal**
- **C. MAC**
- **D. Digital**

Question 16: What is 16 raised to the first power (16^1)?

- **A. decimal 1**
- **B. decimal 16**
- **C. hex FF**
- **D. hex 16**

Question 17: Convert the decimal number 2989 to Hex.

- **A. FDD1**
- **B. BAD**
- **C. ED**
- **D. CAD**

Question 18: What is the decimal value of the hex number ABE?

- **A. 2750**
- **B. 5027**
- **C. 2570**
- **D. 7250**

Question 19: What is the hex value of the binary number 11100010?

- **A. D2**
- **B. E2**
- **C. G2**
- **D. H20**

Question 20: Which numbering system is based on powers of 10?

- **A. octal**
- **B. hexadecimal**
- **C. binary**
- **D. decimal**

Numbering Systems Exam Key

Question 1: All functions of a computer are based upon the use and manipulation of numbers. Which number system is most native to a computer?

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B. decimal
C. hexadecimal
D. octal

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A. 221
B. 193
C. ***217***
D. 192

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A. F0
B. ***E0***
C. 92
D. 9E

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B. 134
C. 201
D. ***127***

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A. 10111001
B. 11100001
C. 11000100
D. ***11001011***

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A. 10001011
B. 11000001
C. 10000111
D. ***10000101***

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B. D3
C. ***F1***
D. A9

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C. hex FF
D. hex 16

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C. ED
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A. D2
B. ***E2***
C. G2
D. H20

Question 20: Which numbering system is based on powers of 10?

A. octal
B. hexadecimal
C. binary
D. ***decimal***