Integers (Junior UKMT)

These questions must be attempted ***without a calculator***

Topics covered in the questions below may not necessarily be from the topic of the title.

1. Which of the following has the greatest value?

A $(1 \times 2) \times (3 \times 4)$ B $(1 \times 2) + (3 \times 4)$ C $(1 \times 2) \times (3 + 4)$

D $(1 + 2) \times (3 \times 4)$ E $(1 + 2) \times (3 + 4)$

2. The value of $1000 - 100 + 10 - 1$ is:

A 111 B 900 C 909 D 990 E 999

3. At half time in a netball match, Jokers were leading Jesters by 3 goals to 2. Seven goals were scored in the second half.

Which of the following could *not* have been the result of the match?

A The match was drawn B Jesters won by 2 goals C Jesters won by 4 goals

D Jokers won by 2 goals E Jokers won by 3 goals

4. Which of the following numbers is *not* the difference between two of the others?

A 1 B 7 C 6 D 5 E 2

5. The DISPUTOR is similar to a calculator, but it behaves a little oddly. When you type in a number, the DISPUTOR doubles the number, then reverses the digits of this result, then adds 2 and displays the final result. I type in a whole number between 10 and 99 inclusive.

Which of the following could be the final result displayed?

A 39 B 41 C 42 D 43 E 45

6. In the multiplication $\begin{array}{r} AB \\ \times\, C \\ \hline DE \end{array}$ each letter represents a different digit and only the digits 1, 2, 3, 4, 5 are used.

Which of the letters represents 2?

A B C D E

7. In this multiplication each letter stands for a different digit.

Which letter stands for 3?

$$\begin{array}{r} A\ 6\ B\ C \\ \times \qquad 7 \\ \hline D\ 9\ E\ 9\ 8 \end{array}$$

A B C D E

8. In the subtraction sum on the right a, b and c are digits, and a is less than b.

What is the value of c?

$$\begin{array}{r} b\ a \\ -\ a\ b \\ \hline c\ 6 \end{array}$$

A 3 B 4 C 5 D 6 E a number greater than 6

9. The year 2004 had the units digit equal to twice the thousands digit.

How many years after 2004 does this first happen again?

A 10 B 36 C 220 D 1002 E 2004

10. 'Saturn' chocolate bars are packed either in boxes of 5 or boxes of 12.

What is the smallest number of full boxes required to pack exactly 2005 'Saturn' bars?

A 118 B 167 C 168 D 170 E 401

11. In a certain code, A = 1, B = 2, C = 3 etc. Words are encoded by multiplying together the values of their letters, so the code for SQUARE is 19 × 17 × 21 × 1 × 18 × 5 = 610 470. Similarly, the code for RECTANGLE is 31 752 000.

What is the code for TRIANGLE?

A 2 116 800 B 2 721 600 C 19 051 200 D 25 401 600 E 52 920 000

12. The letters J, M, C, represent three different non-zero digits.

$$\begin{array}{r} J\ \ J \\ M\ M \\ C\ \ C \\ \hline J\ M\ C \end{array}$$

What is the value of $J + M + C$?

A 19 B 18 C 17 D 16 E 15