

# COS126 Number Systems Activity Solutions - Booksite

## 5.1

1. How is the binary integer 1001 represented in decimal? **ans. 9**
2. How is the binary integer 1011 represented in decimal?  
**ans. 11**
3. What is the hexadecimal representation of the binary integer 1001 1011?  
**ans. 9B**
4. Give the binary and hexadecimal representations of the decimal integer 100.  
**binary ans.  $64 + 32 + 4 \rightarrow 110\ 0100$**   
**hex ans.  $6 \times 16 + 4 \times 1 \rightarrow 64$**
5. Give the **16 bit** binary representation of the decimal integer 100.  
**ans. 0000 0000 0110 0100**  
For the next four questions, use **16-bit two's-complement** numbers.
6. Give the **16 bit two's-complement** binary representation of the decimal integer -100.  
**binary of positive 100 = 0000 0000 0110 0100**  
**Flip the bits to get 1111 1111 1001 1011**  
**Add one to get ans: 1111 1111 1001 1100**
7. What is the hex representation of decimal integer -100?  
**ans. FF9C**
8. What is the decimal representation of the hex number FFFE? **Translate to binary:**  
**1111 1111 1111 1110**  
**Flip the bits: 0000 0000 0000 0001**  
**Add one to get binary: 0000 0000 0000 0010**  
**Interpret positive number: 2**  
**Decimal ans. -2**
9. What is the hex representation of the decimal number -27? **Translate 27 to binary:**  
**0000 0000 0001 1011**  
**Flip bits and add one: 1111 1111 1110 0101**  
**hex answer: FFE5**