Puzzle 1.

Decrypting a secret message

The secret message when decrypted should read:

THIS IS AN EXAMPLE OF A CAESAR CIPHER USING THE LETTER SEVEN TO THE RIGHT

As the decrypted message suggests, A=H, B=I and so on. Ciphers based on shifting the plaintext along the alphabet by a certain number of places are known as a Caesar Ciphers. In deciphering it, the presence in the ciphertext of short words, which could be guessed to be plaintext words such as ‘a’, or ‘the’, was a big help.

Puzzle 2.

Mind reading with numbers

Let the number the volunteer first thinks of be x. It can be any positive integer, though the mind reader asks for between 1 and 10 so his subject can perform the calculations easily.

He takes the subject through these steps, which always result in 2:

STEP 1: \( x + 3 \)

STEP 2: \( 2(x + 3) = 2x + 6 \)

STEP 3: \( 2x + 6 + x = 3x + 6 \)

STEP 4: \( (3x + 6) / 3 = x + 2 \)

STEP 5: \( x + 2 - x = 2 \)

Puzzle 3.

A foolproof scheme

The scheme described is known as a martingale, and though it works in theory it fails in practice.
One reason why it fails is that if the string of losses is long enough, the gambler will run out of money. In the example given, with a £50 initial stake, after 5 losses in a row the amount required to be bet will be £1,600. It will be £51,200 after 10 losses, and more than £1.6 million after 15 losses.

Even if you were rich enough not to blink at the escalating stakes, you would be hard pressed to find someone to take the other side of your mounting bets: most casinos have stake limits.

**True or False**

True. Humans have 46 chromosomes, which is more than laboratory mice (40) and dolphins (44) but less than kingfishers (132) and pineapples (50).