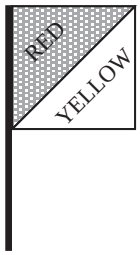
13 Semaphore

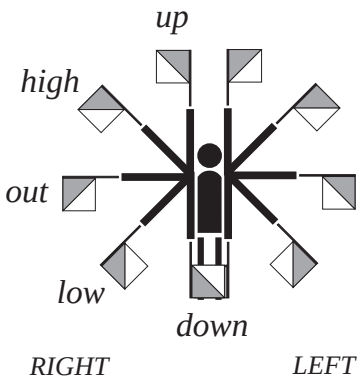
The semaphore flag signalling system, designed by the Chappe brothers in France in the late 18th century was used to carry despatches between French army units, including those commanded by Napoleon, and was soon adopted by other European states

More information is available on the website

http://www.encyclopedia4u.com/s/semaphore-communication-.html

The semaphore system we use today uses flags, usually square and divided diagonally into a red and a yellow section with the red in the uppermost triangle.



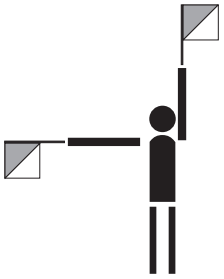


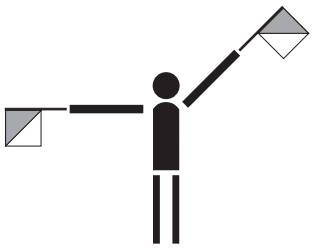
The signaller, with arms extended, holds the flags in various positions to represent the different letters of the alphabet. There are *eight* positions for each flag (up, down, out high, low for each of the left and right hands (LH and RH)).

For six of the positions (letters H, I, O, W, X, Z – see Appendix) the signaller is required to hold one or other of the flags *across* the body so that both flags are on the same side. The flags, though, are never both in the same position. Although the flags have two different patterns, these are not relevant to the signalling – flags of one colour could be used with the same result.

Activity 1

a) When the LH flag is in the up position, how many possible positions are there for the RH flag? (Do not allow the RH flag to be up as this would mean that the two flags would be in the same position).



b) 

Following on from a), if the LH flag is in the high position, how many possible positions can the RH flag now be in to give new signals?

c) Continue this progression to determine the total number of patterns available.

You should have found that for an 8-position system, the total number of positions is

$$7 + 6 + 5 + 4 + 3 + 2 + 1 = 28$$

Activity 2

What is the total number of patterns if you are allowed

a) 6 positions b) 16 positions ?

Why do you think that the 8-position system is used?

The full semaphore alphabet is shown in the Appendix.

Exercise 1

a) *Use the semaphore alphabet to send the message*

H E L P

b) *Decode the reply*

I AM COMING

Activity 3

The semaphore system can also be used for numbers. How do you think this is achieved?

Appendix

Semaphore alphabet