



Comórtas Sóisearach Matamaitice Éireann 2011

Organised by

*The Irish Mathematics Teachers
Association*

FINAL

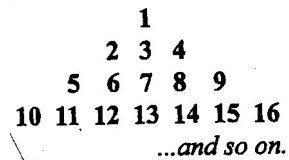
Time : 1 HOUR

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) If the 12th child in a row is the middle one, how many children are there?
(A) 21 (B) 22 (C) 23 (D) 24 (E) 25
- 2) I have a roll of new €5 notes numbered A1211000 to A1211014. How much money have I?
(A) €65 (B) €70 (C) €75 (D) €80 (E) €85
- 3) How many spaces between 30 poles arranged in a circle?
(A) 28 (B) 29 (C) 30 (D) 31 (E) 32
- 4) If 3 smiles = 10 grins and 6 grins = 9 laughs, how many laughs equal 2 smiles?
(A) 8 (B) 10 (C) 12 (D) 14 (E) 20
- 5) A rectangle whose side lengths (in metres) are whole numbers has an area of 24 m^2 . The perimeter of the rectangle, measured in metres, **cannot** possibly be
(A) 20 (B) 22 (C) 24 (D) 28 (E) 50
- 6) Find the sum of $1^2 + 1^4 + 1^6 + 1^8 + \dots + 1^{100}$
(A) 25 (B) 40 (C) 45 (D) 50 (E) 100
- 7) Yesterday I had 7 coins worth 78 cents. What is the **maximum** number of 2 cent coins could I have?
(A) 0 (B) 1 (C) 2 (D) 3 (E) 4
- 8) A square is divided into two equal rectangles. Each of these rectangles has a perimeter of 27 cm. What is the area of the original square (in cm^2)
(A) 25 (B) 49 (C) 64 (D) 81 (E) 100
- 9) When three numbers are added together two at a time, the sums are 29, 46, and 53. What is the sum of the three numbers?
(A) 128 (B) 99 (C) 82 (D) 75 (E) 64
- 10) All natural numbers are arranged in a triangle as shown by the first four rows. What is the first number in the 13th row?
(A) 143 (B) 144 (C) 145 (D) 146 (E) 147



6 Marks

11) How many whole numbers between 1 and 1000 do **not** contain the digit 1?

- (A) 512 (B) 648 (C) 720 (D) 728 (E) 800

12) Dave has 42 identical cubes, each with 1 cm edges. He glues them together to form a rectangular solid. If the perimeter of the base is 18 cm the height of the rectangular solid, in cms, is

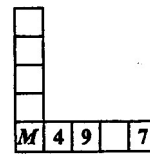
- (A) 1 (B) 3 (C) 5 (D) 6 (E) 7

13) What is the value of $(-2) + (-2)(-2) + (-2)(-2)(-2) + (-2)(-2)(-2)(-2) + (-2)(-2)(-2)(-2)(-2)$?

- (A) -62 (B) -22 (C) -6 (D) 30 (E) 62

14) The whole numbers 1 to 9 are placed one per

square in the figure. The sum of the numbers in the horizontal row is the same as the sum of the numbers in the vertical column. The sum of all the different values that M can be is



- (A) 1 (B) 3 (C) 4 (D) 5 (E) 6

15) The value of $\frac{\frac{1}{2} + \frac{1}{3}}{\frac{1}{3} + \frac{1}{4}}$ is

- (A) $\frac{7}{10}$ (B) $\frac{7}{5}$ (C) $\frac{5}{7}$ (D) $\frac{10}{7}$ (E) 2

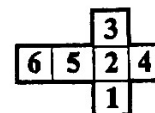
16) Two pairs of shoes have been thrown on to the floor of a dark closet. There is no light. If you pick up the first two shoes that you feel what is the probability that you will have matched pair a shoes?

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

17) The difference between $\frac{2^5 + 2^2}{2}$ and $\frac{(2^5)(2^2)}{2}$ is

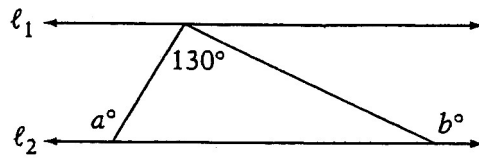
- (A) 0 (B) 2 (C) 12 (D) 30 (E) 46

18) The figure on the right is folded to form a cube. What is the greatest sum that can be got by adding the three numbers on the three faces which meet in a corner?



- (A) 5 (B) 8 (C) 12 (D) 14 (E) 15

19)



Note: Figure not drawn to scale.

In the figure above, if l_1 is parallel to l_2 , the value of the $a + b$ is

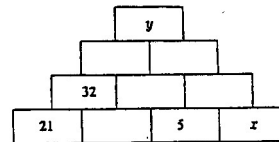
- (A) 130 (B) 270 (C) 280 (D) 290 (E) 310

8 Marks

20) On a 12 hour digital clock, time like 6:06 is called a “double” time because the number representing the hour is the same as the number representing the minute. Other such “doubles” are 7:07 and 8:08. What is the smallest time period, in minutes, between any two such doubles?

- (A) 11 (B) 49 (C) 60 (D) 61 (E) 101

21) The number in each block is the sum of the numbers in the two blocks beneath it. Some of the numbers are hidden. What is the value of $y - x$?



- (A) 21 (B) 48 (C) 58 (D) 69 (E) 85

22) In a certain school 25% of the students are blue-eyed and 75% are brown-eyed. Also 10% of the blue-eyed are left-handed, and 5% of the brown-eyed students are left-handed. The percentage of left-handed students who are blue-eyed is

- (A) 10 (B) 15 (C) 20 (D) 30 (E) 40

23) 4 kg of onions cost the same as 2 kg of beans. At the same time 1 kg of beans costs 3 times as much as 1kg of potatoes, while 1 kg of onions costs 4 cents less than 2 kg of potatoes. The cost of 1 kg of onions, in cents, is

- (A) 8 (B) 12 (C) 16 (D) 20 (E) 24

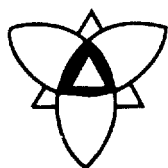
24) Paddy had 3 more brothers than sisters. How many more brothers than sisters has his sister Molly?

- (A) 2 (B) 3 (C) 4 (D) 5 (E) 6

25) A fireman stood on the middle rung of a ladder. He went up 3 rungs, was forced down 5 rungs, and then went up 7 rungs to extinguish the fire. Then the fireman climbed the remaining 6 rungs to the top of the ladder. How many rungs are there on the entire ladder?

- (A) 19 (B) 21 (C) 23 (D) 25 (E) 26

I.M.T.A. (Cork Branch)



Comórtas Sóisearach Matamaitice Éireann (Irish Junior Mathematics Competition) 2011 ANSWER KEY (Final)

SECTION A

1. C
2. C
3. C
4. B
5. C
6. D
7. E
8. D
9. E
10. C

SECTION B

11. D
12. B
13. B
14. C
15. D
16. C
17. E
18. D
19. E
20. B

SECTION C

21. D
22. E
23. B
24. D
25. C