



## Computer Systems: Revision Questions 1

### ANSWERS

1. a. 55573  
b. 15195  
c. 3475  
d. 710  
e. 315
2. a. 1010000110001101  
b. 1000100101001001  
c. 0000001111111111  
d. 0111010100101111  
e. 0001011010000011
3. a. 0 to 127  
b. 0 to 255  
c. 0 to 2047  
d. 0 to 8191  
e. 0 to 32767
4. a. 11110100  
b. 10111111  
c. 11010001  
d. 10001111  
e. 10001000
5. a. -102  
b. -115  
c. -8  
d. -85  
e. -106
6. a. -4 to 3  
b. -16 to 15  
c. -64 to 63  
d. -8 to 7  
e. -128 to 127



**KIND**



**POSITIVE**



**YOURSELF**

7. a.  $0000000101100111 \times 2^{00000110}$   
b.  $1110011000000000 \times 2^{00000010}$   
c.  $0110011000000000 \times 2^{11111111}$   
d.  $1100110000000000 \times 2^{11111110}$   
e.  $0101111010000000 \times 2^{000000110}$
  
8. Decreasing bits for mantissa = reduced precision  
Increasing bits for exponent = increased range
  
9. Decreasing bits for exponent = decreased range  
Increasing bits for mantissa = increased precision
  
10. Decreasing bits for mantissa = reduced precision  
Increasing bits for exponent = increased range