FUKIEN SECONDARY SCHOOL

S1 First Term Uniform Test (2021-2022)

Mathematics

(1 hour)

Date: 10th November 2021 Name:_____

Time: 9:45 a.m. - 10:45 a.m. Class: _____ No.: _____

Instructions to students:

1. This paper consists of THREE parts, Conventional Questions, Multiple-choice Questions and Bonus Question. There are Section A and Section B in Conventional Questions. Section A carries 48 marks, Section B carries 13 marks, Multiple-choice Questions carry 10 marks and Bonus Question carries 4 marks.

2. The maximum score of this paper is 71.

3. Attempt ALL questions in Conventional Questions and Multiple-choice Questions. Write your answers in the spaces provided in this Question / Answer Book.

4. Unless otherwise specified, show your workings clearly.

5. Unless otherwise specified, numerical answers should be exact.

Conventional Questions
Section A (48 marks)

1. (a) Arrange the numbers –4, +7, +2 and –5 in ascending order using the symbol '<'.

   (b) Arrange the numbers –6.8, +9.7, –8.6, +7.9 and 0 in descending order using the symbol '>'.

(2 marks)

2. Evaluate each of the following expressions.

   (a) (+2) – (–16)

   (b) $\frac{-91}{-7}$

   (c) [(–3) + (–17)] ÷ [(–14) – (–18)]

   (d) $\left(-\frac{2}{3}\right)-\left(+\frac{1}{4}\right)\times\left(-\frac{5}{6}\right)\div\left(-\frac{1}{8}\right)$

(10 marks)

3. Prove that 401 376 is divisible by both 6 and 8 by using divisibility rules.

(3 marks)

4. (a) Find the prime factorizations of 84, 108 and 168.
   (b) Hence, express the L.C.M. and H.C.F. of 84, 108 and 168 as prime factorizations.

(5 marks)

5. Fill in the following table.

	Algebraic expression	Constant term	Like terms
(a)	$2hk - 8 - h^2k + 3hk$		
(b)	$7ac^2 + ac - 5c^2a$		

(4 marks)

6. Write down the missing terms in each of the following sequences.

   (a) _____ , 4 , 6 , 8 , 10 , 12 , 14 , _____

   (b) 1 , 4 , _____ , 16 , _____ , 36 , 49 , 64

   (c) 1 , 3 , 6 , 10 , 15 , 21 , _____ , _____

(6 marks)

7. Consider the formula $R = \frac{2S}{T} + 14$. If $S = 18$ and $T = -4$, find R.

(3 marks)

8. Simplify the following expressions.

   (a) $6x - 2x + 7 - x + 4$

   (b) $8 - 10a \div 5 - 8b - 3a \times 6 + 2ab - 6a + 2$

   (c) $7x - (8x - 2x) \div 3 \times y + 4xy$

(6 marks)

9. Solve the following equations.

(a) $2x + 5 = 6x - 19$

(b) $3(4y + 7) = 5y - 14$

(c) $2[2(1 - 3d) - 3(4d + 2)] = 17d + 11$

(d) $\frac{3c+3}{7} = \frac{4c-34}{3}$

(9 marks)

Section B (13 marks)

10. In a toy shop, the total price of 3 toy aeroplanes and 4 toy trains is $1232. If the price of a toy aeroplane is $42 less than that of a toy train, find the total price of 5 toy aeroplanes and 3 toy trains.

(5 marks)

11. It is given that the general term of a sequence is $a_n = n(n - 1)$.

    (a) Suppose k is a positive integer.

        (i) Express the $(k + 1)$th term of the sequence in terms of k.

        (ii) Express the difference between the $(k + 1)$th term and the kth term of the sequence in terms of k.

    (b) If the difference between two consecutive terms in the sequence is 60, using the result in (a), find the bigger term.

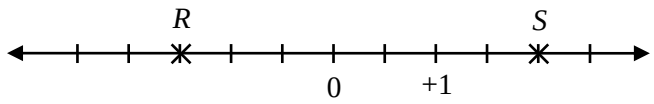
(8 marks)

Multiple-choice Questions (10 marks)

Each question carries 2 marks. Write down the correct answers in the boxes.

12	13	14	15	16

12. Which directed numbers do *R* and *S* on the number line below represent?



	R	*S*
A.	–3	+4
B.	–3	+2
C.	–1.5	+4
D.	–1.5	+2

13. Suppose *X* and *Y* are two distinct prime numbers. Which of the following must be true?

I. *X* and *Y* have no common factors.

II. The H.C.F. of *X* and *Y* is 1.

III. The L.C.M. of *X* and *Y* is $X \times Y$.

A. I and II only
B. I and III only
C. II and III only
D. I, II and III

14. Which of the following word phrases can be used to represent the expression '$5b - 6$'?

A. Subtract 5 from the product of 6 and *b*.

B. Subtract 6 from the product of 5 and *b*.

C. Subtract the product of 5 and *b* from 6.

D. Subtract the product of 6 and *b* from 5.

15. In Figure 1, the 1st pattern consists of 4 dots. For any positive integer n, the $(n + 1)$th pattern is formed by adding 3 dots to the nth pattern. Find the number of dots in the 7th pattern.

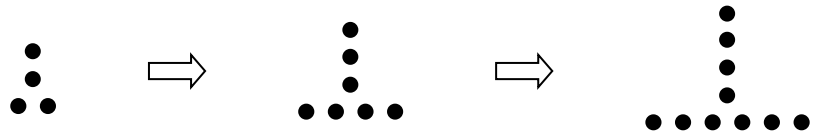


Figure 1

A. 19

B. 22

C. 25

D. 28

16. Hazel is x years old now. Ken is 2 years older than Hazel. After 30 years, Ken's age will be five times the present age of Hazel. Which of the following equations can be used to find the value of x?

A. $x + 32 = 5x$

B. $x - 32 = 5x$

C. $30(x + 2) = 5x$

D. $5(x + 2) = 30x$

Bonus Question (4 marks)

17. (a) Solve $\frac{x+1}{2}+\frac{x+2}{3}+\frac{x+3}{4}+\frac{x+4}{5}=\frac{7}{10}$.

(b) Using the result in (a), solve $\frac{2y-1}{2}+\frac{2y-2}{3}+\frac{2y-3}{4}+\frac{2y-4}{5}=-\frac{7}{10}$.

(4 marks)

END OF PAPER