CodeBash

codebash.co.uk

FREE SAMPLE · SHARE FREELY

Number Bases

Questions Booklet

Binary, denary and hexadecimal conversions.

GCSE & A-Level Computer Science

GCSE CS

CodeBash

Number Bases

codebash.co.uk

200 practice questions - binary, denary, hex, two's complement, bit shifts

Name: _____ Date: _____ Score: /200

GCSE CS

CodeBash

Number Bases

codebash.co.uk

Section A: Q1-Q30

Section A: Binary to Denary (30 marks)

Convert each 8-bit binary number to its denary (decimal) equivalent.

Q	Binary	Denary
1	00010010	
2	10110111	
3	01010100	
4	01101100	
5	00000001	
6	11001000	
7	01001001	
8	01010100	
9	11000001	
10	10110100	
11	10110010	
12	10101111	
13	01111001	
14	10011111	
15	11000001	
16	01000110	
17	01110100	
18	01111100	
19	11011110	
20	10010000	
21	10011101	
22	01111010	
23	00100100	
24	11101101	
25	10010010	
26	11111101	
27	01111011	
28	00010000	

29	10001010	
30	00111011	

Number Bases

Q31-Q60

Section B: Denary to Binary (30 marks)

Convert each denary number to its 8-bit binary equivalent.

Q	Denary	Binary (8-bit)
31	56	
32	232	
33	178	
34	237	
35	49	
36	4	
37	77	
38	28	
39	62	
40	143	
41	69	
42	242	
43	47	
44	168	
45	193	
46	124	
47	171	
48	184	
49	8	
50	232	
51	148	
52	229	
53	20	
54	195	
55	165	
56	185	
57	105	
58	129	

59	138	
60	214	

Number Bases

Q61-Q80

Section C: Hexadecimal to Denary (20 marks)

Convert each hexadecimal value to its denary equivalent.

Q	Hex	Denary
61	0xC3	
62	0xFD	
63	0xC8	
64	0x8F	
65	0xAF	
66	0xBF	
67	0x4C	
68	0x7D	
69	0x19	
70	0xC4	
71	0x96	
72	0x50	
73	0x89	
74	0x59	
75	0xE5	
76	0x90	
77	0xE2	
78	0x61	
79	0x31	
80	0x08	

Number Bases

Q81-Q100

Section D: Denary to Hexadecimal (20 marks)

Convert each denary value to two-digit hexadecimal.

Q	Denary	Hex
81	106	
82	113	
83	182	
84	11	
85	108	
86	226	
87	248	
88	70	
89	4	
90	52	
91	106	
92	36	
93	216	
94	183	
95	243	
96	64	
97	130	
98	4	
99	65	
100	171	

Number Bases

Q101-Q120

Section E: Binary and Hexadecimal Conversion (20 marks)

E1: Binary to Hex. E2: Hex to Binary.

E1: Binary to Hexadecimal (Q101-Q110)

Q	Binary	Hex
101	`10011000`	
102	`10100001`	
103	`01010010`	
104	`00011100`	
105	`10110011`	
106	`01000101`	
107	`01011000`	
108	`11101101`	
109	`00110010`	
110	`01001110`	

E2: Hexadecimal to Binary (Q111-Q120)

Q	Hex	Binary (8-bit)
111	`0x97`	
112	`0x09`	
113	`0xC6`	
114	`0x2F`	
115	`0x7E`	
116	`0x70`	
117	`0x98`	
118	`0x4B`	
119	`0x93`	
120	`0xD5`	

Number Bases

Q121-Q145

Section F: Two's Complement - Read the Value (25 marks)

Each 8-bit two's complement binary represents a negative value. State the denary.

Q	Binary (two's comp)	Denary
121	11000100	
122	11101100	
123	10000001	
124	10001010	
125	10110000	
126	11000010	
127	11110000	
128	11110101	
129	11000010	
130	10010111	
131	11100101	
132	10001010	
133	11111011	
134	10011011	
135	10000101	
136	11000101	
137	11011110	
138	10101111	
139	10111111	
140	10111010	
141	10000001	
142	10000101	
143	10011101	
144	11011111	
145	11000000	

Number Bases

Q146-Q160

Section G: Two's Complement - Convert Negative Denary (15 marks)

Convert each negative denary value to 8-bit two's complement binary.

Q	Negative Denary	Binary (two's comp)
146	-28	
147	-68	
148	-53	
149	-16	
150	-62	
151	-82	
152	-83	
153	-27	
154	-25	
155	-75	
156	-12	
157	-7	
158	-106	
159	-2	
160	-120	

GCSE CS

CodeBash

Number Bases

codebash.co.uk

Q161-Q180

Section H: Binary Addition (20 marks)

Add the two 8-bit binary numbers. State the 8-bit result, denary total, and overflow status.

Q	Operand A	Operand B	Result (8-bit)	Denary	Overflow?
161	00010101	00111011			
162	01101001	00000011			
163	00001111	00011100			
164	00101011	00000001			
165	01110010	00101110			
166	00111000	01011011			
167	00000011	01100100			
168	00000001	01110111			
169	01111111	01010001			
170	01101110	01100111			
171	01111100	01110011			
172	00101100	00011011			
173	00101000	01000001			
174	01011000	01111110			
175	00000111	00110111			
176	01001101	01111001			
177	00010100	01101010			
178	00011000	00110100			
179	01100001	00111011			
180	00011111	00110111			

Number Bases

Q181-Q200

Section I: Logical Bit Shifts (20 marks)

Apply the stated logical bit shift. Give the result in binary and state the new denary value.

Q	Value (binary)	Shift	Result (binary)	Result (denary)	Working
181	`00001001`	1 left			
182	`00001100`	1 left			
183	`00100111`	1 right			
184	`00110100`	1 right			
185	`00010111`	2 left			
186	`00110011`	1 left			
187	`00100101`	1 left			
188	`00110111`	2 right			
189	`00001001`	2 right			
190	`00001011`	2 left			
191	`00110010`	1 right			
192	`00011001`	1 left			
193	`00111100`	1 left			
194	`00010010`	1 right			
195	`00100000`	1 left			
196	`00010011`	2 left			
197	`00100000`	1 left			
198	`00101001`	2 right			
199	`00100110`	1 right			
200	`00000011`	1 left			

Want more like this?

CodeBash has the rest of the GCSE and A-Level CS toolkit.

More Worksheets & Mark Schemes
Logic Gates, Karnaugh Maps, Floating Point, SQL and trace tables for OCR, AQA, CIE and Edexcel.

Online Code Editor
Write and run Python and C# in the browser. No setup. Save your work to your account.

Lockdown Assessments
Timed, exam-style assessments your teacher can release to the whole class with one click.

Theory Revision
Spaced flashcards, quizzes and explanations covering the full GCSE and A-Level specification.

codebash.co.uk

Free for students. School plans available for teachers.

Made for UK Computer Science classrooms by **CodeBash**. Share this booklet with anyone who would find it useful.