Names (group) _____ Date _____

Binary Numbers and Logic: Practice and Check

PART 1 Group game: Find the pair

1. Cut out the 24 cards and put them face down.
2. Players take turns to turn over two cards. If the cards mean the same thing, the player keeps the pair and explains why.
3. If it is not a pair, the cards go back. The player with the most pairs wins.

1101_2	8 bits	$\neg(A \vee B)$	01000001
32	codes with 4 bits	$A \oplus B$	-1 (4 bits)
255	$\neg(A \wedge B)$	$A \wedge B$	13
$0101_2 + 0011_2$	$\neg A \wedge \neg B$	1111	100000_2
1000_2	half adder: sum S	11111111_2	16
half adder: carry C	1 byte	$\neg A \vee \neg B$	the letter A (ASCII)

Name _____ Date _____

PART 2 Check

1 ON YOUR OWN Convert.

$101101_2 =$ ☐ $75 =$ ☐

2 ON YOUR OWN Add in binary.

$1011_2 + 0110_2 =$ ☐

3 ON YOUR OWN How many bits are there in 3 bytes? How many different codes do 3 bits give?

☐ ☐

4 ON YOUR OWN Work out for $A = 0, B = 1, C = 0$.

$(A \vee B) \wedge \neg C =$ ☐ $\neg A \wedge \neg B =$ ☐

$A \oplus B =$ ☐

5 ON YOUR OWN Complete the table and say which gate it is.

A	B	$\neg(A \vee B)$
0	0	☐
0	1	☐
1	0	☐
1	1	☐

gate: ☐

6 ON YOUR OWN CHALLENGE Write -5 with 4 bits in two's complement.

☐

How am I doing?

- ☐ I can confidently convert numbers, add in binary and work with logical expressions.
- ☐ I can, but sometimes I need the cards, a table or the app.
- ☐ I need more practice.