VanWyk's 103 **Section 2.3 Homework Problems**

TERMS YOU SHOULD KNOW: *base, binary, octal, hexadecimal.*

1. Write both one million and one billion as $1 \cdot 10^n$ using the appropriate value of n.

2. Convert each number to base ten.

   (a) 603_{eight}

   (b) 29_{twelve}

   (c) 110111_{two}

   (d) 10000_{five}

3. Convert the number 123_{ten} to:

   (a) base two

   (b) base five

   (c) base nine

4. Count to ten in

   (a) base three

   (b) base five

1. $1 \cdot 10^6$ and $1 \cdot 10^9$, respectively.

2a. 387_{ten}
2b. 33_{ten}
2c. 55_{ten}
2d. 625_{ten}

3a. 1111011_{two} (Note: binary digits are often grouped in groups of three, so another way to write this is $011\ 111\ 011_{\text{two}}$.)
3b. 443_{five}
3c. 146_{nine}

4a. 1, 2, 10, 11, 12, 20, 21, 22, 100, 101.
4b. 1, 2, 3, 4, 10, 11, 12, 13, 14, 20.