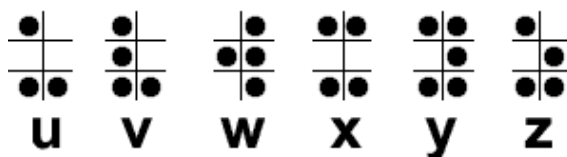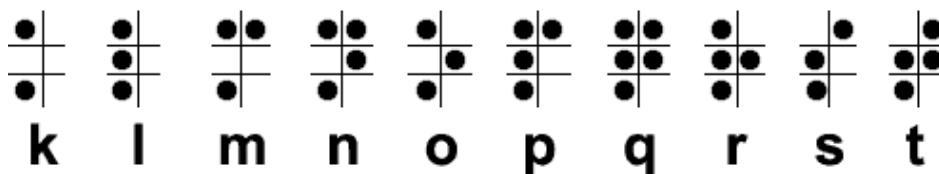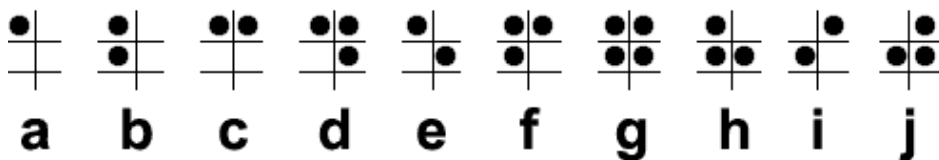# The Braille Language System

The Braille system of writing used by blind people consists of a code of 63 characters. The characters are "combinations" of raised dots, ranging in number from 1 to 6.

Examples:

a b c d e f g h i j

k l m n o p q r s t

u v w x y z

In how many ways can

1 of the 6 dots be raised?

Solution: $_6C_1 = \dfrac{6!}{1!\,5!} = 6$

2 of the 6 dots be raised?

3 of the 6 dots be raised?

4 of the 6 dots be raised?

5 of the 6 dots be raised?

6 of the 6 dots be raised?

Does the Braille code use every possible way of combining from 1 to 6 dots?

Sources: Jacobs, Harold R. Mathematics: *A Human Endeavor*. San Francisco: W.H. Freeman and Company, 1982.
http://www.afb.org/braillebug/

Braille is a tactile code made up of raised dots. Six dot positions comprise each character, called a braille cell, with a total of 63 possible dot combinations. Braille cells represent the alphabet, numbers and punctuation.

The six dots of the braille cell are arranged and numbered as follows:
        1..4
        2..5
        3..6

Letters are capitalized by prefixing dot 6. Numbers are indicated by prefixing the number sign (dots 3, 4, 5 and 6).

Braille Alphabet

A B C D E F G H I J

K L M N O P Q R S T

U V W X Y Z 1 2 3 4

5 6 7 8 9 0 . , ; :

/ ? ! @ # + - * " "

' < > ( ) capital _ and letter number