



THAILAND INTERNATIONAL MATHEMATICAL OLYMPIAD HEAT 2019 (HONG KONG REGION)

Primary 4

Time allowed: 90 minutes

Question Paper

Instructions to Contestants:

1. Each contestant should have ONE Question-Answer Book which CANNOT be taken away.
2. 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 incorrect answers.
3. All answers should be written on ANSWER SHEET.
4. NO calculators can be used during the contest.
5. All figures in the paper are not necessarily drawn to scale.
6. This Question-Answer Book will be collected at the end of the contest.

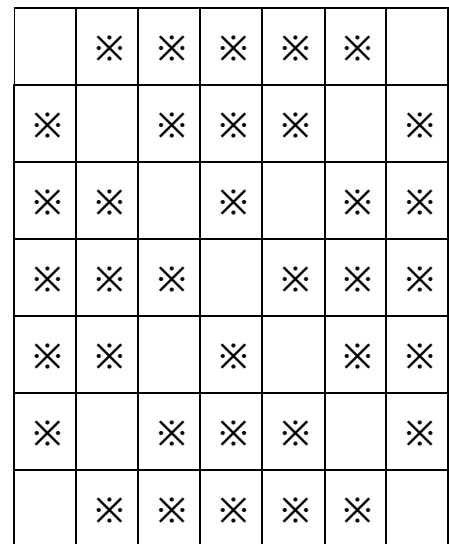
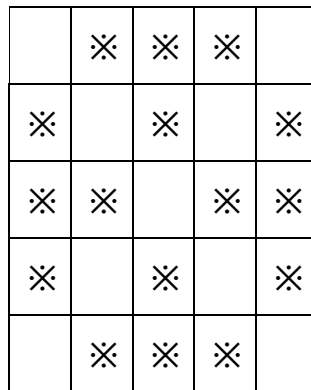
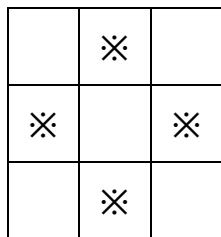
THIS Question-Answer Book CANNOT BE TAKEN AWAY.

DO NOT turn over this Question-Answer Book without approval of the examiner.
Otherwise, contestant may be DISQUALIFIED.

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

Logical Thinking

- Today is Sunday. Which day of the week will 616 days be later?
Hari ini adalah hari Minggu. Hari apakah 616 hari dari sekarang?
- There are a total of 20 chickens and rabbits in a farm. The animals have a total of 66 legs. How many chicken(s) is / are there?
Terdapat 20 ayam dan kelinci di sebuah peternakan. Ternak tersebut mempunyai 66 kaki secara keseluruhan. Berapa banyak ayam ada di sana?
- It requires 22 minutes to cut a piece of wood into 12 sections. If the time required to cut into each section is the same, how many minute(s) is / are required to cut into 6 sections?
Diperlukan 22 menit untuk memotong sebatang kayu menjadi 12 bagian. Jika waktu yang diperlukan untuk memotong masing-masing bagian adalah sama, berapa menit yang diperlukan untuk memotong sebatang kayu tersebut menjadi 6 bagian?
- Chris's grandfather's age this year minus 11, then is divided by 9, adds 5 and is multiplied by 6. The result will be 66 years old. How old is Chris's grandfather this year?
Umur kakek Chris tahun ini dikurangi 11, dibagi 9, ditambah 5 dan dikalikan 6. Jika hasilnya adalah 66, berapa umur kakek Chris tahun ini?
- According to the pattern shown below, how many ✖ is / are there in the 9th group?
Berdasarkan pola di bawah ini, berapa banyak ✖ yang ada pada Kelompok 9?



1st Group
Kelompok 1

2nd Group
Kelompok 2

3rd Group
Kelompok 3

4th Group
Kelompok 4

Question 5
Soal nomor 5

Arithmetic

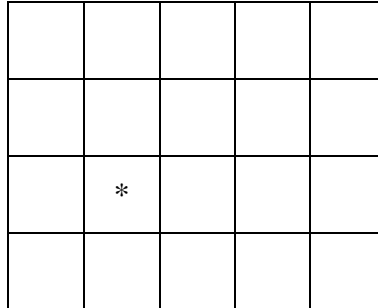
6. Find the value of 10201×121 .
Carilah nilai dari 10201×121 .
7. Find the value of $171 \div 3 + 171 \div 9 + 171 \div 19$.
Carilah nilai dari $171 \div 3 + 171 \div 9 + 171 \div 19$.
8. Find the value of $80 \times 12 + 160 \times 11 - 18 \times 40$.
Carilah nilai dari $80 \times 12 + 160 \times 11 - 18 \times 40$.
9. Find the value of $101 + 111 + 121 + 131 + 141 + 151 + 161 + 171 + 181$.
Carilah nilai dari $101 + 111 + 121 + 131 + 141 + 151 + 161 + 171 + 181$.
10. Find the value of $2 + 4 + 8 + \dots + 128$.
Carilah nilai dari $2 + 4 + 8 + \dots + 128$.

Number Theory

11. If 9-digit number $\overline{20206423A}$ is divisible by 12, find the value of A .
Jika bilangan 9-angka $\overline{20206423A}$ dapat dibagi 12, carilah nilai dari A .
12. Find the unit digit of A if $A = \underbrace{2 \times 2 \times 2 \times \dots \times 2}_{2019's} \times \underbrace{4 \times 4 \times 4 \times \dots \times 4}_{2019's} \times \underbrace{6 \times 6 \times 6 \times \dots \times 6}_{2019's}$.
Carilah angka satuan dari bilangan A jika $A = \underbrace{2 \times 2 \times 2 \times \dots \times 2}_{2019's} \times \underbrace{4 \times 4 \times 4 \times \dots \times 4}_{2019's} \times \underbrace{6 \times 6 \times 6 \times \dots \times 6}_{2019's}$.
13. Define the operation symbol $a \otimes b = (a+b) \times (a-b)$, find the value of $(6 \otimes 5) \otimes 9$.
Didefinisikan simbol operasi $a \otimes b = (a+b) \times (a-b)$, carilah nilai dari $(6 \otimes 5) \otimes 9$.
14. The sum of positive numbers A and B is 846. A is 8 times of B . Find the value of A .
Hasil penjumlahan bilangan positif A dan B adalah 846. A 8 kali lebih besar dari B . Carilah nilai dari A .
15. How many factors does 2020 have?
Berapa banyak faktor yang dimiliki 2020?

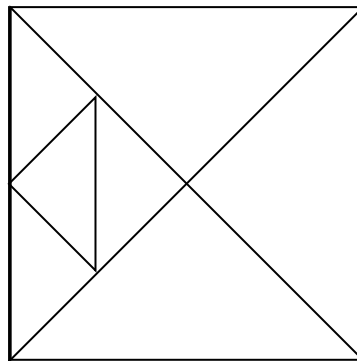
Geometry

16. How many rectangle(s) with "*" is / are there in the figure below?
Berapa banyak persegi panjang yang mengandung "*" yang ada pada gambar di bawah ini?



Question 16
Soal nomor 16

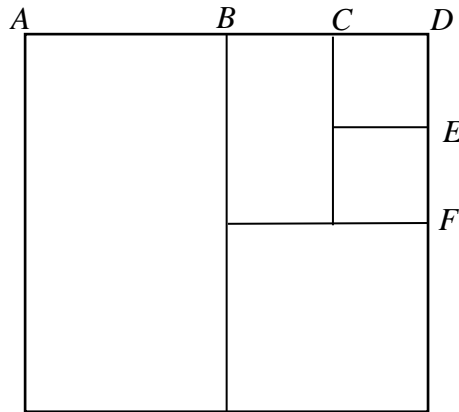
17. How many right-angled triangle(s) is / are there in the figure below?
Berapa banyak segitiga siku-siku yang ada pada gambar di bawah ini?



Question 17
Soal nomor 17

18. The perimeter of a rectangle is 22 cm. If sides of the rectangle are integers, find the maximum value of the area of the rectangle.
Keliling sebuah persegi panjang adalah 22 cm. Jika panjang sisi dari persegi panjang tersebut adalah bulat, carilah nilai maksimum dari luas persegi panjang tersebut.

19. The square below is cut into 3 squares and 2 rectangles and $AB = BD, BC = CD, DE = EF$. If the perimeter of the original square is 64 cm, find the area of the smallest square.
Bujursangkar di bawah ini dipotong menjadi 3 bujursangkar dan 2 persegi panjang dan $AB = BD, BC = CD, DE = EF$. Jika keliling dari bujursangkar besar ini adalah 64 cm, carilah luas bujursangkar yang terkecil.



Question 19
Soal nomor 19

20. The perimeter of a square is 60 cm. Now Amy combines 9 squares to a new rectangle. What is the maximum value of the perimeter of the rectangle in cm?
Keliling dari sebuah bujursangkar adalah 60 cm. Sekarang Amy menyusun 9 bujursangkar tersebut menjadi sebuah persegi panjang. Berapa nilai maksimum dari keliling persegi panjang tersebut dalam cm?

Combinatorics

21. 69 students are grouped as evenly as possible into four classes. What is the minimum possible number of students of the largest class?
69 murid dikelompokkan menjadi empat kelas dengan jumlah seimbang mungkin. Berapa paling sedikit jumlah murid di kelas terbesar?
22. Find the smallest difference by using all 10 digits from 0 to 9 without repetition to form two 5-digit numbers.
Carilah selisih terkecil dari dua bilangan 5-angka yang dibentuk oleh angka 0 sampai 9 tanpa pengulangan.
23. It is given that the total weight of 3 apples and 2 oranges is 390 g. The weight of 2 apples is the same as that of 3 oranges. What is the weight of 1 apple?
Diketahui berat total 3 apel dan 2 jeruk adalah 390 g. Berat dari 2 apel sama dengan berat 3 jeruk. Berapa berat 1 apel?
24. A flight of stairs has 9 steps. David can go up for 1 step, 2 steps or 3 steps each time. How many way(s) is / are there for David to go up the stairs?
Sebuah tangga mempunyai 9 anak tangga. David dapat menaiki tangga tersebut 1, 2 atau 3 anak tangga tiap melangkah naik. Berapa banyak cara berbeda David dapat menaiki tangga tersebut?

All answers should be written on the ANSWER SHEET.

25. How many 3-digit number(s) is / are there such that the number does not contain digit “0”, “1” or “2”?
Berapa banyak bilangan 3-angka yang tidak mengandung angka “0”, “1” atau “2”?

~ End of Paper ~