National Mathematics Day Activity

Title of chapter/article	Semaphore
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Each cipher and code activity has a suggested level: lower primary, upper primary or junior secondary. However, many of the activities can be enjoyed by students (and teachers!) of all ages.

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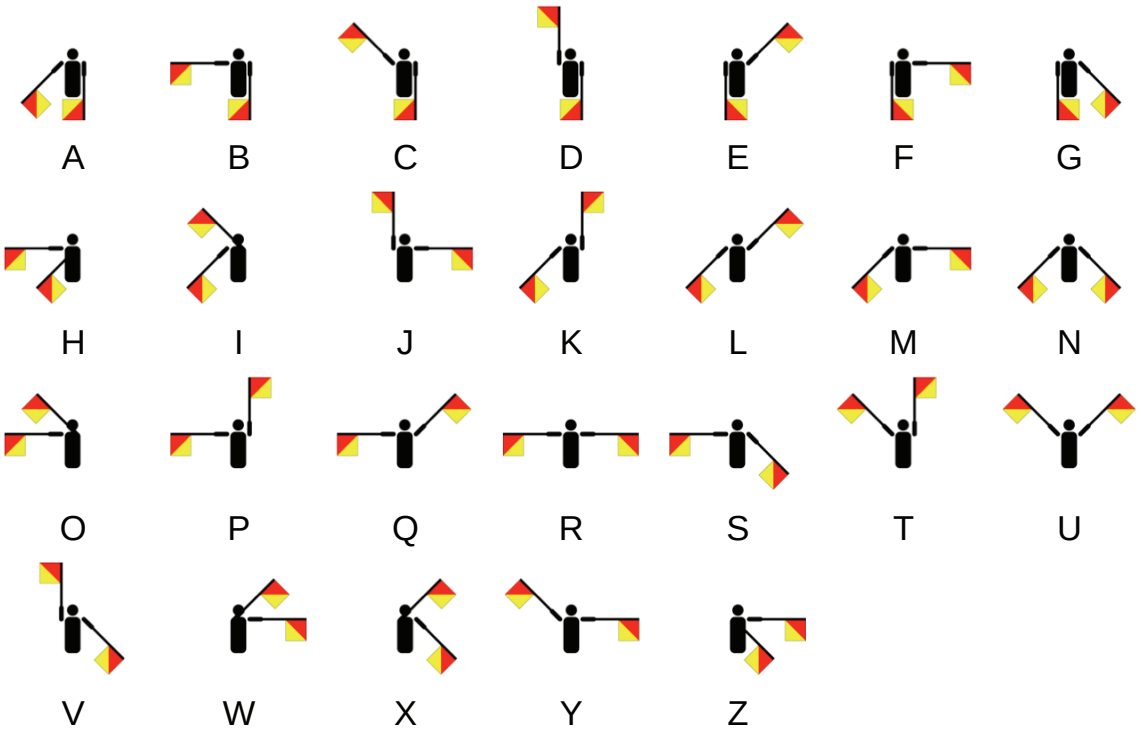
Semaphore

[primary]

Semaphore, the flag signalling system, was designed by the Chappe brothers in France in the late 18th century. Each signaller had to be able to see the next signaller so that the message could be passed down the line. The first ‘line’ was established between Paris and Lille in 1792. It was used to send messages between French army units, including those commanded by Napoleon.

Semaphore is an alphabet signalling system using two flags. The flags are usually square in shape, and are divided diagonally with the red portion on the upper hoist and yellow on the lower.



At first it seems confusing, but there is a pattern in terms of circles. One flag stays in a ‘fixed’ position while the other flag moves in a circular pattern (clockwise). The ‘fixed’ flag position is described from the observer’s view.

The pattern resembles a clock face divided into eight positions: low left, middle left, high left, up, high right, middle right, low right, and down. This gives 7 different positions for the ‘unfixed’ flag, e.g.

First circle: the ‘fixed’ flag points down.

A B C D E F G

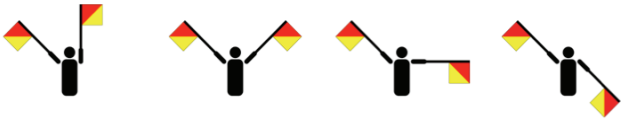
Second circle: the ‘fixed’ flag is in the low position.

H I K L M N

Third circle: the ‘fixed’ flag is in the middle left position.

O P Q R S

Fourth circle: the ‘fixed’ flag is in the high left position.



T U Y annul

Fifth circle: the ‘fixed’ flag is in the up position.

numeric J or alphabetic V

Sixth circle: the ‘fixed’ flag is in the high right position.

W X

Seventh circle: the ‘fixed’ flag is in the middle right position.

Z

- Why is the flag divided diagonally?
- Why does the red portion need to be on the upper hoist?
- Why couldn't you have both flags in the same position?
- Can you use the Semaphore alphabet to send the message H E L P?

- What does this word in Semaphore say?

- Can you write your own message using Semaphore?

- How far is it from Paris to Lille?
- How far do you think each signaller could see?
- How many people would be needed to send a Semaphore message over the distance from Paris to Lille?
- How long do you think it would take to send a message this distance?
- What are some of the advantages and disadvantages of this way to send messages?

- How many different Semaphore flag positions are there?
- If you were only allowed 5 positions (instead of 7) how many different Semaphore flag positions would there be?