



Comórtas Sóisearach Matamaitice Éireann 2013

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.
- Section A 5 Marks**

- 1) 75 is 20% of what number?
(A) 3.75 (B) 15 (C) 25 (D) 37.5 (E) 375
- 2) Four ice-creams cost €6 more than one ice-cream. What is the cost of one

ice-cream?

- (A) €1 (B) €2 (C) €3 (D) €4 (E) €5

- 3) John and Mary got a job stacking cans on a shelf. Altogether they stacked 60 cans. If John stacked three cans for every two that Mary stacked, how many cans did Mary stack?

- (A) 20 (B) 24 (C) 30 (D) 36 (E) 40

- 4) What is the greatest number of Mondays that can occur in a 36 day period?

- (A) 3 (B) 4 (C) 5 (D) 6 (E) 7

- 5) Dave buys a large bar of chocolate. He eats half of it on the first day. On the second day he eats one third of the remaining part. What fraction of the bar is still uneaten?

- (A) $\frac{1}{2}$ (B) $\frac{1}{3}$ (C) $-\frac{1}{4}$ (D) $\frac{1}{6}$ (E) $\frac{1}{12}$

- 6) The value of $\frac{1}{2} + \frac{1}{4} + \frac{1}{5} + \frac{1}{6} - \frac{1}{5} + \frac{1}{2} + \frac{5}{6} + \frac{3}{4}$ is

- (A) 4 (B) 3 (C) $2\frac{2}{3}$ (D) $3\frac{2}{3}$ (E) $2\frac{5}{6}$

- 7) Two pairs of shoes have been thrown on to the floor of a dark closet. There is no light. One pair is newer than the other.

If you pick up the first two shoes that you feel what is the probability that the two shoes you pick will belong to the newer pair?

- (A) $\frac{1}{2}$ (B) $\frac{1}{5}$ (C) $\frac{1}{4}$ (D) $\frac{1}{6}$ (E) $\frac{1}{8}$

- 8) From all the 3-digit numbers where the sum of their digits is 8, the largest and the smallest are chosen. What is their sum?

- (A) 707 (B) 907 (C) 916 (D) 1000 (E) 1001

- 9) Four athletes are the only participants in each of eight events at an athletics meeting. For each event three medals are awarded. If each of these four athletes wins the same number of medals how many medals did each athlete win?
- (A) 3 (B) 4 (C) 5 (D) 6 (E) 8
- 10) A list is made of every digit that is the units digit of at least one prime number. How many numbers in the answers appear in the list?
- (A) 1 (B) 2 (C) 3 (D) 4 (E) 5

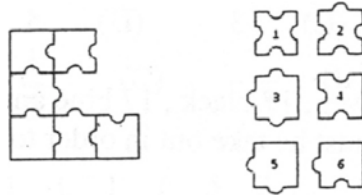
Section B 6 Marks

- 11) I think of a positive number, square it, add 12, halve the answer and now find that I get 38. What was the original number?
- (A) 9 (B) 32 (C) 3 (D) 8 (E) 961
- 12) A man has 51 socks in a drawer, 17 black, 17 blue and 17 white. Without looking how many socks must he take out in order to be certain to have a pair of socks of each colour?
- (A) 6 (B) 19 (C) 35 (D) 36 (E) 51
- 13) If X and Y represent positive whole numbers and $\frac{X}{3} + \frac{Y}{4} = \frac{11}{12}$ what is the value of X + Y?
- (A) 2 (B) 3 (C) 4 (D) 5 (E) 6
- 14) In my street there are 17 houses. John lives in the last house on the even side, it is number 12. His cousin lives in the last house on the odd side. What is the number of his house?
- (A) 5 (B) 7 (C) 13 (D) 17 (E) 21
- 15) Sam found an old book in the attic. When he opened it, there was page 24 on the left side and page 45 on the right. How many sheets of paper were missing between these two pages?
- (A) 24 (B) 21 (C) 11 (D) 10 (E) 9

- 16) The positive whole numbers from 1 to 3000 are arranged in columns in the pattern shown below. Please note that 2, 9 and so on are in column C. Under what letter will 2013 appear?

A	B	C	D	E	F	G
1		2		3		4
	7		6		5	
8		9		10		11
	14		13		12	

- (A) A (B) C (C) E (D) F (E) G
- 17) Which of the three numbered puzzle pieces should be added to the picture to complete the square?



- (A) 1,3,4 (B) 1,3,6 (C) 2,3,5 (D) 2,3,6 (E) 2,5,6
- 18) A prime number is a whole number greater than 1 that can be divided only by itself and 1. What is the smallest positive even number that can be expressed as the sum of exactly two prime numbers, possibly equal, in more than one way?
- (A) 4 (B) 6 (C) 8 (D) 10 (E) 12
- 19) A group of students were planning a trip. If each of them paid €4, then they would be €4 short to pay for the trip. If each of them paid €6, they would have €6 more than they needed. How much should each pay so that they would have the exact amount for the trip?
- (A) €4.40 (B) €4.60 (C) €4.80 (D) €5 (E) €5.20
- 20) John and Sarah both bought stamps for their collections. Each stamp John bought costs him €1.10 and Sarah paid 70 cent for each of her stamps. Between them they spent exactly €10. How many stamps did they buy in total?
- (A) 9 (B) 10 (C) 11 (D) 12 (E) 13

Section C 8 Marks

- 21) A whole number is divisible by 3 if the sum of its digits is divisible by 3. A three digit number has all digits odd.
How many of these numbers is divisible by three?
- (A) 29 (B) 36 (C) 39 (D) 40 (E) 41
- 22) The sum of 41 consecutive whole numbers is 2009. If we multiply the smallest and the largest of these numbers the answer is
- (A) 2100 (B) 1932 (C) 1960 (D) 2001 (E) 2030
- 23) Sam forms two four digit numbers using each of the digits 1, 2, 3, 4, 5, 6, 7 and 8 exactly once. She wants to make the sum of the two numbers as small as possible.
What is the value of the smallest possible sum?
- (A) 2468 (B) 3333 (C) 3825 (D) 4734 (E) 6912
- 24) A group of scouts went on an expedition. At dinner each tin of soup was shared between 2 scouts, each tin of tuna was shared between 3 scouts and each tin of rice was shared between 4 scouts. Each scout had all three courses and all the tins were emptied. The scout leader opened 156 tins in total.
How many scouts were on the expedition?
- (A) 120 (B) 144 (C) 156 (D) 180 (E) 288
- 25) THIS IS ONE GREAT CHALLENGE IN MATHEMATICS
- Every minute, the first letter of each word is moved to the other end of the word. After how many minutes will the original sentence first reappear?
- (A) 422 (B) 880 (C) 1264 (D) 1800 (E) 1980