JF Maths CS1003

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Timetable

Michaelmas Term: 26-Sept-2016 to 16-Dec-2016

Time\Day	**Monday**	**Tuesday**
9am	*CS1003* ***Lecture*** *(Goldsmith Hall)* **But** (On 17 & 24 Oct in **LB 04**)	
12Noon	CS1003 **Tutorial** (Goldsmith)	
3pm	CS1003 **Tutorial** (LB 08)	*CS1003* ***Lecture*** *(MacNeil)*
4pm	CS1003 **Tutorial** (LB 04)	*CS1003* ***Lecture*** *(MacNeil)*

Bank Holiday Monday: 31th October.

Reading Week: 7-Nov to 11-Nov.

Awesome Mind Reader

Awesome Mind Reader Solution:
Let n be the 2-digit where $10 \leq n \leq 99$ and let a and b be the digits of n, $\therefore$ (therefore)
$n = 10 * a + b$ – we use $*$ for multiplication.
with $1 \leq a \leq 9$ and $0 \leq b \leq 9$.
Calculating,
$(10 * a + b) - (a + b)$
$= 9 * a$ where $a \in \{1..10\}$
tf. $answers = \{9, 18, 27, 36, 45, 54, 63, 72, 81, 90\}$.

All *answers* are given the same symbol, which may change from game to game.
Note: Some non multiples of 9 are also given this symbol, as a distraction.

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Puzzles

Qs. 1

- If someone says to you,
  "I'll bet you a euro that if you give me five euro I'll give you a 10 euro in exchange."
  Would that be a good bet to take?

- Suppose you and I have the same amount of money. How much must I give you so that you have €10 more than me.
- A bottle of wine costs €10. The wine is worth €9 more than the bottle. How much is the bottle worth.

Qs. 2

In a certain sports pub each fan was either a Spurs fan or an Arsenal fan.

At one stage one of the Spurs fans decides to become an Arsenal fan and as a consequence there was the same number of Arsenal fans as Spurs fans.

A bit later this new Arsenal fan changes their mind and reverts to being a Spurs fan. Later on, an Arsenal fan decides to become a Spurs fan, at which point there were twice as many Spurs fans as Arsenal fans.

How many fans were there in the sports pub?

Solution Qs. 2

Let S be the number of Spurs fans.
Let A be the number of Arsenal fans.
From
"At one stage one of the Spurs fans decides to become an Arsenal fan and as a consequence there was the same number of Arsenal fans as Spurs fans."
we get:
$S - 1 = A + 1 \therefore S - A = 2$

Solution Qs. 2 (Cont'd)

From
"A bit later this new Arsenal fan changes their mind and reverts to being a Spurs fan. Later on, an Arsenal fan decides to become a Spurs fan, at which point there were twice as many Spurs fans as Arsenal fans."
$S + 1 = 2 * (A - 1)$
$\therefore S + 1 = 2 * A - 2$
$\therefore S - 2 * A = -3$
From above: $S - A = 2$ $\therefore$ we have simultaneous equations:

Cont'd

$$\begin{array}{rcrcr} S & - & 2*A & = & -3 \\ S & - & A & = & 2 \end{array}$$

Multiply line2 by -1:

$$\begin{array}{rcrcr} S & - & 2*A & = & -3 \\ -S & + & A & = & -2 \end{array}$$

Add line1 to line2:

$$\begin{array}{rcrcr} S & - & 2*A & = & -3 \\ 0 & - & A & = & -5 \end{array}$$

$\therefore A = 5$
Since $S - 2*A = -3$ i.e. $S - 2*5 = -3$
$\therefore S = 7$