# Teacher Information

This resource includes a set of 5 mathematical puzzles, which act as clues to finding some treasure.

Each clue should successfully be solved, then the children can be given the next clue. The children could work on their own, or in pairs of small groups.

## Summary of Clues

Coded Message: children have to crack a code based on letters being changed in a pattern.

Your Destination: solve small clues to find a longitude/ latitude destination.

The Landing: use International Maritime flags to solve a clue.

The Island: Find the correct solution to a mathematical puzzle to find a single word.

Find the Treasure: follow a mathematical algorithm to draw a shape.

## Links

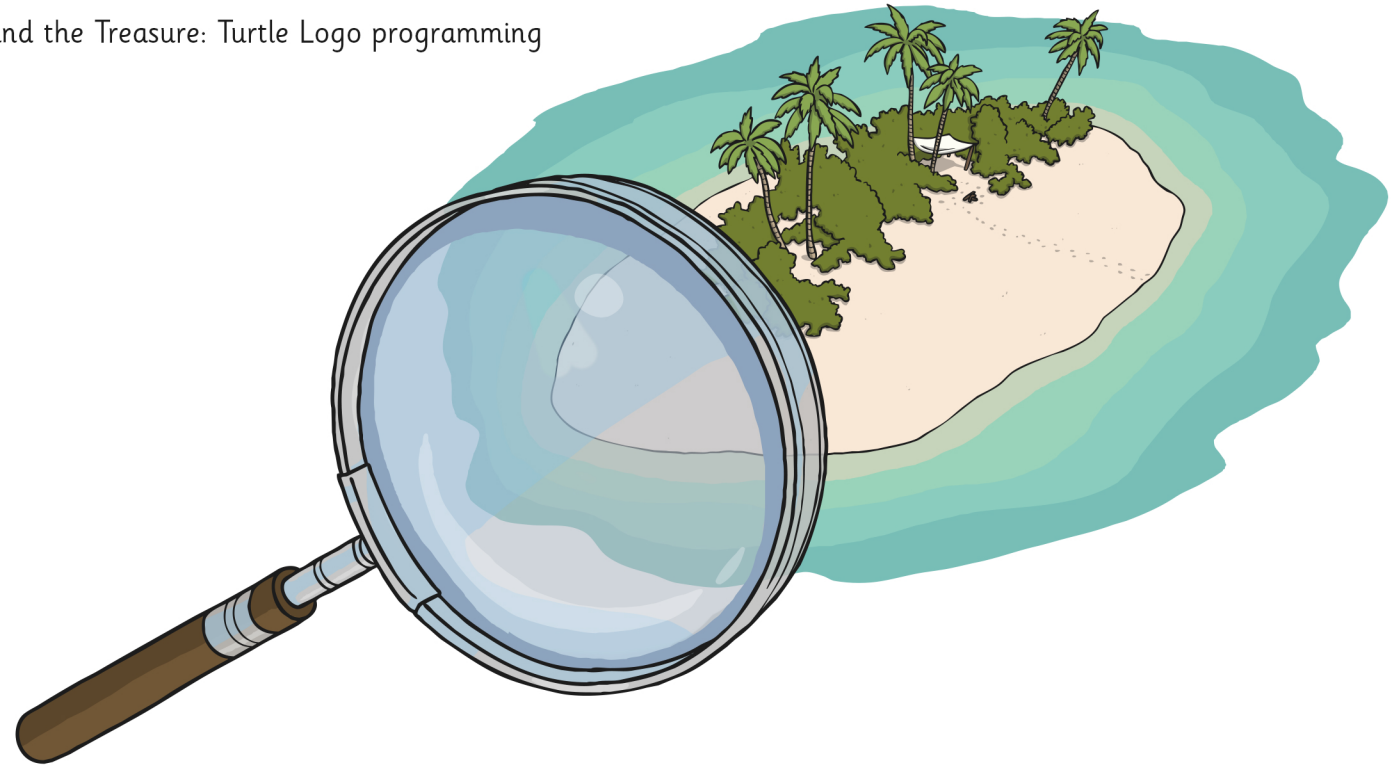
Possible wider learning links:

Coded Message: code cracking

Your Destination: longitude/ latitude, locations at sea, map coordinates

The Landing: message systems (flag, Morse etc.)

Find the Treasure: Turtle Logo programming



# A Coded Message

You find the following coded message slipped under your door. You know that sometimes a code exchanges letters like this:

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| l | m | n | o | p | q | r | s | t | u | v | w | x | y | z | a | b | c | d | e | f | g | h | i | j | k |

So you need to look in a coded message for simple short words like a, he, it, the. In a code like:

Wzzv qzc esp nzxxzy hzcod ty esp nzop.

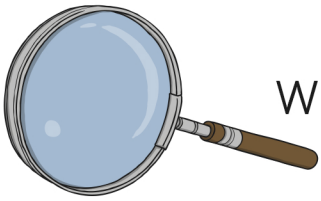
The word "esp" appears twice, so it might be the word "the".
Can you work out the rest of this code?

Here is the message you received. This message uses a different code.

Pfl nzcc evvu r jyzg reu r tivn. Kyve pfl nzcc sv xzmve pfli uvjkzerkzfe.

Use this grid once you have cracked this code to work out the message.

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | | | | |



When you have the code, you can have the next clue.

Cut out these strips to help you crack the 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

# Your Destination

Your destination is an island. Locations are given by a series of numbers with 2 letters. These are the degrees and minutes latitude and longitude. London is 510 32' N 00 5' W.

The clue to your destination is 4 numbers and 2 letters, in the order:
number, number, letter, number, number, letter.

| Number | Number | Letter | Number | Number | Letter |
|---|---|---|---|---|---|
| A two digit number below 20, whose digits add up to 6. | A multiple of 8, where the second digit is one more than the first digit. | This letter is a consonant in island and mountain but not in beach. | A prime number between 60 and 70, where the first digit is bigger than the second. | A square number with the same digits as the previous clue. | This letter has 4 straight lines, is symmetrical and it's name is twice another letter. |
| | | | | | |

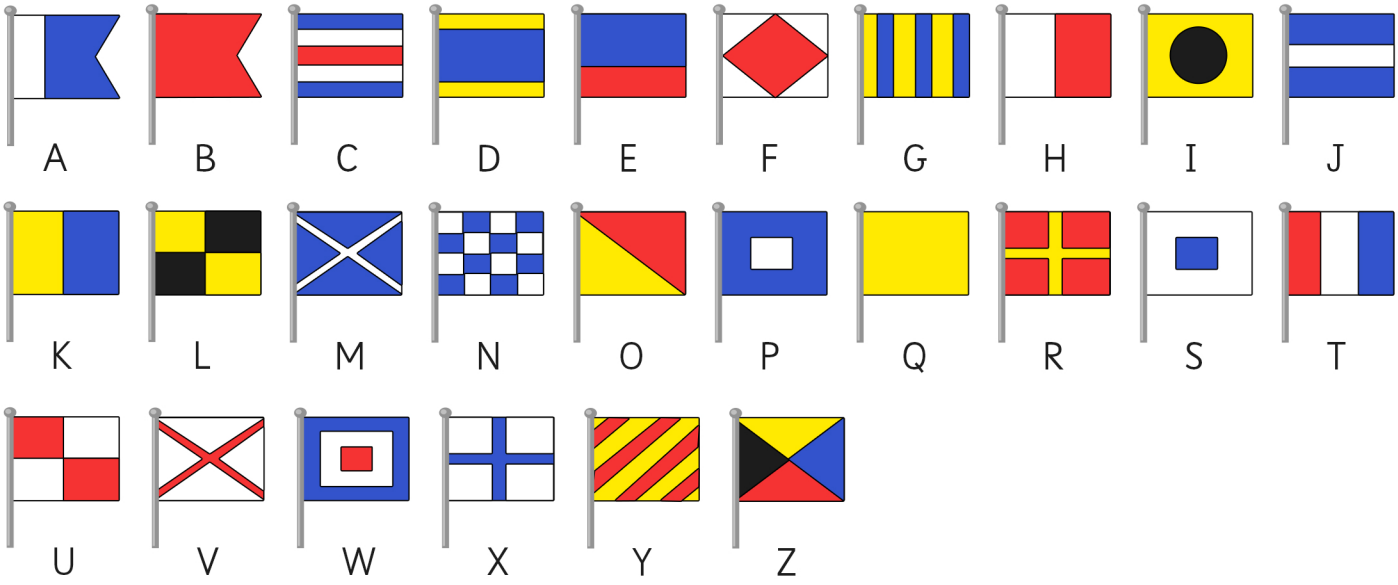
What is your destination?

_____0 _____' _____ _____0 _____' _____

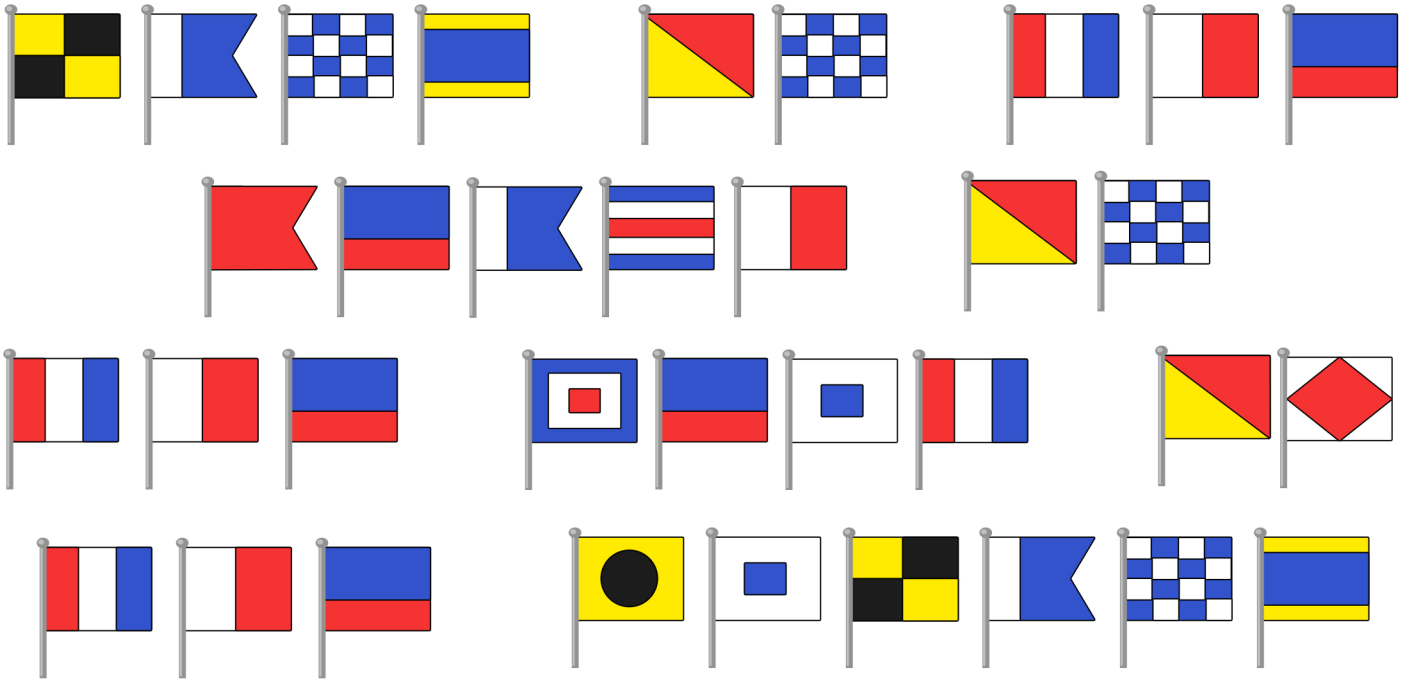
When you have the destination, you can have the next clue.

# The Landing

You need to know where to land on the island. Here is the clue. It uses the International Maritime Flags.




Here is the message:

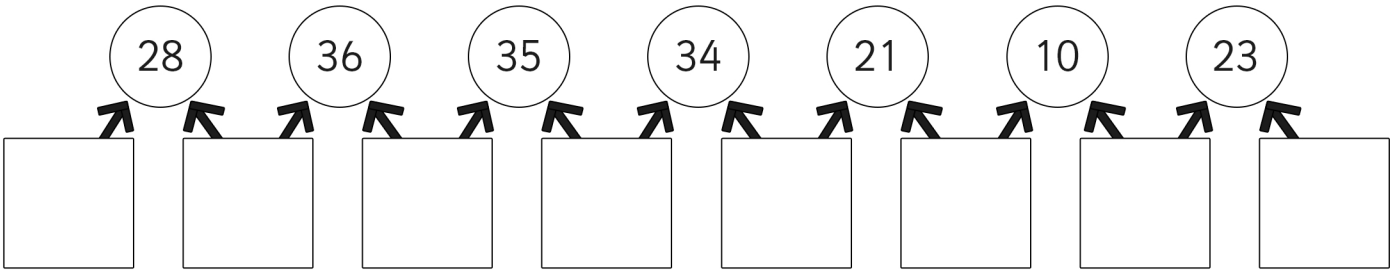


When you know where to land, you may have the next clue.

# The Island

The coded message you receive for where you must go now is a single word.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 |




The 8 numbers that need to be found are in the 8 squares. Adjacent numbers add to make the number in the circle above.

Note: there are a range of mathematical answers to the problem. You will need to find one which spells a word..


When you know where to go, you can find the treasure.

# Find the Treasure

The treasure is found using a mathematical algorithm. You will need to use the letters and numbers to draw a shape. When the shape is drawn correctly, you have found the treasure.

F5 R45 F7 R45 F8 R45 F7 R45 F5 R135 F7 L45 F8 L45 F7

# Answers

**A Coded Message**

eg. code:

Wzzv qzc esp nzxxzy hzcod ty esp nzop.
Look for the common words in the code.

Message received:

Pfl nzcc evvu r jyzg reu r tivn. Kyve pfl nzcc sv xzmve pfli uvjkzerkzfe.
You will need a ship and a crew. Then you will be given your destination.

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| r | s | t | u | v | w | x | y | z | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q |

**Your Destination**

15° 56’ N  61° 16’ W

**The Landing**

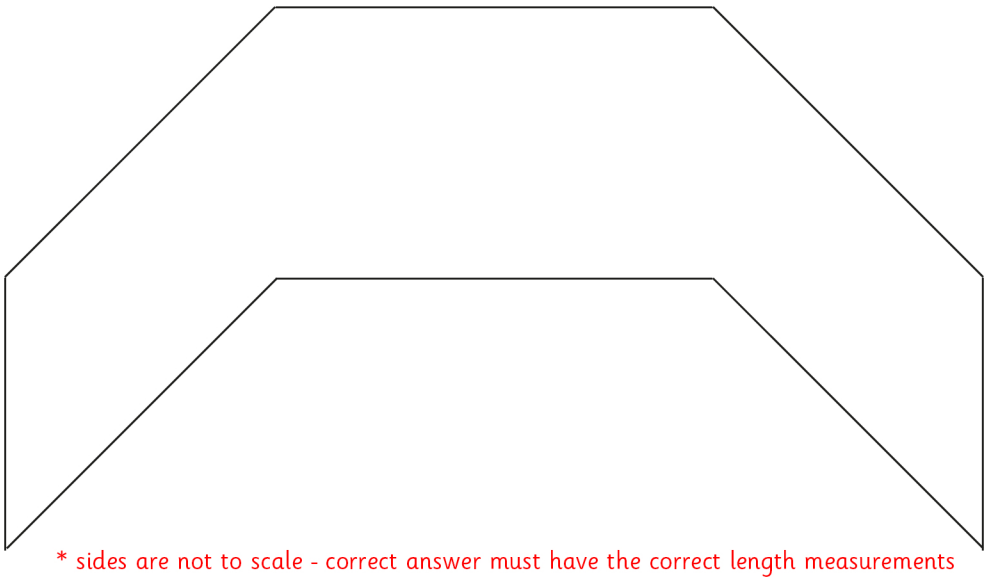
Land on the beach on the west of the island.

**The Island**

13, 15, 21, 14, 20, 1, 9, 14 = mountain

**Find the Treasure**

Forward 5cm
Turn right 45°
Forward 7cm
Turn right 45°
Forward 8cm
Turn right 45°
Forward 7cm
Turn right 45°
Forward 5cm
Turn right 135°
Forward 7cm
Turn left 45°
Forward 8cm
Turn left 45°
Forward 7cm



* sides are not to scale - correct answer must have the correct length measurements