



奧冠教育中心

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泰國國際數學競賽初賽 2020 - 2021

**THAILAND INTERNATIONAL
MATHEMATICAL OLYMPIAD
HEAT ROUND 2020 - 2021**

小學三年級 Primary 3

時限：90 分鐘

Time allowed: 90 minutes

試題

Question Paper

考生須知：

Instructions to Contestants:

1. 本卷包括 試題 乙份，試題紙不可取走。

Each contestant should have ONE Question-Answer Book which CANNOT be taken away.

2. 本卷共 5 個範疇，每範疇有 5 題，共 25 題，每題 4 分，總分 100 分，答錯不扣分。

There are 5 exam areas and 5 questions in each exam area. There are a total of 25 questions in this Question-Answer Book. Each carries 4 marks. Total score is 100 marks. No points are deducted for

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Write down the answer in the simplest form. If the calculation result is a fraction, please write down the answer as a proper or mixed fraction, decimal figure is also accepted. Marks will NOT be given for incorrect unit.

請將答案寫在 **答題紙** 上。

All answers should be written on the ANSWER SHEET.

incorrect answers.

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4. 比賽期間，不得使用計算工具。

NO calculators can be used during the contest.

5. 本卷中所有圖形不一定依比例繪成。

All figures in the paper are not necessarily drawn to scale.

6. 比賽完畢時，本試題會被收回。

This Question-Answer Book will be collected at the end of the contest.

本試題不可取走。

THIS Question-Answer Book CANNOT BE TAKEN AWAY.

未得監考官同意，切勿翻閱試題，否則參賽者將有可能被取消資格。

DO NOT turn over this Question-Answer Book without approval of the examiner.

Otherwise, contestant may be **DISQUALIFIED**.

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Open-Ended Questions (1st ~25th) (4 points for correct answer, no penalty point for wrong answer)

Logical Thinking

1. According to the pattern shown below, what is the number in the blank?

Pada pola di bawah ini, bilangan berapakah yang seharusnya ada pada “ ___ ”?

38 、 35 、 30 、 23 、 14 、 ___ 、 ...

2. There are 27 transparent boxes, as shown in figure 1. Each layer contains 9 boxes as figure 2 shows. Some black marbles are inserted into the boxes and view from different directions, the images are shown in the diagram below. Find the maximum number of black marbles inserted in these 27 boxes.

Terdapat 27 kotak transparan, seperti yang terlihat pada Gambar 1. Setiap lapisannya berisi 9 kotak seperti yang terlihat di Gambar 2. Beberapa bola hitam dimasukkan ke dalam kotak dan dilihat dari arah yang berbeda-beda, seperti yang terlihat pada gambar di bawah ini. Carilah jumlah maksimal bola hitam yang dimasukkan ke dalam 27 kotak ini.

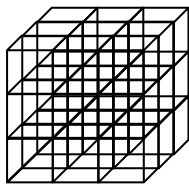


Figure 1

Gambar 1

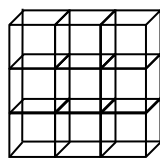
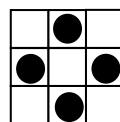


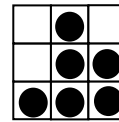
Figure 2

Gambar 2



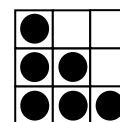
Top view

Dilihat dari atas



Front view

Dilihat dari depan



From the right

Dilihat dari sisi kanan

Question 2

Soal No. 2

3. Today is Wednesday. Which day of the week was 25 days ago?

Hari ini adalah hari Rabu. Hari apakah 25 hari yang lalu?

請以最簡形式填寫答案，若計算結果是分數，請確保為真分數或帶分數，或將計算結果寫成小數。錯誤單位將不給予任何分數。

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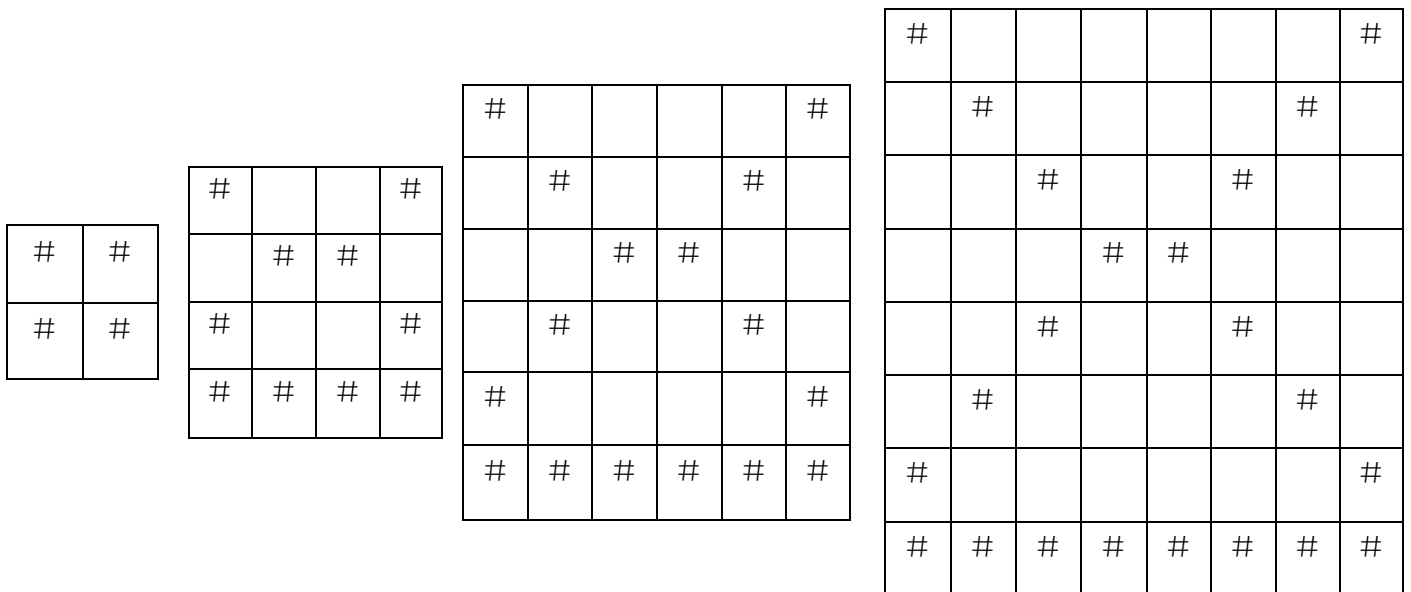
4. What is the value of the number to represent “?” in the following table?

Berapakah nilai dari bilangan yang diwakili oleh “?” dalam tabel berikut?

| | | | |
|---|---|----|----|
| 1 | 3 | 5 | 20 |
| 2 | 4 | 7 | 42 |
| 3 | 5 | 9 | 72 |
| 4 | 6 | 11 | ? |

5. According to the pattern shown below, how many # is / are there in the 7th group?

Berdasarkan pola di bawah ini, berapa banyak # yang ada pada Kelompok 7?



Question 5

Soal No. 5

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請將答案寫在

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| 答題紙 |
|-----|

 上。

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Arithmetic

6. Find the value of $217 + 642 + 513 + 727 + 138 + 633$.

Carilah nilai dari $217 + 642 + 513 + 727 + 138 + 633$.

7. Find the value of $128 \div 2 + 128 \div 4 + 128 \div 8 + 128 \div 16 - 128 \div 32 - 128 \div 64 - 128 \div 128$.

Carilah nilai dari $128 \div 2 + 128 \div 4 + 128 \div 8 + 128 \div 16 - 128 \div 32 - 128 \div 64 - 128 \div 128$.

8. Find the value of $27 \times 6 + 18 \times 11 - 9 \times 13 - 3 \times 6$.

Carilah nilai dari $27 \times 6 + 18 \times 11 - 9 \times 13 - 3 \times 6$.

9. Find the value of $9 + 15 + 21 + 27 + 33 + 39 + 45 + 51 + 57$.

Carilah nilai dari $9 + 15 + 21 + 27 + 33 + 39 + 45 + 51 + 57$.

10. Find the value of $2 \times 4 \times 8 \times 15 \times 25 \times 35$.

Carilah nilai dari $2 \times 4 \times 8 \times 15 \times 25 \times 35$.

Number Theory

11. Define the operation symbol $a \oplus b = (a-3) \times (a+b) \times (b-3)$, find the value of $(8 \oplus 6)$.

Didefinisikan simbol operasi $a \oplus b = (a-3) \times (a+b) \times (b-3)$, **carilah nilai dari** $(8 \oplus 6)$.

12. What is the smallest 3-digit odd number that can both be divisible by 7 and 11?

Berapakah bilangan ganjil 3-angka terkecil yang dapat dibagi 7 dan 11?

13. Determine the result of $111 \times (213 + 151) + 222 \times (132 + 157) - 333 \times (12 + 1) + 444 \times (112 + 334)$ is an odd or even number.

Tentukan apakah hasil dari $111 \times (213 + 151) + 222 \times (132 + 157) - 333 \times (12 + 1) + 444 \times (112 + 334)$ **adalah bilangan ganjil atau genap.**

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14. Jacky has 24 eggs and Emma has 16 eggs. How many egg(s) does Jacky have to give Emma to make the number of eggs of Emma's is 3 times of that of Jacky's?

Jacky mempunyai 24 telur dan Emma mempunyai 16 telur. Berapa banyak telur yang Jacky harus berikan ke Emma untuk membuat jumlah telur Emma 3 kali jumlah telur Jacky?

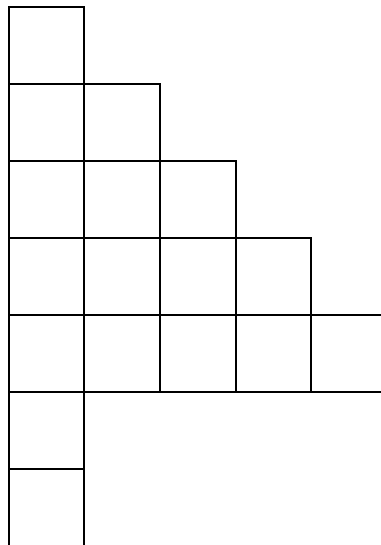
15. The product of positive integers A and B is 693. The difference between A and B is 12. Given A is smaller than B , find the value of A .

Hasil kali bilangan bulat positif A dan B adalah 693. Selisih antara A dan B adalah 12. Diketahui A lebih kecil daripada B , carilah nilai dari A .

Geometry

16. How many square(s) is / are there in the figure below?

Berapa banyak bujursangkar yang ada pada gambar di bawah ini?



Question 16

Soal No. 16

17. A pyramid has 200 vertices, how many edge(s) does this pyramid have?

Sebuah piramida mempunyai 200 titik sudut, berapa banyak rusuk yang piramida ini miliki?

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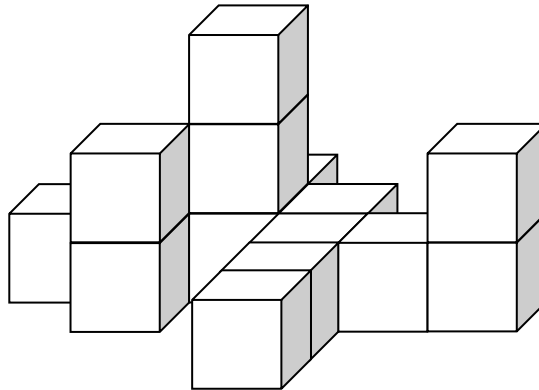
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18. 9 small squares whose perimeters are 36 form a larger square. What is the perimeter of the larger square?

9 bujursangkar yang mempunyai keliling 36 membentuk sebuah bujursangkar yang lebih besar.
Berapakah keliling bujursangkar yang lebih besar tersebut?

19. At least how many square(s) can be seen if observing the figure below from the right hand side?

Sekurang-kurangnya berapa bujursangkar dapat terlihat jika bangun ini dilihat dari samping kanan?



Question 19

Soal No. 19

20. How many rectangles are there in the figure below?

Berapa banyak persegi panjang yang ada pada gambar di bawah ini?



Question 20

Soal No. 20

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| 答題紙 |
|-----|

 上。

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Combinatorics

21. After Peter takes 20 apples and 17 apples from Bobby and Charlie respectively, they will have equal number of apples. How many apple(s) did Bobby have more than Peter originally?

Setelah Peter mengambil 20 apel dari Bobby dan 17 apel dari Charlie, mereka akan mempunyai jumlah apel yang sama. Berapa apel lebih banyak yang Bobby punyai dari Peter pada awalnya?

22. Counting from 1 to 400, how many numbers are there that have exactly one digit “0” and one digit “3”?

Hitung dari 1 sampai 400, berapa banyak bilangan yang ada yang mempunyai persis 1 angka “0” dan 1 angka “3”?

23. Numbers are drawn from the 30 integers 1 to 30. At least how many number(s) is / are drawn at random to ensure that there are two numbers whose sum is 38?

Bilangan diambil dari 30 bilangan bulat, 1 sampai 30. Setidaknya berapa banyak bilangan harus diambil secara acak untuk memastikan ada dua bilangan yang hasil penjumlahannya adalah 38?

24. How many 4-digit number(s) less than 3333 can be formed by using 0, 1, 2, 3 and 4? (Each number can only be used once)

Berapa banyak bilangan 4-angka yang lebih kecil dari 3333 yang dapat dibentuk dengan menggunakan angka 0, 1, 2, 3 dan 4? (Setiap angka hanya dapat digunakan satu kali).

25. A drink shop has 3 types of drinks and 7 types of topping. How many way(s) can Peter buy 1 drink with 2 toppings? (Type of toppings cannot be repeated)

Sebuah toko minuman mempunyai 3 jenis minuman dan 7 jenis *topping*. Berapa banyak cara Peter dapat membeli 1 minuman dengan 2 *topping*? (Jenis *topping* tidak dapat diulang).

~ 全卷完 ~

~ End of Paper ~

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