Name: _____ Class: _____

Lesson 4: Introduction to Binary

Date: _____ **Learning objective:** I am learning to explain how computers store numbers in binary and convert between binary and denary.

Starter — What can you remember? (5 min)

1. What is primary storage?	**2.** AND gate: A = 1, B = 0. What is the output?
3. Name one solid-state storage device.	**4.** Why is RAM called volatile?

Section 1: Developing — Know how data is stored in binary (8 min)

Task 1 — Units of data

1. What is a bit?

_____

2. Complete the table.

Unit	Equal to
1 nibble	
1 byte	
1 kilobyte	
1 megabyte	
1 gigabyte	

3. Put these in order, smallest first: terabyte, kilobyte, nibble, gigabyte.

_____

Section 2: Securing — Convert binary to denary (12 min)

Task 2 — Binary to denary

4. Convert 00010101 to denary.

128	64	32	16	8	4	2	1
0	0	0	1	0	1	0	1

Denary answer: _____

5. Convert 01001101 to denary.

128	64	32	16	8	4	2	1
0	1	0	0	1	1	0	1

Denary answer: _____

6. Convert 10000011 to denary.

128	64	32	16	8	4	2	1
1	0	0	0	0	0	1	1

Denary answer: _____

Section 3: Mastering — Convert denary to binary (12 min)

Task 3 — Denary to binary

7. Convert 36 into 8-bit binary.

128	64	32	16	8	4	2	1

8. Convert 100 into 8-bit binary.

128	64	32	16	8	4	2	1

9. Convert 200 into 8-bit binary.

128	64	32	16	8	4	2	1

10. What is the largest number that can be stored in 8 bits? Explain.

Exit ticket (3 min)

1. How many bits in a byte?	**2.** Convert 00001010 to denary.	**3.** Convert 17 to 8-bit binary.
Finished early? Computers also store letters as binary (ASCII). 'A' is 65. Write 'A' in 8-bit binary, then work out 'C'.		

How confident do I feel? Colour one box for each skill.

Level	Skill	Red	Amber	Green
Developing	Know how data is stored in binary			
Securing	Convert binary to denary			
Mastering	Convert denary to binary			