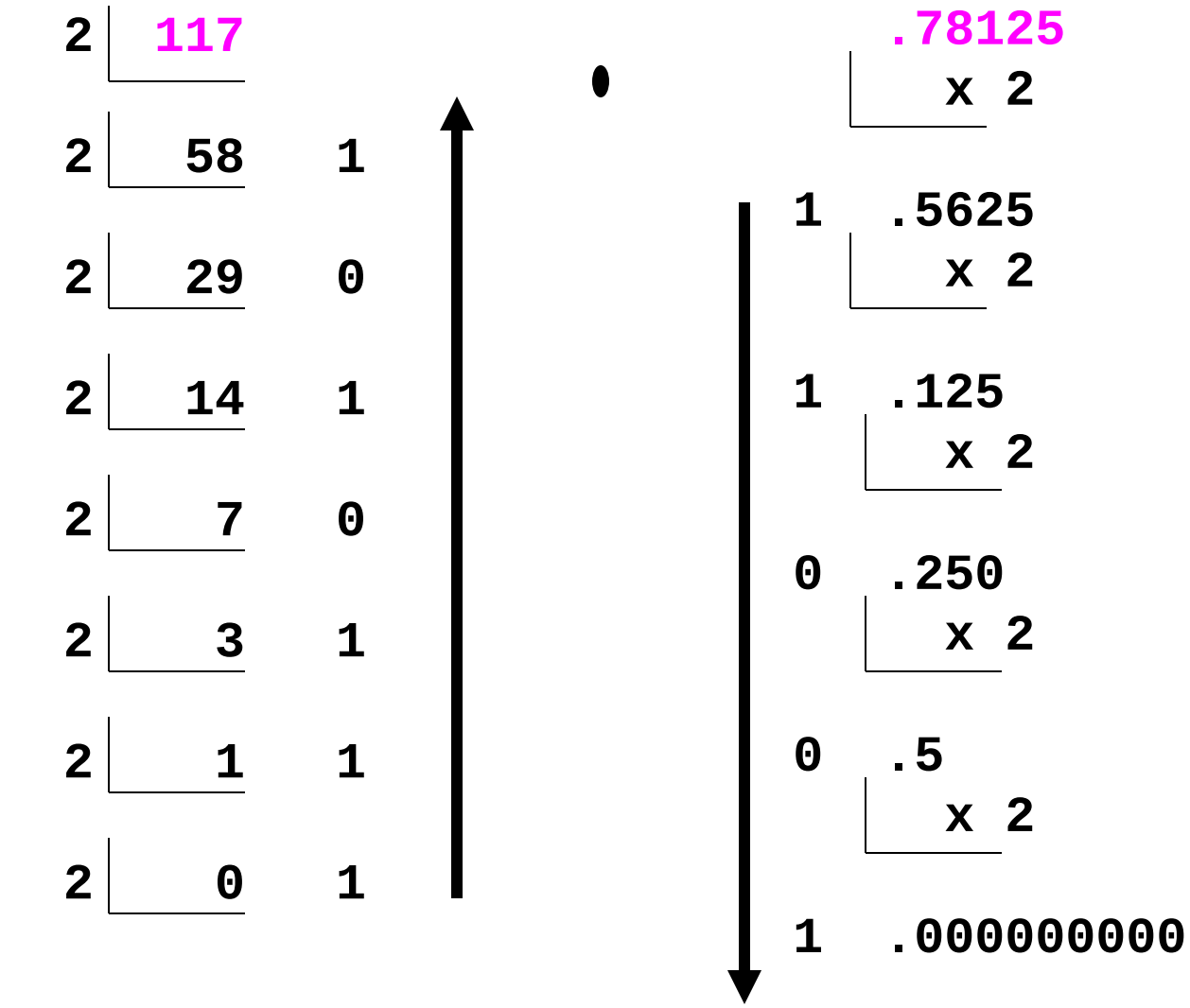
Convert the **base 10 real number** 117. 78125 into

A. Base **2** _____

B. Base **8** _____

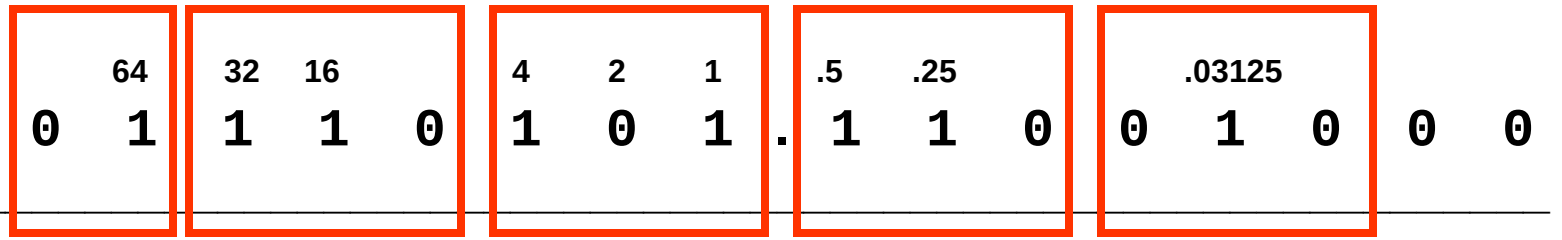
C. Base **16** _____



1 1 1 0 1 0 1 . 1 1 0 0 1

Convert the **base 10 real number** 117. 78125 into

A. Base **2** _____



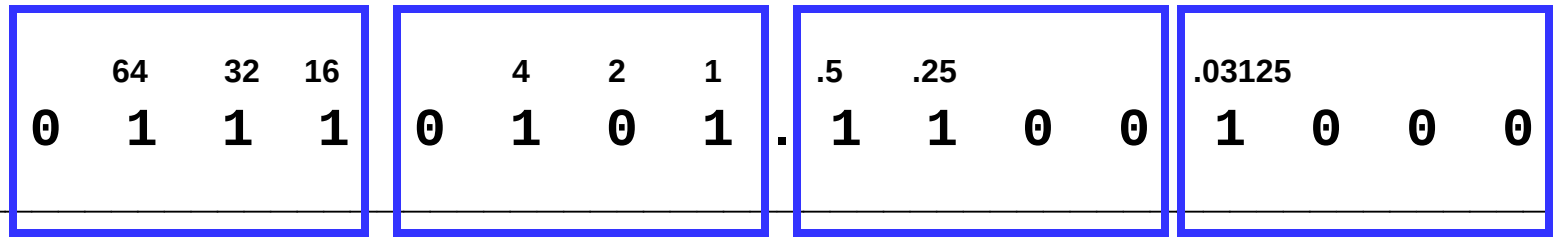
1 6 5 . 6 2

B. Base **8** _____

C. Base **16** _____

Convert the **base 10 real number** 117. 78125 into

A. Base **2** _____



B. Base **8** _____

7 5 . C 8

C. Base **16** _____

For the following 16 bit sequence:

1 111 111 110 010 101

A. What is the **base 10** value if the sequence is a **signed 2's complement 16 bit integer** ??

2 + 8 + 32 + 64 + 1 = -107

B. **Add** the following 2's complement 16 bit integer sequence to the sequence shown in part **A**. above, and express the answer as a **base 10 signed value**:

0 000 000 001 001 101

1 + 4 + 8 + 64 = +77 **-107 + 77 = -30**

1 111 111 110 010 101
0 000 000 001 001 101
1 111 111 111 100 010 **1 + 4 + 8 +16 + 1 = -30**

The following 2 byte sequence represents a C variable declared as:

`unsigned short int var1;`

that is located in memory at bytes 3000 and 3001 as shown:

Mem adr	Bit content
3000	0 0 0 0 0 1 0 1
3001	1 0 0 0 0 1 0 1

A. What is the **base 10** value if the sequence is found in a big endian machine ? **1413**

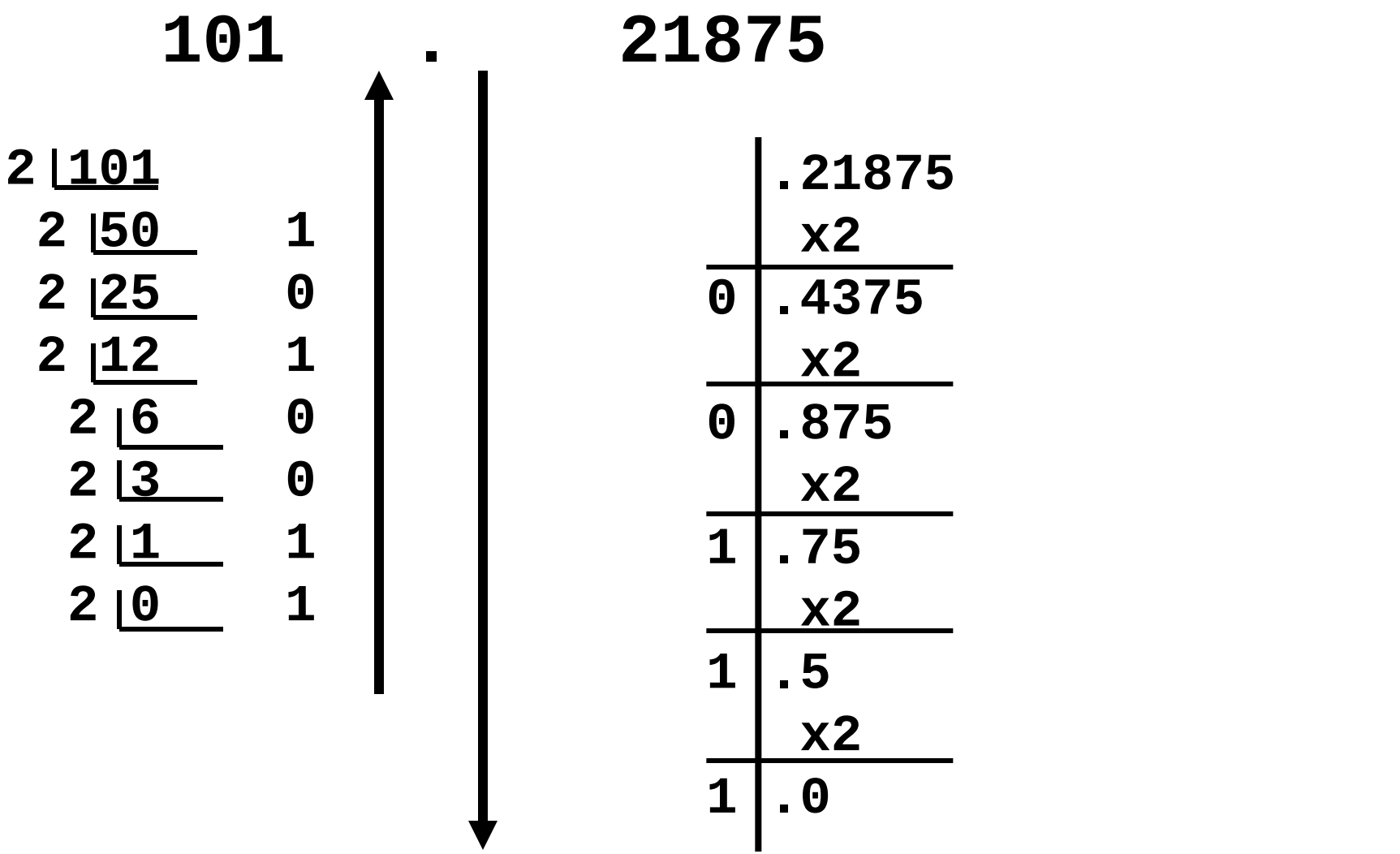
B. What is the **base 10** value if the sequence is found in a little endian machine ? **34053**

C. Assuming that **var1** from above is stored in a **little endian** machine

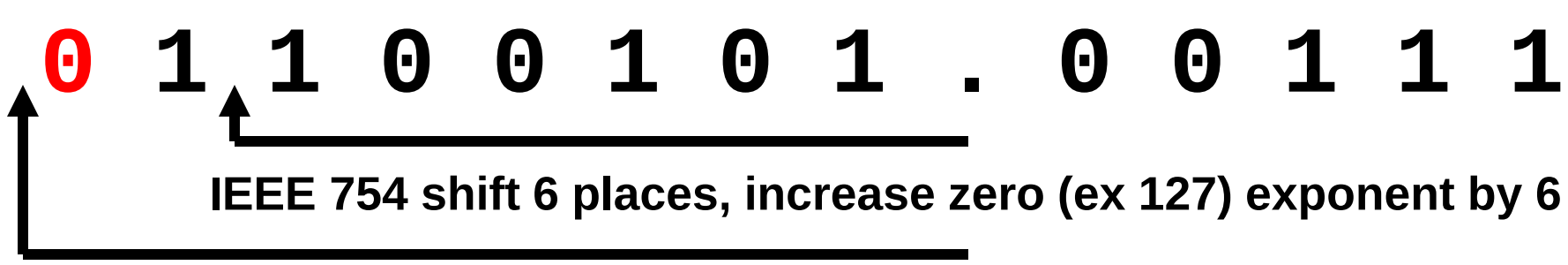
`int var2 = var1;`

Mem adr	Bit content
6000	0000 0101
6001	1000 0101
6002	0000 0000
6003	0000 0000

For the **base 10 real number** 101.21875



0 1 1 0 0 1 0 1 . 0 0 1 1 1



15 POINTS

1. For the **base 10 real number** 101.21875

A. Show the **IEEE 754** 32 bit normalized floating point **bit representation**

0	1	0	0	0	0	1	0	1	1	0	0	1	0	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0

B. Show the **IBM** 32 bit normalized floating point **bit representation**

0	1	0	0	0	0	1	0	0	1	1	0	0	1	0	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0

C. Show the **IEEE 754** 32 bit normalized floating point **bit representation** of the number **after** it has been **multiplied by 32**

0	1	0	0	0	1	0	1	0	1	0	0	1	0	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0