

# Binary to Decimal - method

Q. A bit pattern is shown below

00101100

Convert the bit pattern into decimal

Method to use is shown over the next 4 slides.

**Remember: exam papers are non-calculator!**

# Binary to Decimal - method

1. Write the number down

1 0 0 1 0 1

# Binary to Decimal - method

2. Write the **binary sequence** above the digits - starting from the **right**.

Start from 1 and **double** each time

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

# Binary to Decimal - method

3. Write the numbers with a 1 down underneath

128	64	32	16	8	4	2	1
		1	0	0	1	0	1
		<b>32</b>			<b>4</b>		<b>1</b>

# Binary to Decimal - method

4. Add the numbers together to get the answer

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

$$32 + 4 + 1 = 37$$

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Checks to make:

- odd numbers have a 1 on the right
- even numbers don't have a 1 on the right
- largest possible 8 bit number: 255

**Always check your answers twice!!!**