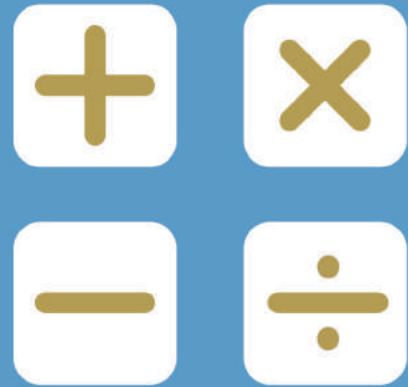


PAPER B



SEAMO

Southeast Asian
Mathematical
Olympiad

2020

DO NOT OPEN THIS BOOKLET UNTIL INSTRUCTED.

STUDENT'S NAME:

Read the instructions on the **ANSWER SHEET** and fill in your **NAME, SCHOOL** and **OTHER INFORMATION**.

Use a 2B or B pencil.

Do **NOT** use a pen

Rub out any mistakes completely.

You **MUST** record your answers on the **ANSWER SHEET**.

MIDDLE PRIMARY

Mark only **ONE** answer for each question.

Marks are **NOT** deducted for incorrect answers.

QUESTIONS 1 TO 20

Use the information provided to choose the **BEST** answer from the five possible options.

On your **ANSWER SHEET** shade the option that matches your answer.

QUESTIONS 21 TO 25

On your **ANSWER SHEET** write your answer within the box provided. Units are not required.

You are **NOT** allowed to use a calculator.

**QUESTIONS 1 TO 10 ARE WORTH
3 MARKS EACH**

1. Find the value of

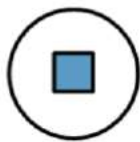
$$(1 \div (2 \div 3) \div (3 \div 4) \div (4 \div 5) \div (5 \div 6))$$

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

2. Find the number represented by the last figure.



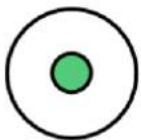
11



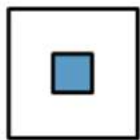
23



31



22



33



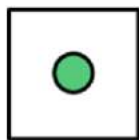
12



13



21



?

- (A) 13
- (B) 31
- (C) 32
- (D) 23
- (E) None of the above

3. How many dots will there be in the 8th figure?



Fig 1



Fig 2

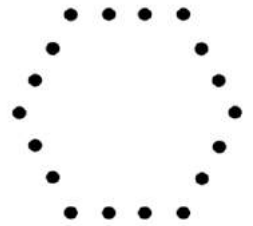


Fig 3

- (A) 42
- (B) 44
- (C) 46
- (D) 48
- (E) None of the above

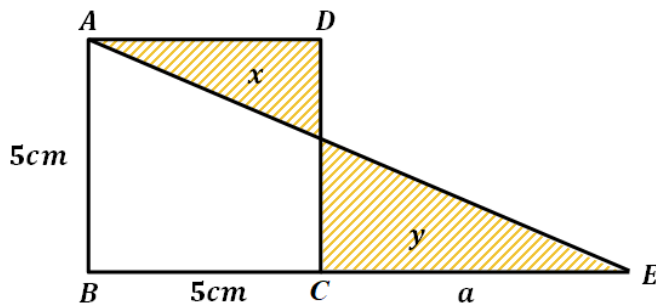
4. A new operation is defined as

$$M \forall N = 4M - 3N$$

Find the value of x in $x \forall 1 = 17$.

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

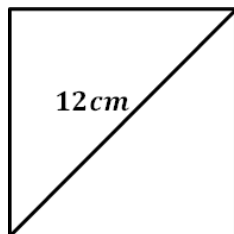
5. In the figure below, $ABCD$ is a square, BCE is a straight line where $CE = a$. It is given that the shaded region y is larger than the shaded region x by 5 cm^2 .



Find the length, a .

- (A) 7 cm
- (B) 8 cm
- (C) 9 cm
- (D) 10 cm
- (E) None of the above

6. The diagonal of a square is 12 cm as shown below. What is its area?



- (A) 68 cm^2
- (B) 72 cm^2
- (C) 74 cm^2
- (D) 76 cm^2
- (E) 80 cm^2

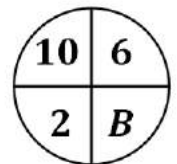
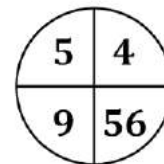
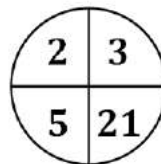
7. A prime number is a whole number that has exactly two positive factors, 1 and itself.

Examples of prime numbers include 2, 3, 5, 7, 11, 13, ...

The sum of 2 prime numbers is 34. Find their smallest possible product.

- (A) 48
- (B) 54
- (C) 72
- (D) 88
- (E) 93

8. Find the value of B .



- (A) 72
- (B) 84
- (C) 88
- (D) 94
- (E) 96

9. How many numbers are there in the sequence below?

4, 10, 16, 22, 28, ..., 64

- (A) 8
- (B) 10
- (C) 12
- (D) 14
- (E) None of the above

10. Marvin wrote the following sequence on the whiteboard.

1, 2, 3, 4, 5, 6, 7, ...

What is the 177th digit he wrote?

- (A) 1
- (B) 2
- (C) 3
- (D) 4
- (E) 5

**QUESTIONS 11 TO 20 ARE WORTH
4 MARKS EACH**

11. How many digits are there in the product below?

111 111 111 \times 111 111 111

- (A) 13
- (B) 14
- (C) 15
- (D) 16
- (E) None of the above

12. Find the value of

$$1 - 2 + 3 - 4 + 5 - 6 + 7 - \dots - 2018 + 2019$$

- (A) 840
- (B) 1010
- (C) 1060
- (D) 2000
- (E) 2018

13. Nutcharat drove from Chiang Mai to Bangkok at a speed of 120 *km/h*. She then returned from Bangkok to Chiang Mai at a speed of 80 *km/h*.

What was her average speed for the entire trip?

- (A) 93 *km/h*
- (B) 94 *km/h*
- (C) 95 *km/h*
- (D) 96 *km/h*
- (E) 100 *km/h*

14. Emma's wallet was stolen. Adam, Ben and Charles were the suspects.

Adam: "Ben stole the wallet!"

Ben: "Not me!"

Charles: "It wasn't me."

Given that only one person told the truth, who stole the wallet?

- (A) Adam
- (B) Ben
- (C) Charles
- (D) Adam and Ben
- (E) Impossible to determine

15. What is the largest 4-digit number that is a common multiple of 5 and 8?

- (A) 9900
- (B) 9920
- (C) 9940
- (D) 9960
- (E) None of the above

16. What is the first number in the 10th row in the following array?

```

                1
            3   5   7
        9  11  13  15  17
    19 21 23 25 27 29 31
33 35 37 39 41 43 45 47 49
.. .. .. .. .. .. .. .. .. ..

```

- (A) 163
- (B) 165
- (C) 167
- (D) 169
- (E) 171

17. In Mathematics " $A > B$ " means A is larger than B ; " $A < B$ " means A is smaller than B .

Given that:

$$A = 98765 \times 87654$$

and

$$B = 98756 \times 87663$$

Which of the following is true?

- (A) $A > B$
- (B) $A < B$
- (C) $A = B$
- (D) Impossible to determine
- (E) None of the above

18. The school rented some boats for 48 students to go on a boat ride.

A small boat fits 3 students and costs \$4 to rent. A big boat fits 5 students and costs \$6 to rent.

What is the minimum amount of fees the school paid to rent the boats?

- (A) \$54
- (B) \$55
- (C) \$56
- (D) \$57
- (E) \$58

19. There is a basket of apples.

At first, 2 more than half of the apples are removed.

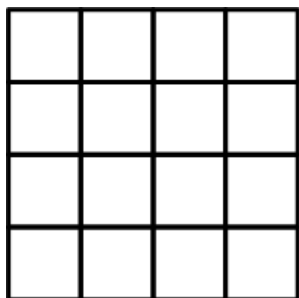
Then, 2 less than half the remaining number of apples are removed.

In the end, 20 apples remain.

How many apples were there in the basket at first?

- (A) 76
- (B) 72
- (C) 64
- (D) 58
- (E) 48

20. How many squares are there in the 4×4 grid?



- (A) 28
- (B) 30
- (C) 32
- (D) 34
- (E) 36

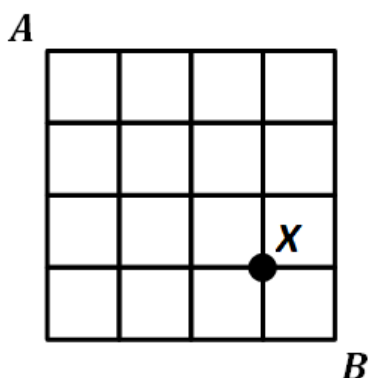
**QUESTIONS 21 TO 25 ARE WORTH
6 MARKS EACH**

21. In Mathematics,

$$\begin{aligned} 3^1 &= 3 \\ 3^2 &= 3 \times 3 = 9 \\ 3^3 &= 3 \times 3 \times 3 = 27 \\ 3^4 &= 3 \times 3 \times 3 \times 3 = 81 \\ &\dots \\ &\dots \end{aligned}$$

What is the ones digit in 33^{33} ?

22. By only moving \rightarrow or \downarrow , how many ways are there to go from A to B while passing through X ?



23. The sum of two numbers, A and B , is 42. If A is multiplied by 5 and B is multiplied by 3, their new sum is 182.

Find the value of A .

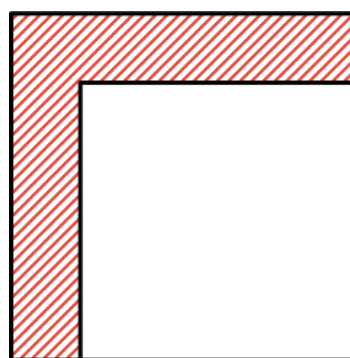
24. A car travels for 10 minutes at half its full speed. It then travels at full speed for the next 10 minutes.



If the car travelled 21 km altogether, what is its full speed in km/h ?

25. The figure shows 2 squares of different sizes. The area of the shaded region is 25 cm^2 .

Find the perimeter (in cm) of the shaded region, given that the side length of the square is a natural number.



End of Paper

SEAMO 2020

Paper B – Answers

Multiple-Choice Questions

Questions 1 to 10 carry 3 marks each.

Q1	Q2	Q3	Q4	Q5
B	C	D	C	A

Q6	Q7	Q8	Q9	Q10
B	E	A	E	C

Questions 11 to 20 carry 4 marks each.

Q11	Q12	Q13	Q14	Q15
A	B	D	C	D

Q16	Q17	Q18	Q19	Q20
A	B	E	A	B

Free-Response Questions

Questions 21 to 25 carry 6 marks each.

21	22	23	24	25
3	40	28	84	52