Comórtas Sóisearach Matamaitice Éireann 2014

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.**

Each unanswered or incorrect answer receives no mark.

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) If $\dfrac{5}{9}$ of the children in a choir are boys and the rest are girls, the ratio of boys to girls is

A) 4 : 9   (B)   4 : 5   (C)   5 : 4   (D)   9 : 4   (E)   5 : 9

2)   The number of pairs of parallel faces on a cube is

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

3)   One and twenty four hundreds as a decimal is

(A)   0.124   (B)   1.024   (C)   1.24   (D)   124.00   (E)   12400

4)   What is 25% of 6% of 1000?

(A)   15   (B)   60   (C)   100   (D)   150   (E)   250

5)   What is the product of ten minus seven and seven minus ten?

(A)   - 9   (B)   -6   (C)   0   (D)   6   (E)   9

6)   The average of two numbers is 7. When a third number is included the average becomes 6. What is the value of the third number?

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

7)   Eight red boxes, six blue boxes and one green box weigh 67 kg.
        Three red boxes, five blue boxes and ten green boxes weigh 43 kg.
        What is the **total weight** of one red box, one blue box and one green box?

(A)   10 kg   (B) 11 kg   (C) 12 kg   (D)   13 kg (E)   14 kg

8)   Jim keeps canaries and cats as pets. Together they have 15 heads and 50 legs.
        How many cats does Jim have?

(A)   4   (B)   5   (C)   9   (D)   10   (E)   12

9)   A camera takes a picture of a metre stick beside a brick wall. In the developed photograph the metre stick is 2 cm long and the brick wall is 4.5 cm high.
        What is the actual height of the wall in cms?

(A)   4.5   (B)   22.5   (C)   45   (D)   225   (E)   450

10)   The value of $9 - 6 \div 3 \times 2 + 5$ is

(A)   0   (B)   3   (C)   7   (D)   10   (E)   13

Section B (6 Marks)

11)   Pat wants to sell his house for €150 000. After two months, the house was not sold and he decides to reduce the price by 20%. A new potential buyer likes the house but will only buy if Pat reduces the price by a further 10%. Pat agrees.

What price should the new buyer pay for the house?

(A) €105 000 (B) €108 000 (C) €110 000 (D) €112 000 (E) €115 000

12) Three buses leave the terminal together at 8 am. The buses return again to the terminal after 20 minutes, 30 minutes and 24 minutes respectively.
At what time will all three buses be at the terminal together again for the first time?

(A) 9.30 am (B) 10 am (C) 12 noon (D) 10.30 am (E) 8 am next day

13) On a standard die the numbers on the opposite sides add up to 7.
Three dice are shown. What is the sum of the numbers that
are hidden from sight?

(A) 31 (B) 32 (C) 33 (D) 34 (E) 35

14) A monthly bus pass costs €30. Without a pass, each bus ride would cost €0.50.
In a month, the fewest number of times a person with a bus pass must go on a bus ride in order to save money is

(A) 15 (B) 30 (C) 31 (D) 59 (E) 61

15) If December contains five Sundays in a particular year, then December 25th may occur on
(A) Monday (B) Thursday (C) Friday (D) Saturday (E) Sunday

16) On a test consisting of 30 questions Aoife had 50% more right answers than she had wrong answers. She answered all the questions and each answer was either right or wrong. The number of answers Aoife got right was

(A) 10 (B) 12 (C) 15 (D) 18 (E) 20

17) A 1000 seat cinema multiplex is divided into three theatres. There are 470 seats in the first theatre, and the third theatre has 150 seats less than the second.
How many seats are in the second theatre?

(A) 190 (B) 340 (C) 380 (D) 470 (E) 530

18) At the Post office Jill spent a total of €2 to buy some 52 cent stamps and 11 cent stamp. If she received no change how many stamps did Jill buy?

(A) 1 (B) 2 (C) 3 (D) 4 (E) 7

19) Sales of pairs of leather gloves at a shop totalled €473. Each pair of gloves sold for the same price and the price is an exact number of euros. The number of pairs of gloves sold could have been is

(A) 7 (B) 9 (C) 11 (D) 13 (E) 15

20) Sam's car uses 5.3 litres of petrol per 100 km when driving in the city and 4.3 litres of petrol per 100 km when driving on the motorway. Sam drove 60 km in the city and 40 km on the motorway.
What was her average consumption of petrol, in litres per 100 km, correct to 1 decimal place?

(A) 1.92 (B) 3.18 (C) 4.3 (D) 4.8 (E) 4.9

Section C (8 Marks)

21) Joe and Pat both cycled a distance of 27 km, starting at the same time.
Joe completed his journey 18 minutes earlier than Pat. Joe's average speed was 18 km/h. What was Pat's average speed in km/hr?

(A) 1.8 (B) 15 (C) 18 (D) 22.5 (E) 27

22) How many even whole numbers between 1 and 100 are not divisible by 5?

(A) 40 (B) 41 (C) 42 (D) 43 (E) 44

23) Starting with a list of three numbers, the "changesum" procedure creates a new list by replacing each number by the sum of the other two. For example, from {3,4,6} "changesum" gives {10,9,7} and a new "changesum" leads to {16.17.19}.
If we begin with {20,1,3}, what is the maximum difference between two numbers of the list after 2014 consecutive "changesums"?

(A) 1 (B) 2 (C) 17 (D) 19 (E) 2013

24) Sarah lights a candle every ten minutes. Each candle burns for 40 minutes and then goes out. How many candles are lighting 55 minutes after Sarah lit the first candle?

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

25) The digits used to number all the pages of a book were counted. If the number of digits used was 216, how many pages are in the book?

(A) 100 (B) 101 (C) 104 (D) 108 (E) 109