**ATM Session March 2013 Division**

**Whiteboard pens; no handouts**

1. **Humour me 222222 ÷ 13; 444444; 666666; 777777?; 222223; 22222226**
2. **Remind re. long division algorithm:**

**1260257 ÷ 37 (Wikipedia)**

**Dividend; divisor; quotient**

1. **Other long division traditions (in the room? Layouts)**

**(vertical line between 9 and 17) France?**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 6 | 3 | 5 | 9 | 17 |
| − 5 | 1 |  |  | 374 |
| 1 | 2 | 5 |  |   |
| − 1 | 1 | 9 |  |   |
|   |   | 6 | 9 |   |
|  | − | 6 | 8 |   |
|  |  |   | 1 |   |

**Mexico:**  125 (Explanations)

 4)500

 10 (5 - 4 = 1)

 20 (10 - 8 = 2)

 0 (20 - 20 = 0)

**No subtractions written in**

**European**

 127|4

 −12 |31,75

 07

 − 4

 30

 −28

 20

 −20

 0

1. **Binary:**

**Divide a seven digit binary by a three digit binary**

1. **÷ 7 ; ÷ 11; ÷17; ÷ 19 etc. make a good fist of 19 at least**
2. **Div by 19; explain; magic square; diagonals; powers of two backwards sum.**
3. **How to rescue recurring decimals using a calculator?**
4. **Polynomial division: start with x3- 1 ÷ (x-1)**
5. **1/(1+1/2) diagram**
6. **Developments: 1/(1+2) cf. 1/(2+1); 9/(1+3) cf. 9/(3+1) Generalise**
7. **Show by division that 1/99 = 1/100 + 1/10000+ etc. generalise.**

**Head-scratching method (Vedic/Horner’s)**

To divide

12x2 -8x- 32 ÷ (x-2)

12 has to be the first coefficient in the quotient so write down 12x.

Multiply the -2 by 12 and change the sign (this is the same as multiplying 12 by the complement of -2 which makes x-2 become x)

Add the 24 to the next coefficient which is -8

i.e. 24-8 = 16 so write down 16.

Multiply 16 by the -2 and change the sign

Add the 32 to the next coefficient which is -32

i.e. 32-32 = 0

So we are done, with 12x+16 as the answer.

**Try some others:**

7x2 +5x + 3 ÷ (x-1)

1234 ÷ 112 (n.b. the complement this time will be 888 to bring 112 up to 1000)