# Comórtas Sóisearach Matamaitice Éireann 2012

Organised by

## The Irish Mathematics Teachers Association
**FINAL**

*Time : 1 HOUR*

**Instructions**

1.      Do not open the examination until you are told to do so.

2.      **You are permitted to use a calculator. The use of graph (squared) paper is not allowed.** You may use rulers, compasses and paper for rough work.

3.      Be certain that you understand the coding system for your answer sheet. If        you are not sure, ask the supervisor to explain it.

4.      This is a multiple-choice test. Each question is followed by five possible   answers marked **A, B, C, D** and **E.** Only one of these is correct. When you have
        decided on your choice, enter the appropriate letter on your answer sheet for        that question.

5.      **Scoring:**
                Each answer is worth 5 marks in Section A, 6 marks in Section B, and
                8 marks in Section C.
                There is **no penalty** for an incorrect answer.
                Each unanswered question is worth 2 marks to a maximum of 10
        marks.

6.      Diagrams are not drawn to scale. They are intended as aids only.

7.      Please do not begin until you are instructed, you will have **1 HOUR** of       working time.

## 5 Marks

1)      How many prime numbers between  20 and 380 end in 8?

        (A)     28      (B)     10      (C)     5       (D)     3       (E)     0

2)      A motorist drove a distance of 28 km in 30 minutes.
        What is his average speed in km/h?

(A)    28    (B)    36    (C)    56    (D)    58    (E)    62

3)    The value of $\dfrac{2012 \times 2.012}{201.2 \times 20.12}$ is

(A)    0.01    (B)    0.1    (C)    1    (D)    10    (E)    100

4)    How many odd numbers are there between 1 and 99?

(A)    46    (B)    47    (C)    48    (D)    49    (E)    50

5)    A rectangle is cut into two squares each with a perimeter of 28 cm. What was the perimeter of the rectangle (in cms)?

(A)    36    (B)    42    (C)    45    (D)    48    (E)    56

6)    A 55 minute school assembly ends at 10:05 am. At what time did it start?

(A)    9:15    (B)    9:20    (C)    9:10    (D)    9:50    (E)    10:50

7)    How many natural numbers can divide 31 and have a remainder of 7?

(A)    0    (B)    1    (C)    2    (D)    3    (E)    4

8)    When Sue adds the lengths of of three sides of a rectangle she gets 20 cm. when Jim adds the lengths of three sides of the same rectangle he gets 22 cm.
What is the perimeter of the rectangle (in cms) ?

(A)    24    (B)    26    (C)    28    (D)    32    (E)    48

9)    In a soccer tournament FC Hope scored three goals and had one goal scored against it. It won one game, drew one game and lost one game. What was the score in the game that FC Hope won?

(A)    2-0    (B)    3-0    (C)    1-0    (D)    4-1    (E)    0-1

10)    The product of three different prime numbers is 42. What is the sum of these three prime numbers?

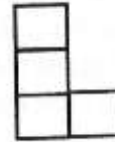(A)    12    (B)    13    (C)    17    (D)    22    (E)    43

**6 Marks**

11) 4 people can be seated at a single card table. If two tables
are placed end to end, 6 people can be seated as shown
in the diagram.
How many tables must be placed end to end to seat 22 people?

(A)   8   (B)   10   (C)   11   (D)   12   (E)   14

12) On my side of the street the houses are numbered  2, 4, 6, 8, 10, 12,
14, and 16. My house is positioned so that the sum of all the houses to
the left of me is the same as the sum of all the houses to the right of
me. What is my house number?

(A)   6   (B)   8   (C)   10   (D)   12   (E)   14

13) Which of the the following numbers cannot be expressed as the sum
of two or more consecutive whole numbers?

(A)   12   (B)   13   (C)   14   (D)   15   (E)   16

14) Sheila mixes 1 litre of 1% butterfat milk, 2 litres of 2% butterfat milk
and 4 litres of 4% butterfat milk. What perccntage of the resulting
seven litres of milk is butterfat?

(A)   1%   (B)   2%   (C)   3%   (D)   4%   (E)   5%

15) When the sum of a certain set of numbers is doubled, the result is
5248. If one of the numbers is changed from 213 to 312, then twice
the sum of the new numbers is

(A)   5347   (B)   5247   (C)   5560   (D)   5577   (E)   5446

16) In a school of 860 students, 440 are girls. One fourth of the students travel by bus.
300 of the boys do not go on the bus. How many girls  travel by bus?

(A)   95   (B)   96   (C)   100   (D)   105   (E)   110

17) At exactly 20:12 Jack looked at his digital watch, which was set to
display time in 24 hour mode. What is the shortest amount of time,
in minutes, after which the displayed time will again contain the digits
0, 1, 2 and 2

(A)   40   (B)   45   (C)   50   (D)   55   (E)   60

18) How many rectangles of area 6 are in the 4 X 5 diagram shown?



(A)    12    (B)    14    (C)    15    (D)    16    (E)    17

19) The diagram shows an L-shaped figure made from four small squares. In how many ways can an extra small square be added so that the the new resultant figure has an axis of symmetry?



(A)    1    (B)    2    (C)    3    (D)    5    (E)    6

20) In a certain street houses on the right hand side have odd numbers. However people in these houses do not use the digit 3. The first house on the right hand side is  number 1.
What is the number of the 15th house on the right hand side of this street?

(A)    29    (B)    41    (C)    43    (D)    45    (E)    47

**8 Marks**

21) It takes 255 digits to number the pages of a book: 1, 2, 3……….
The number of  pages the   book contains is

(A)    111    (B)    121    (C)    122    (D)    211    (C)    212
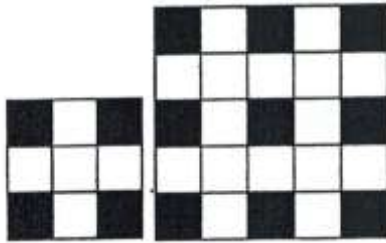
22) One third of the birds in a cage are blue. Forty of the 60 females are blue, while 25% of the males are blue.
How many birds are in the cage?

(A)    60    (B)    120    (C)    180    (D)    240    (E)    300

23) A bus is scheduled to stop outside my house at equal intervals throughout the day. It is now 3:25 pm and the last bus arrived 6 minutes ago, but was 2 minutes late. The next bus is due at 3:52 pm. When is the bus after that due?

(A) 4:23 pm  (B)        4:27 pm  (C ) 4:33pm  (D) 4:30 pm  (E) 4:37 PM

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24) Square floors are made of black and white tiles. Floors with 4 and 9 black tiles are shown in the diagram. There is a black tile in each corner and all tiles around a black tile are white.
How many white tiles are needed for a floor with 25 black tiles?



(A)    25    (B)    39    (C)    45    (D)    56    (E)    72

25) In a certain month there were 5 Saturdays and 5 Sundays, but only 4 Fridays and 4 Mondays. In the following month there will be

(A)    5 Wednesdays        (B)   5 Thursdays     (C)    5 Fridays
(D)    5 Saturdays         (E)   5 Sundays