* Binary to octal
  + Groups of 3
  + Convert each group
* Binary to hexadecimal
  + Groups of 4 from right
  + Convert each group
  + 10101011 is AB in base 16
* Converting decimal to other bases
  + Algorithm for converting number in base 10 to other bases
  + While (the quotient is not zero)
    - Divide the decimal number by the new base
    - Make the remainder the next digit to the left in the answer
    - Replace the original decimal number with the quotient
* Convert from base 10 to other bases
  + Divide by the base into which you are converting the number
  + Division yields a quotient and remainder
  + Remainder becomes next digit in the new number (right most)
  + Quotient replaces the number to be converted
  + Process continues until the quotient is zero
  + EXAMPLE: Convert 2748 to base 16  
    2748 / 16 = 121 R12 => C  
    171 / 16 = 10 R11 => B  
    10/16 = 0 R10 => A  
    **ABC**
  + EX: convert 5274 to base 8  
    5274 / 8 = 659 R 2 =>   
    659 / 8 = 82 R3 =>

82 / 8 = 10 R2

10 / 8 = 1 R 2

1/ 8 = 0 R1

**12232**

* + Convert 5274 to base 16  
    5274 / 16 = 329 R 10   
    329 / 16 = 20 R9  
    29 / 16 = 1 R 4  
    1 / 16 = 0 R1  
    247A
  + Convert 1988 to base 8   
    1988 / 8 = 248 R4  
    24 / 8 = 31 R0  
    31 / 8 = 3 R7   
    3/ 8 = 0 R3  
    **Answer: 3704**
* Working with Decimals
  + EX: 2.625 convert to binary = 10.101  
    0.625 \* 2 = 1.25 = 1  
    0.25 \* 2 = 0.50 = 0  
    0.50 \* 2 = 1.00 = 1
  + EX 4.75 convert to binary = 100.11  
    0.75 \* 2 = 1.50 => 1  
    0.50 \* 2 = 1.0 => 1
* Largest number that can be added with two 8-bit numbers is 510.
  + Add all the bits for that number
* Low voltage is represented by a 0. High represented by 1.
* Byte = 8 bits
* The number of bits in a word determines the word length of the computer, but usually a multiple of 8
  + 32-bit machine (2-bit word)
  + 64-bit machine etc.
* Ethical issues
  + Homeland Security and Carnivore / DCS – 1000
    - Carnivore (p 46)
    - IBM’s security tool that can be installed at the ISP scan and collect data
    - Used to identified against terrorists
    - Was used against
* Mary Grace Hopper (p44)
  + Programmer on the Harvard Mark 1
  + Helped to develop Cobol