1. What is the unsigned binary number 101101 in decimal?

   _____

2. Any logic circuit can be built using only NAND gates.

   ☐ True ☐ False

3. In fetch-decode-execute, the instruction register (IR) is loaded during –

   ☐ fetch

   ☐ decode

   ☐ execute

   ☐ the next branch

4. In lw R1, 0(R2) the 0 is –

   ☐ the opcode

   ☐ the value zero being loaded

   ☐ a register number

   ☐ the offset added to base register R2

5. Two threads of the same process share that process's memory.

   ☐ True ☐ False

6. The preprocessor checks that a macro is used with the right types.

   ☐ True ☐ False

7. What is the largest unsigned number that 10 bits can hold?

   _____

8. How many rows does the full truth table of a 3-input gate have?

   _____

9. The PC holds 1000 and every instruction is 4 bytes. After three instructions with no branch, what does the PC hold?

   _____

10. R2 holds 400. Which memory address does lw R1, 12(R2) read?

    _____

1. **45**

   $32 + 8 + 4 + 1 = 45$.

2. **True**

   NAND is universal. For example, NOT a is a NAND a, and AND is a NAND followed by a NOT.

3. **fetch**

   Fetch reads memory at the PC into the IR; decode then interprets it.

4. **the offset added to base register R2**

   Address = R2 + 0. This is base + offset addressing.

5. **True**

   Threads live inside one address space. Separate processes each get their own.

6. **False**

   The preprocessor only swaps text. Types are checked later, by the compiler.

7. **1023**

   $2\hat{}10 - 1 = 1024 - 1 = 1023$.

8. **8**

   Each input is 0 or 1, so there are $2\hat{}3 = 8$ rows.

9. **1012**

   $1000 + 3 \times 4 = 1012$.

10. **412**

    Base + offset = 400 + 12 = 412.