

Name: \_\_\_\_\_

**9.** [6 points] Use the register and memory values in the table below for the next questions. Assume a 32-bit machine. Assume each of the following questions starts from the table values; that is, DO NOT use value changes from one question as propagating into future parts of the question.

Register	Value	Memory Location	Value
R1	12	12	16
R2	16	16	20
R3	20	20	24
R4	24	24	28

a) Give the values of R1, R2, and R3 after this instruction: `add R3, R2, R1`

b) What values will be in R1 and R3 after this instruction is executed: `load R3, 12(R1)`

c) What values will be in the registers after this instruction is executed: `addi R2, R3, #16`

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**3. [10 points]** In MIPS assembly, write an assembly language version of the following C code segment:

```
int A[100], B[100];
for (i=1; i < 100; i++) {
    A[i] = A[i-1] + B[i];
}
```

At the beginning of this code segment, the only values in registers are the base address of arrays A and B in registers \$a0 and \$a1. Avoid the use of multiplication instructions—they are unnecessary.