| Coding Circuits | Grade 6 – Electricity and Electrical Devices |
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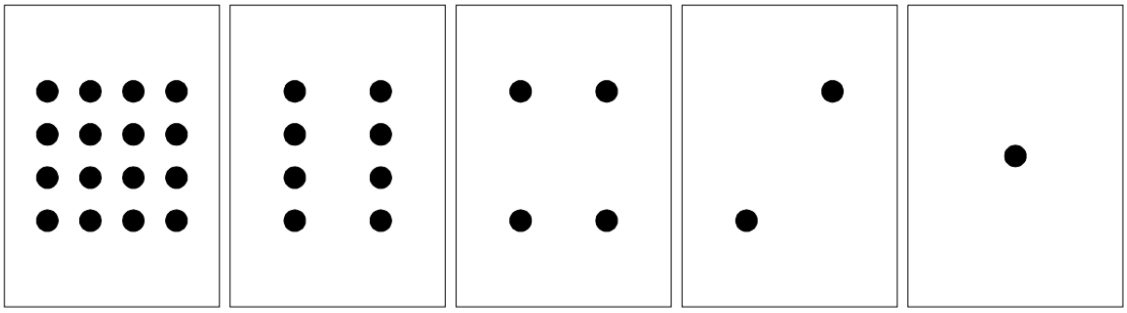
## Binary Unplugged



1. Practice translating binary into whole numbers. What numbers do you get?

   01111 =

   01010 =

   11100 =

2. This code was created using a binary system. Can you decode the message?

| | | | | |
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| | | ■ | | |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | B | C | D | E | F | G | H | I | J | K | L | M |
| 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| N | O | P | Q | R | S | T | U | V | W | X | Y | Z |

Answer:

3. Create your own message using the same binary system. Write your (encoded) message below:

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | B | C | D | E | F | G | H | I | J | K | L | M |
| 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| N | O | P | Q | R | S | T | U | V | W | X | Y | Z |

ANSWER KEY

**Question 1**

01111 = 15
01010 = 10
11100 = 25

**Question 2**

Hint: each row of the table corresponds to one binary string (and therefore one letter of the alphabet), so:

| | |
|---|---|
| 01000 = 8 = | H |
| 00101 = 5 = | E |
| 01100 = 12 = | L |
| 01100 = 12 = | L |
| 01111 = 15 = | O |
| 10111 = 23 = | W |
| 01111 = 15 = | O |
| 10010 = 18 = | R |
| 01100 = 12 = | L |
| 00100 = 4 = | D |

“HELLO WORLD” (often written as Hello, World!) is traditionally one of the first programs that coders learn (a program that simply generates the greeting on a screen or printout) and as a test-run to make sure that a system is working.