



# Decoding an Extraterrestrial Message

Radio astronomers from the Université de Montréal have recently picked up a signal from the stars using a radio telescope from the Dominion Radio Astrophysical Observatory in Penticton, British Columbia. The researchers believe that the signal is a binary message sent by an extraterrestrial civilization.

Here's the content of the message: 0 0 1 1 1 0 0 0 1 0 0 0 1 0 0 1 0 1 0 1 0 0 1 0 0 0 1 0 0 0 1 1 1 0 0

- How many zeroes are in the message? 22
- How many ones are in the message? 13
- How many bits of information in total are in the message? 35  
*(A bit of information is a zero or a one.)*
- Which two prime numbers (other than 1) can you divide this total number of bits by?  
5 and 7

To understand the message, astronomers suggest transposing the zeroes and ones onto a grid with the number of rows and columns matching the two prime numbers you've identified in the question above. Darken the squares representing a one and leave blank the squares representing a zero.

**Hint:** Fill in the squares beginning with the top left corner of the grid and continue to the end of the first row. Then jump to the next row and do the same. To avoid errors, check off each bit in the message as you transpose it onto your grid.

**Good luck!**

Grid n° 1

		■	■	■		
	■				■	
	■		■		■	
	■				■	
		■	■	■		

Grid n° 2

		■	■	■		
			■			
		■				
■		■			■	
		■				
	■					
■	■	■				