



# THAILAND INTERNATIONAL MATHEMATICAL OLYMPIAD HEAT 2019 (HONG KONG REGION)

## Primary 3

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 (1<sup>st</sup> ~25<sup>th</sup>) (4 points for correct answer, no penalty point for wrong answer)

**Logical Thinking**

1. 62 students line up where Alice is the 37<sup>th</sup> starting from the front. How many student(s) is / are behind her?  
 62 murid berbaris dan Alice berada nomor 37 dari depan. Berapa banyak murid yang ada di belakang dia?


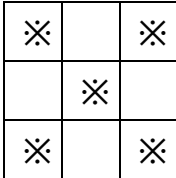
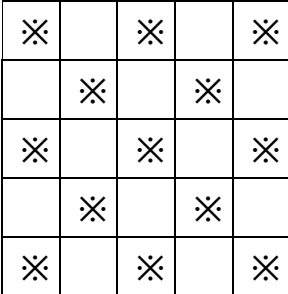
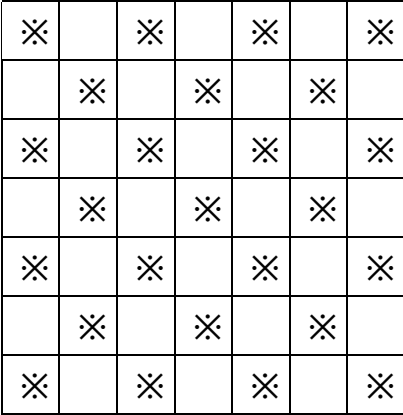
2. According to the pattern shown below, what is the number in the blank?  
 Berdasarkan pola di bawah ini, berapakah bilangan yang ada pada “ \_\_\_ ”?

$$7 \text{ \textasciitilde } 21 \text{ \textasciitilde } 36 \text{ \textasciitilde } 52 \text{ \textasciitilde } \underline{\hspace{1cm}} \text{ \textasciitilde } \dots$$

3. Today is Friday. Which day of the week was 15 days ago?  
 Hari ini adalah hari Jumat. Hari apakah 15 hari yang lalu?

4. The age of Bruce 9 years ago is equal to the age of Peter 3 years later. Given Bruce is 18 years old now, how old is Peter now?  
 Umur Bruce 9 tahun lalu sama dengan umur Peter 3 tahun dari sekarang. Jika Bruce berumur 18 tahun sekarang, berapa umur Peter sekarang?

5. According to the pattern shown below, how many ✖ is / are there in the 8<sup>th</sup> group?  
 Berdasarkan pola di bawah ini, berapa banyak ✖ yang ada pada Kelompok 8?

			
<p>1<sup>st</sup> Group Kelompok 1</p>	<p>2<sup>nd</sup> Group Kelompok 2</p>	<p>3<sup>rd</sup> Group Kelompok 3</p>	<p>4<sup>th</sup> Group Kelompok 4</p>

Question 5  
Soal nomor 5

All answers should be written on the ANSWER SHEET.

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**Arithmetic**

6. Find the value of  $1+9+17+25+33+41+49+57+65+73$ .  
Carilah nilai dari  $1+9+17+25+33+41+49+57+65+73$ .
  
7. Find the value of  $149+264+358+492+181+376$ .  
Carilah nilai dari  $149+264+358+492+181+376$ .
  
8. Find the value of  $39\times 6+78\times 3-39\times 2$ .  
Carilah nilai dari  $39\times 6+78\times 3-39\times 2$ .
  
9. Find the value of  $999\times 888$ .  
Carilah nilai dari  $999\times 888$ .
  
10. Find the value of  $360\div 6+360\div 15+360\div 120$ .  
Carilah nilai dari  $360\div 6+360\div 15+360\div 120$ .

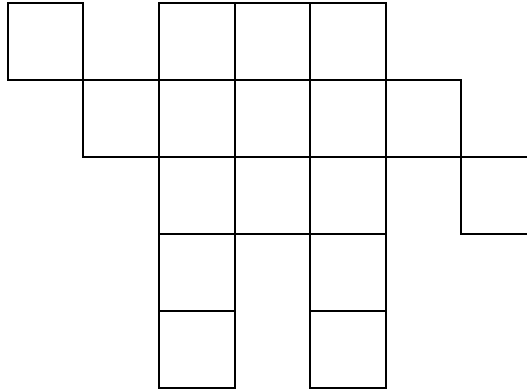
Write down the answer in the simplest form. If the calculation result is a fraction, please write down the answer as a proper or mixed fraction, decimal figure is also accepted. Marks will NOT be given for incorrect unit.

**Number Theory**

11. What is the greatest 3-digit number that can both be divisible by 12 and 15?  
Berapa bilangan 3-angka terbesar yang dapat dibagi 12 dan dapat dibagi 15?
12. A 3-digit number is divided by 22 to get a remainder of 9. Find the minimum value of this 3-digit number.  
Sebuah bilangan 3-angka jika dibagi 22 akan menghasilkan sisa 9. Carilah nilai terkecil dari bilangan 3-angka tersebut.
13. The sum of  $A$  and  $B$  is 256.  $A$  is 15 times of  $B$ . Find the value of  $A$ .  
Hasil penjumlahan  $A$  dan  $B$  adalah 256.  $A$  15 kali lebih besar dari  $B$ . Carilah nilai dari  $A$ .
14. Define the operation symbol  $a \otimes b = \frac{a+1}{b} + 2 \times a$  and  $b \neq 0$ , find the value of  $(11 \otimes 4)$ .  
Jika didefinisikan simbol operasi  $a \otimes b = \frac{a+1}{b} + 2 \times a$  dan  $b \neq 0$ , carilah nilai dari  $(11 \otimes 4)$ .
15. The sum of 3 consecutive even numbers is 18. Find the L.C.M. (Least Common Multiple) of all the numbers.  
Hasil penjumlahan 3 bilangan genap berturut-turut adalah 18. Carilah KPK (Kelipatan Persekutuan Terkecil) dari ketiga bilangan tersebut.

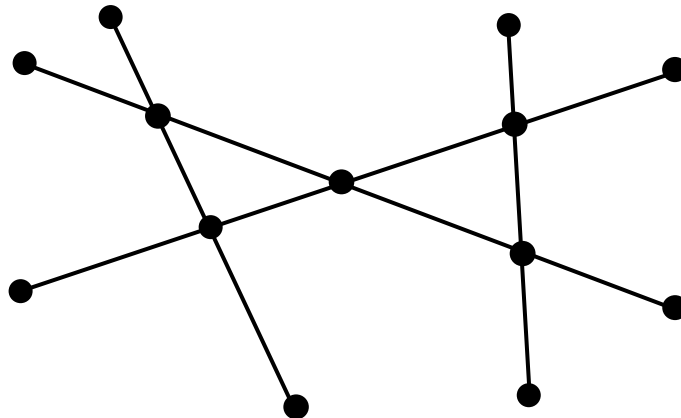
**Geometry**

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 nomor 16

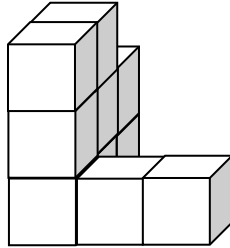
17. How many line segment(s) is / are there in the figure below?  
Berapa banyak ruas garis yang ada pada gambar di bawah ini?



Question 17  
Soal nomor 17

18. A pyramid has 30 vertices, how many face(s) does this pyramid have?  
Sebuah piramida mempunyai 30 titik sudut, berapa banyak sisi yang piramida ini punyai?
19. At most how many segment(s) can be formed by using 5 lines on a circle?  
Berapa segmen paling banyak dapat dibuat dengan menggunakan 5 garis pada sebuah lingkaran?

20. At least how many cube(s) can be seen if observing the figure below from the side?  
Setidaknya ada berapa kubus yang dapat terlihat jika kita melihat bangun ini dari samping?



Question 20  
Soal nomor 20

### Combinatorics

21. After Bruce takes 14 peanuts and 9 peanuts from Amy and Mary respectively, they will have equal number of peanuts. How many peanut(s) did Amy have more than Bruce originally?  
Setelah Bruce mengambil 14 kacang dari Amy dan 9 kacang dari Mary, mereka akan mempunyai jumlah kacang yang sama. Berapa banyak kacang yang Amy punyai lebih banyak dari Bruce pada awalnya?
22. What is the greatest 5-digit even number by using 1, 3, 5, 7, 8 and 9? (Each digit can only be used once)  
Berapa bilangan genap 5-angka terbesar dengan menggunakan 5 angka dari 1, 3, 5, 7, 8 dan 9?  
(Masing-masing angka hanya dapat digunakan satu kali)
23. Numbers are drawn from the 80 integers 1 to 80. At least how many number(s) is / are drawn at random to ensure that there are two numbers whose difference is multiple of 9?  
Bilangan diambil dari 80 bilangan bulat dari 1 sampai 80. Setidaknya berapa banyak bilangan yang harus diambil secara acak untuk memastikan bahwa ada dua bilangan yang selisihnya adalah kelipatan 9?
24. Chris has 30 \$1 coins, 20 \$2 coins and 60 \$5 coins. Each book costs \$22 and \$3 discount for every 3 books. How many book(s) can at most he buy?  
Chris mempunyai 30 koin \$1, 20 koin \$2 dan 60 koin \$5. Masing-masing buku berharga \$22 dan potongan \$3 diberikan untuk setiap pembelian 3 buku. Berapa banyak buku yang dapat dia beli?
25. 16 students are either wearing L, M or S size uniforms. At least how many students wear the same size of uniform?  
16 murid menggunakan seragam dengan ukuran L, M atau S. Setidaknya ada berapa murid yang menggunakan seragam dengan ukuran yang sama?

~ End of Paper ~