



# COMMUNICATIONS AND SPECIAL CODES

**BACKGROUND**

### COMMUNICATING CLEARLY IN THE RAF

The RAF has the most powerful information and communication systems available. They must be able to communicate at all times. This communication can be in the form of data, voice, satellite link or landline. They use telephones, radio, digital communications networks, GPS, computers and code systems. Increasingly large amounts of information must flow without interruption, whilst also being protected. This is why codes are used. One of the main code systems used by the RAF is the phonetic alphabet.

### THE PHONETIC ALPHABET

The phonetic alphabet is a system where a letter is exchanged for a full word. See the table below for which word represents each letter. This system is widely used and recognised around the world.

A alpha	B bravo	C charlie	D delta	E echo		
F foxtrot	G golf	H hotel	I india	J juliett	K kilo	L lima
M mike	N november	O oscar	P papa	Q quebec	R romeo	S sierra
T tango	U uniform	V victor	W whiskey	X xray	Y yankee	Z zulu

### CALL SIGNS

Most units of the Royal Air Force are identified by a two-character alphabetical or alpha-numeric combination squadron code. Usually, that code is painted on the aircraft belonging to that unit. The squadron code is usually presented along with an individual letter or character to form a call sign for the particular aircraft.

When pilots speak to the control tower, they tell the air control officer their call sign using code words instead of letters. These code words form the phonetic alphabet. This helps the control tower to hear clearly the call sign so there is no misunderstanding as some letter sound very similar (for example m and n, or p and b).



#### Activity link

“The phonetic alphabet: making communication clear”

Answer:

Papa India Lima Oscar Tango spells: PILOT.

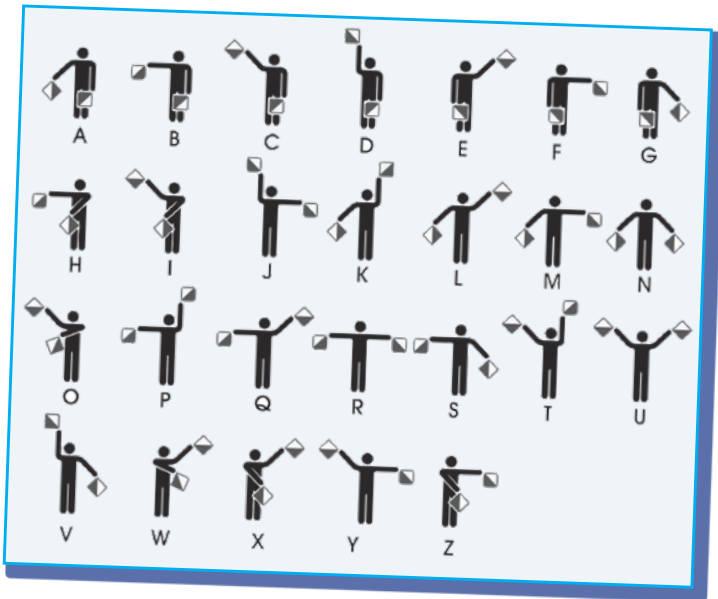


**CALL SIGN**



## SEMAPHORE

Semaphore is a system of sending messages by holding the arms or two flags or poles in certain positions according to an alphabetic code. It is really useful when you want to send a message to someone who is too far away to hear you. Each letter of the alphabet has its own particular code, as shown below:



## SECRET CODES

Sometimes its important to keep communications or messages private. A good way to do this is to replace or 'code' letters of the alphabet.

A	B	C	D	E	F	G	H	I	J
£	©	¥	≠	√	↑	♠	®	△	↙

K	L	M	N	O	P	Q	R	S	T
Δ	≡	◊	⌂	&	#	!	*	@	}

U	V	W	X	Y	Z
¤	§	«	~	¶	±



### Activity link

"Secret codes"

Answer:

Flying, Aircraft, Engine.



### Activity link

"Test your semaphore skills"

Answer:

Britain, Unit, Flight.



### AIRLINE IDENTITIES AND LOGOS

All airlines have their own unique identity - which is often displayed in the form of a distinctive logo.



#### Activity link

**"How well do you know your commercial aircraft?"**

Answer:

(A) Hawaiian airlines (B) Iran air, (C) Cathy Pacific,  
(D) Emirates, (E) Bahamas Air, (F) Alaska airlines (G)  
Delta airlines, (H) KLM (I) Qantas.

### READING CODES IN MAPS

Maps are important guides to tell us where landmarks are and other areas of interest whilst travelling. They contain lots of detail and use codes to describe features. Ordnance Survey (OS) is the national mapping agency for Great Britain. They produce printed and digital maps for personal and commercial use.



#### Activity link

**"How good are you at reading maps?"**

### MORSE CODE

One of the most famous coding systems is Morse Code, which was developed to allow messages to be sent over long distances. Morse Code messages can be sent using light or by pulses. When Morse Code was invented, the most common way to send a pulse message was via a telegraph. A telegraph, also known as a straight key, sends pulses in the form of electrical current based on the message that was "tapped out" using the telegraph key.

With Morse Code, each letter of the alphabet is translated into short and long signals (also known as dots and dashes). The pulse length of a dash is equal to the pulse length of three dots. Eventually, when Morse Code was adapted to radio, the dots and dashes began being referred to as "dits" and "dahs" based on the sound of the radio pulses.



#### Activity link

**"Communicating in morse code"**

Answers:

-. . - - - -. . -. -. . -. . -  
cockpit

... -. . - - - -. . -  
scout

-. . -. . -. . -. . -. .  
engineer

.. -. . -. . -. . -. . -. .  
fuselage





# COMMUNICATIONS AND SPECIAL CODES

**ACTIVITIES**



	A alpha	B bravo	C charlie	D delta	E echo	
F foxtrot	G golf	H hotel	I india	J juliett	K kilo	L lima
M mike	N november	O oscar	P papa	Q quebec	R romeo	S sierra
T tango	U uniform	V victor	W whiskey	X xray	Y yankee	Z zulu

Write your name using the phonetic alphabet

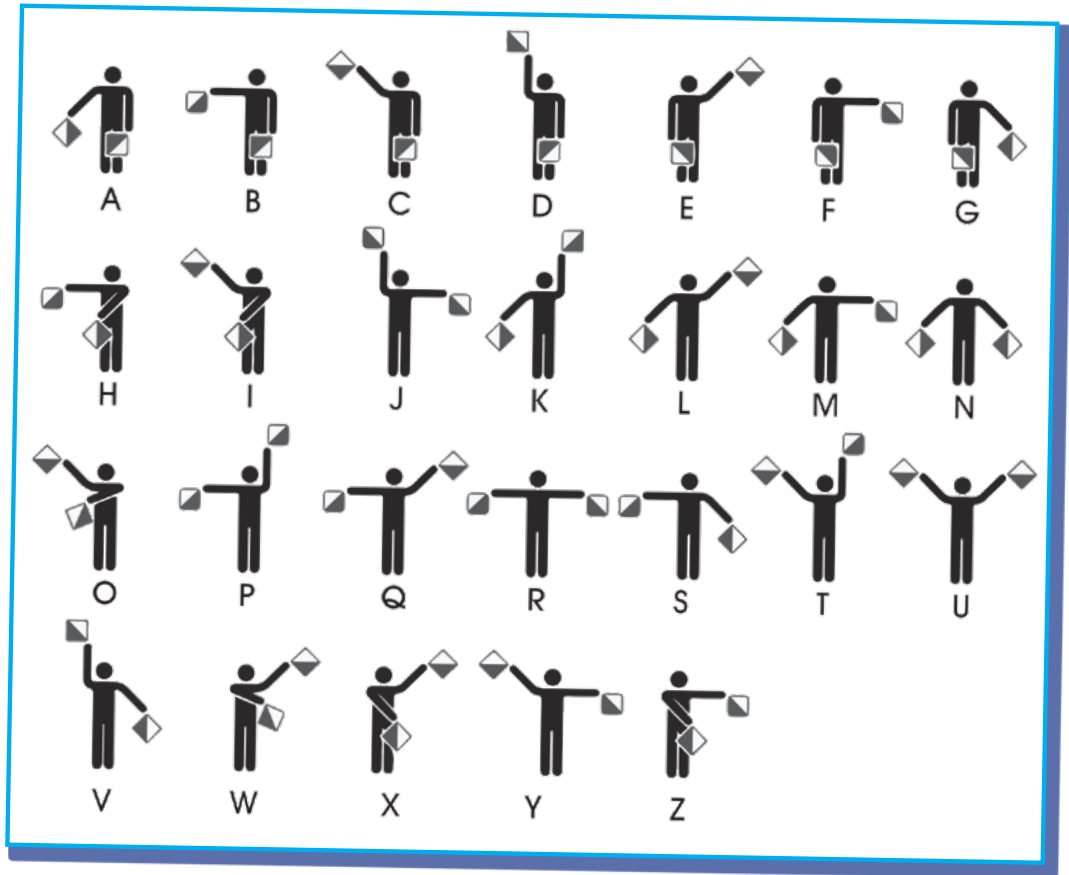
Write your favourite colour using the phonetic alphabet

What is the word written in code here?

PAPA INDIA LIMA OSCAR TANGO

TEST YOUR  
SEMAPHORE  
SKILLS!

USING THE  
SEMAPHORE  
CODES,  
SPELL OUT  
THE WORDS  
BELOW:





## SECRET CODES

A	B	C	D	E	F	G	H	I	J
£	©	¥	≠	√	↑	♠	®	⬆	↙

K	L	M	N	O	P	Q	R	S	T
Δ	≡	◇	⋮	&	#	!	*	@	}

U	V	W	X	Y	Z
⌘	§	«	~	¶	±

USING THE CODE ABOVE, WORK OUT THE WORDS AND BECOME A CODE-BREAKER!

↑ ≡ ¶ ⬆ ⋮ ♠

£ ⬆ \* ¥ \* £ ↑ }

√ ⋮ ♠ ⬆ √



HOW WELL DO YOU KNOW YOUR COMMERCIAL AIRCRAFT? HOW MANY CAN YOU IDENTIFY FROM THEIR LOGOS?

**A**




**B**




**C**



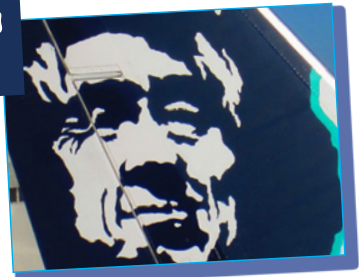

**D**




**E**



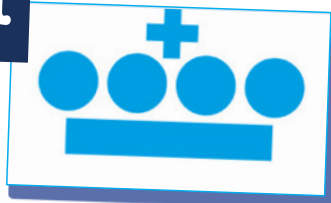

**F**




**G**




**H**



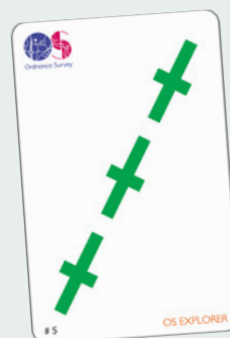
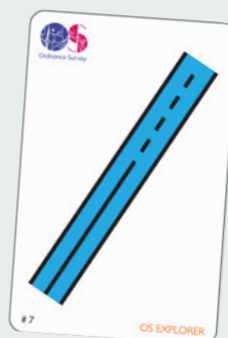
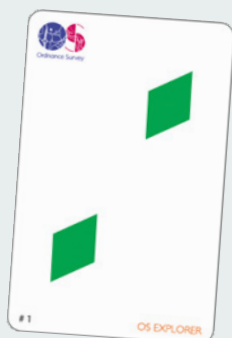

**I**





## HOW GOOD ARE YOU AT READING MAPS?

Download and print these free map symbols and make your own cards. It's a great way to learn how to read maps, why not compete with other groups and see who can guess the most right? There are 90 cards in total!



You can download the cards from here:  
<https://www.ordnancesurvey.co.uk/education/map-symbol-flashcards.html>

Using the guide below, convert the words from Morse Code.

Using the guide below, convert the words from Morse Code.

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-.. 0----- 1-.... 2-... 3-...  
4-... 5-... 6-... 7-... 8-... 9-....

--

● ● ●    —   ●   —   ●   — — —   ● ●   —   —

--

●      ■      ■ ■      ■      ● ●      ●      ●      ●      ●      ■      ●

--

• •    —    •    • •    —    • • •    •    •    —    • •    —    —    —    •    •



## PLAYING WITH WORDS

How many words of three or more letters can you make from the letters in these words:

HELICOPTER

COMMUNICATION

WEATHER

WRITE YOUR  
WORDS HERE



## DID YOU KNOW?

FUEL IS VERY HEAVY AND SO MUST BE SPREAD AROUND THE AIRCRAFT TO KEEP IT IN BALANCE. THE MAIN FUEL TANKS OF AN AIRCRAFT ARE USUALLY IN THE WINGS.