FUKIEN SECONDARY SCHOOL S2 First Term Uniform Test (2021-2022) Mathematics (1 hour)

Date: 11th November 2021 Time: 8:30 a.m. - 9:30 a.m.

Name:_	
Class:	No.:

Instructions to students:

- 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 38 marks, Section B carries 14 marks, Multiple-choice Questions carry 8 marks and Bonus Question carries 3 marks.
- 2. The maximum score of this paper is 60.
- 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. The diagrams in this paper are not necessarily drawn to scale.

Conventional Questions

Section A (38 marks)

- 1. A machine can produce 504 smartphones in 12 hours.
 - (a) Express the rate of production in smartphones/h.
 - (b) How many smartphones can the machine produce in 40 minutes?

(4 marks)

2. There are 36 students in a classroom, 16 of them are girls. Find the ratio of the number of girls to that of boys.

(3 marks)

S2 Mathematics

	If $7a = 8b$, find $(3a - 2b) : (4b - a)$. (4 n	narks)
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4.	There are 84 cakes in a bakery. If the ratio of the number of chocolate cakes to that of strawber cakes to that of cheese cakes is $7:9:5$, find the number of chocolate cakes in the bakery.	rry
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5. It is given that $(Ax - 3)(5x - 4) - 15 \equiv 20x^2 + Bx + C$, where *A*, *B* and *C* are constants. Find the values of *A*, *B* and *C*.

(3 marks)

6.	Factorize each of the following expressions.	
	(a) $24r^3y + 36r^2$	
	(a) $24x y + 30x$	
	(b) $5(7y-z) - x(z-7y)$	
	(c) $py - 2px + 4pz + 5y - 10x + 20z$	(6 marks)

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(4 marks)

- 7. Expand each of the following expressions using identities.
 - (a) $(10+3v)^2$
 - (b) (7s 10t)(10t + 7s)

8. In Figure 1, *JK* // *ML*. *JNL* is a straight line. Prove that $\triangle NLM \sim \triangle KJL$.



(4 marks)

9. In Figure 2, $\triangle ABC \sim \triangle ACD$, AB = 64, AC = 40 and BC = 32. Find the perimeter of $\triangle ACD$.



(4 marks)

10. It is given that $a: b = \frac{1}{6}: \frac{1}{5}$ and b: c = 9: 4. Find a: b: c.

(4 marks)

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- 11. In Figure 3, *ABC*, *CDE* and *AFE* are straight lines.
 - (a) Name one pair of similar triangles and give proof.
 - (b) Prove that $\angle CDB = \angle CEF$.
 - (c) Find AF.





(6 marks)

12.	(a)	Expand $(-x - \frac{1}{2})(-x + \frac{1}{2}).$		
	(b)	Hence or otherwise, expand $\left(-a-2b-\frac{1}{2}\right)\left(-a-2b+\frac{1}{2}\right)$.	(4 marks)	
13.	(a) (b)	Factorize $(2a + 7b)^2 + 35ab + 10a^2$. Using the result of (a), factorize $(2a + 7b)^2 + 35ab + 10a^2 - 5a - 5b$.	(4 marks)	
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S2 Mathematics

Multiple-choice Questions (8 marks)

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

Question No.	14	15	16	17
Answer				

14. If $(x + 4)(x + p) - 16 \equiv qx^2 + (4 + p)x$, where p and q are constants, find p and q.

- A. p = 0, q = 0B. p = 1, q = 0C. p = 1, q = 4D. p = 4, q = 1
- 15. Which of the following is an identity / are identities?
 - I. 2x + 5x = 7x
 - II. $x(x-5) = x^2 5x$
 - III. (x+2)(x-5) = (x-2)(x+5)
 - A. I and II only
 - B. II and III only
 - C. I and III only
 - D. I, II and III
- 16. Which of the following must have 3x 4 as a factor?
 - I. $3x^2 4x$
 - II. $9x^2 12$
 - III. 6xy + 3x 8y 4
 - A. I and II only
 - B. I and III only
 - C. II and III only
 - D. I, II and III
- 17. 3 hours : 30 seconds =
 - A. 6:1
 - B. 1:10
 - C. 100 : 1
 - D. 360 : 1

Bonus Question (3 marks)

- 18. (a) Simplify $(p+q)^2 (p-q)^2$.
 - (b) Prove that the equation $(x^2 + b)(x^2 + c) = \left(x^2 + \frac{b+c}{2}\right)^2 \left(\frac{b-c}{2}\right)^2$ is an identity,

where b and c are constants.

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END OF PAPER