THAILAND INTERNATIONAL
MATHEMATICAL OLYMPIAD FINAL ROUND
2023 – 2024

Primary 3

Open-Ended Questions (1st ~30th) (5 points for correct answer, no penalty point for wrong answer)

Logical Thinking

1. According to the pattern shown below, what should be the number represented by "?" in the figure below?

1	2	4	7
2	4	8	14
1	4	?	19
3	7	15	27

2. Edward is playing "Clapping Game". He counts backward from 100. When he counts a number with digits 1, 2, 3 or 7, he claps his hands once. What will the next number be counted right after he has clapped 31 times?

3. Eric and all other students from grade 3 are standing in a rectangular formation. There are 5 students standing on his left hand side, 2 students standing on his right hand side, 3 students standing in front of him and 5 students standing behind him. How many student(s) is / are standing in the formation?
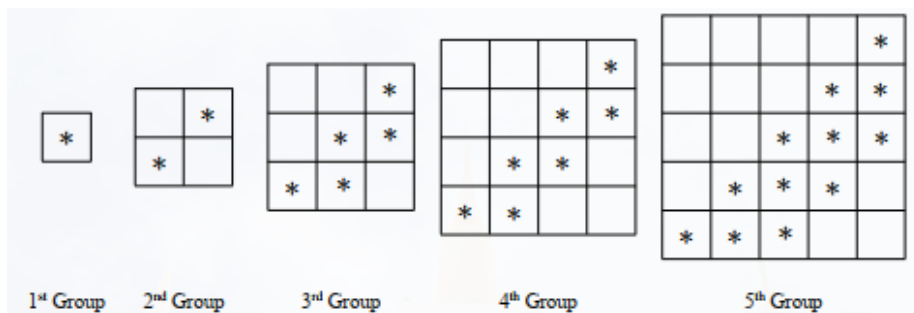
4. Given that 12th June, 2024 is Wednesday, which day of the week is 14th October, 2024?

5. According to the pattern shown below, what should be the English letter filled in the space provided?

T · A · Q · D · N · ___ · ...

6. According to the pattern shown below, how many * is / are there in the 10th group?

1st Group   2nd Group   3rd Group   4th Group   5th Group

Arithmetic

7. Find the value of $523 + 896 + 251 + 428 + 104 + 367 + 459$.

8. If *A* is an 1-digit number, what is the value of *A* if the equation below is correct?

$$\begin{array}{r} A \\ \times \quad 2 \quad A \quad 9 \\ \hline 7 \quad 1 \quad 7 \end{array}$$

9. Find the value of $21 \times 13 + 5 \times 84 + 31 \times 42$.

10. Find the value of $640 \div 4 + 640 \div 8 + 640 \div 16 + 640 \div 32$.

11. Find the value of

190 +197 + 204 + 211 + 218 + 225 + 232 + 239 + 246 + 253 + 260.

12. Which number should be filled in the box below if the equation below is correct?

$$51 \times \boxed{} = 408$$

Number Theory

13. Given that the product of positive integers A and B is 208, and A is 13 times of B. Find the value of A.

14. The numbers below form an arithmetic sequence, what is the 21st term in the sequence?

411、393、375、357、339、...

15. What is the smallest 3-digit positive number that leaves a remainder of 9 when divided by 11?

16. The sum of 6 consecutive even numbers is 90. Find the difference between the second largest number and the second smallest number among these numbers.

17. If A and B are different 1-digit numbers from 2 to 6, what is the value of $A + B$ if the equation below is correct?

$$\begin{array}{r} A \quad B \\ \times \quad A \quad A \\ \hline 5 \quad 7 \quad 2 \end{array}$$

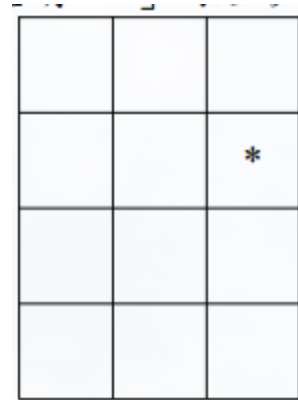18. Given that A is an odd number, determine the result of $6A \times (9A + 13 + 11A - 9) \div 2A$ is an odd or even number.

19. Cubes of the same size and shape are stacked together as shown in the íígure below. At least how many square face(s) of the cubes can be seen if observing from the top?
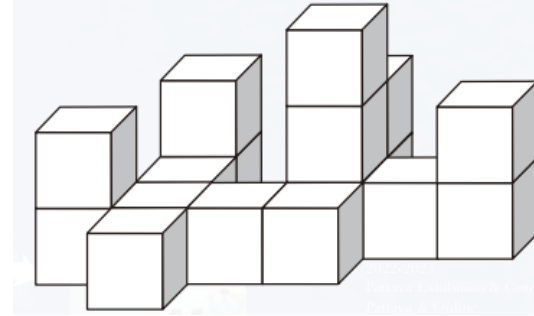
20 How many rectangle(s) containing "*" is / are there in the figure below?
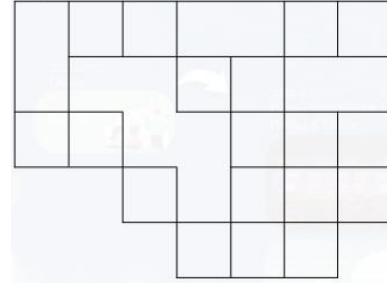
21. A large square with area 64 is cut into 16 identical small squares. Find the difference in perimeters between 16 small squares and the large square.

22. According to the pattern shown below, what should be the figure drawn in the blank?

■★▲●◥◣■★▲●●◥◣■★▲●●●◥◣■★▲●●● __ ...

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

24. A prism has 100 vertices. How many face(s) does this prism have?

Combinatorics

25. Chris has 26 $1 coins, 10 $5 coins and 3 $10 notes. Given a book costed $12, if he can only buy 1 book at a time and no change will be provided for each payment, at most how many book(s) can he buy?

26. Numbers are drawn from 92 integers 50 to 141 at random without replacement. At least how many number(s) need to be drawn to ensure that there are two numbers drawn whose difference is 9?

27. In how many different way(s) can Peter walk from point *A* to point *B* following the paths outlined in the figure below such that he can only move up or move right?

28. At least how many exchange(s) is / are there if each of 25 students in class 3C has to exchange presents with each other in the class?

29. .If we choose 3 different numbers from 0, 2, 3, 4, 5 and 7 to form 3-digit numbers, how many of these numbers is / are even?

30 Numbers are drawn from 80 integers 18 to 97 at random without replacement. At least how many number(s) need to be drawn to ensure that there are two numbers drawn whose product is divisible by 6?