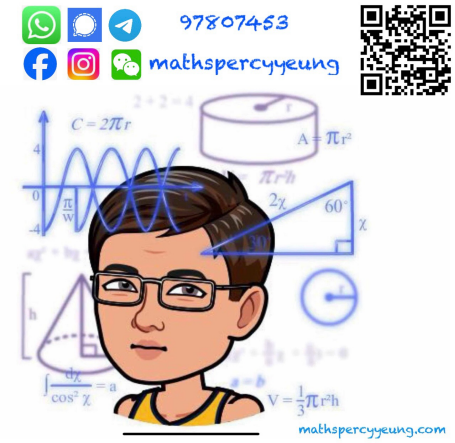
2024-2025 S1
1st TERM EXAM
MATH



2024 – 2025
S1 First Term Examination

MATHEMATICS

Question–Answer Book

8th January, 2025
8:15 am – 9:45 am (1 hour 30 minutes)
This paper must be answered in English

INSTRUCTIONS

1. Write your name, class and class number in the spaces provided on this cover.

2. Answer ALL questions in Section A. You should use an HB pencil to mark all the answers on the Answer Sheet, so that wrong marks can be completely erased with a clean rubber. You must mark the answers clearly; otherwise you will lose marks if the answers cannot be captured. You should mark only ONE answer for each question. If you mark more than one answer, you will receive NO MARKS for that question.

3. Attempt ALL questions in Sections B and C. Write your answers in the spaces provided in this Question – Answer Book.

4. Unless otherwise specified, all working must be clearly shown.

5. The diagrams in this paper are not necessarily drawn to scale.

6. NO calculator is allowed.

Sections	Marks
A Total	**/30**
B Total	**/40**
C Total	**/30**
TOTAL	**/100**

Section A (30 marks)

Choose the best answer for each question.

1. $27+(36-6\times4)=$

A. 15.
B. 39.
C. 120.
D. 147.

2. Which of the following is correct?

A. $4^3=4+4+4$
B. $4^5=4\times5$
C. $5^4=5\times5\times5\times5$
D. $6^3=3\times3\times3\times3\times3\times3$

3. The L.C.M. of $2^3\times3\times5$, $3^2\times5^3\times7$ and $2^5\times5\times7^2$ is

A. $2^3\times5^3\times7^2$.
B. $2^5\times3^2\times5$.
C. $2^5\times3^2\times5^3\times7^2$.
D. 5.

4. 7834✶ is a 5-digit number. If the number is divisible by 8, find the possible value of ✶.

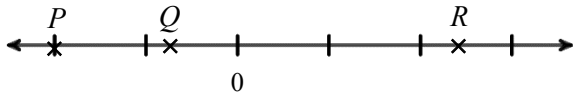
A. 0
B. 2
C. 4
D. 6

5. P and Q are two natural numbers. If P is divisible by 2 and Q is divisible by 3, which of the following must be divisible by 6?

I. $P\times Q$
II. $P+Q$
III. $4\times Q$

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

6. According to the number line below, each letter represents a directed number.



Which of the following is false?

A. $P<0$
B. $Q<0$
C. $R>P$
D. $P>Q$

7. Which of the following numbers is the greatest?

A. -0.4
B. $-\frac{1}{5}$
C. -0.5
D. $-1\frac{1}{2}$

8. $\dfrac{(-2)(-2)-(-2)(+2)}{-2^2+2}=$

A. -8.
B. -4.
C. 0.
D. $\dfrac{4}{3}$.

9. Raymond tops up \$250 to his Octopus card. Then, he spends \$170 and \$115 on buying a toy robot and a comic respectively. The overall change in the value of Raymond's Octopus card is

A. decreased by \$35.
B. decreased by \$195.
C. increased by \$35.
D. increased by \$195.

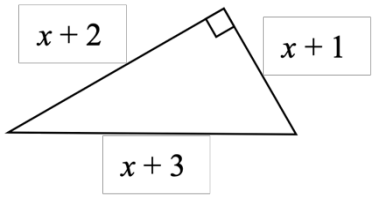
10. Simplify $4\times 3u\times(-5u)$.

A. $-120u^2$
B. $-60u^2$
C. $-60u$
D. $7u$

11. Find the value of the algebraic expression $\dfrac{2y+1}{3}$ when $y=7$.

A. 5
B. $\dfrac{16}{3}$
C. 6
D. 7

12. The figure shows a right-angled triangle. Which of the following formulae represents its area?



A. $A=3x+6$
B. $A=\dfrac{1}{2}(x+1)(x+2)$
C. $A=\dfrac{1}{2}(x+2)(x+3)$
D. $A=\dfrac{1}{2}(x+1)(x+3)$

13. Use an algebraic expression to represent 'Add k to m and then divide the sum by 3'.

A. $\dfrac{m+k}{3}$
B. $\dfrac{m-k}{3}$
C. $m+k-3$
D. $m+k+3$

14. Kelly bought 11 pairs of gloves in a supermarket. She paid \$130 and the change was \$$c$. Find the price of one pair of gloves.

A. $\$\left(\dfrac{130-c}{11}\right)$
B. $\$\left(\dfrac{130+c}{11}\right)$
C. $\$\left(\dfrac{130}{11}+c\right)$
D. $\$\left(\dfrac{130}{11}-c\right)$

15. The general term T_n of a sequence is $\frac{3(7n+30)}{n^2}$. Find the 6th term in the sequence.

A. 4
B. 5
C. 6
D. 7

16. Solve the equation $5x-3=7+3x$.

A. $x=\frac{5}{4}$
B. $x=4$
C. $x=5$
D. $x=20$

17. Solve the equation $9\left(8-\frac{b}{3}\right)=63$.

A. $b=-3$
B. $b=0$
C. $b=3$
D. $b=39$

18. Mary has \$$x$. The amount of money that Tommy has is \$75 more than four times that of Mary. If they have \$315 in total, which of the following equations can be used to find the value of x?

A. $75x=315$
B. $75+x=315$
C. $75+4x=315$
D. $75+5x=315$

19. Which of the following statements is correct?

A. The root of $3x-4=-1$ is 1.
B. The root of $2(x-1)=4$ is 2.
C. The root of $5x+x=12$ is 3.
D. The root of $x-1=-x+1$ is 4.

20. There are 28 students in a classroom. If the number of boys is more than that of the girls by 6, find the number of boys in the classroom.

A. 11
B. 13
C. 15
D. 17

21. Arrange the numbers $\frac{3}{7}$, 42% and 0.428 in descending order.

A. $\frac{3}{7}$, 0.428, 42%
B. $\frac{3}{7}$, 42%, 0.428
C. 42%, 0.428, $\frac{3}{7}$
D. 42%, $\frac{3}{7}$, 0.428

22. What percentage of 2 kg is 4 g?

A. 0.2%
B. 0.5%
C. 2%
D. 5%

23. There are 78 English books and 72 Chinese books in a room. Find the percentage of the books in the room that are Chinese books.

A. 32%
B. 48%
C. 52%
D. 58%

24. The fare of a Star Ferry route was \$6.5 last year. It is increased by 40% this year. Find the fare of the route this year.

A. \$7.2
B. \$8.1
C. \$8.7
D. \$9.1

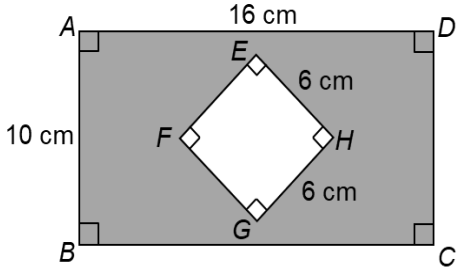
25. The price of a water bottle is decreased from \$120 to \$96. Find the percentage decrease in price.

A. –20%
B. 15%
C. 20%
D. 25%

26. A table is sold for \$1190 at a loss of 15%. Find the cost.

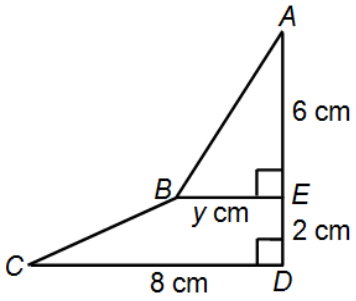
A. \$1011.5
B. \$1035
C. \$1368.5
D. \$1400

27. Find the area of the shaded region in the figure.



A. 36 cm^2
B. 124 cm^2
C. 160 cm^2
D. 196 cm^2

28. In the figure, *AED* is a straight line. The area of ΔABE is same as that of trapezium *BCDE*. Find the value of *y*.

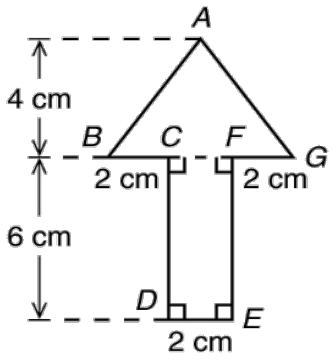


A. 1
B. 2
C. 3
D. 4

29. Simplify $8b \div 2 \times 4b$.

A. 1
B. 16
C. b^2
D. $16b^2$

30. In the figure, *BCFG* is a straight line. Find the area of polygon *ABCDEFG*.



A. 12 cm^2
B. 18 cm^2
C. 24 cm^2
D. 36 cm^2

Section B (40 marks)

31. Evaluate the following expressions.

(a) $23-[13-3\times 2]$

(b) $[(15-32)\times 2-3\times 4]\div 2$

(4 marks)

32. Consider the formula $P=4(2c-9)$.

(a) Find the value of P if $c=6$.

(b) Find the value of c if $P=-20$.

(4 marks)

33. (a) Use index notation to express each of the following numbers as a product of prime factors.

(i) 63 (ii) 150

(b) Hence, find the L.C.M. of 63 and 150 by prime factorization.

(5 marks)

34. Simplify the following expressions.

(a) $t + 5t \times 4t + 2t$

(b) $4 \times e \times f \times (2e) \times f \div e + 2e \times f$

(5 marks)

35. Solve the following equations.

(a) $a-3=2(a-1)$

(b) $\dfrac{4-3x}{4}-6=1$

(c) $\dfrac{1-x}{2}+\dfrac{2(x-2)}{3}=\dfrac{5}{6}$

(8 marks)

36. Evaluate the following expressions.

(a) $(+75)\times\left(-\dfrac{1}{5}\right)\div(+3)$

(b) $(-2)^4-(-3)^3+(-1^4)$

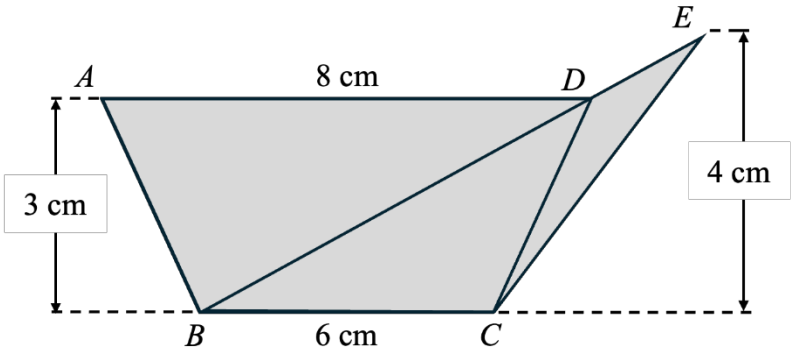
(6 marks)

37. After Ocean pays 48% of his monthly salary for the rent of his apartment, his remaining salary is $13 000.

(a) Find the monthly salary of Ocean.

(b) Find the rent of Ocean's apartment. (4 marks)

38. In the figure, *BDE* is a straight line and *ABCD* is a trapezium. Find the area of the shaded region. (4 marks)



Section C (30 marks)

39. A merchant bought 80 light bulbs. If he sells 30 light bulbs at \$30 each and the rest at \$22 each, the percentage profit is 25%.

(a) Find the cost of each light bulb. (3 marks)

(b) Unfortunately, one-fourth of the light bulbs were broken during delivery.

(i) Find the overall percentage loss if he sells all the unbroken light bulbs at \$22 each.

(ii) Find the selling price of each light bulb if he wants to get an overall profit of 20% from selling the unbroken light bulbs.

(7 marks)

40. In order to encourage people to save energy by reducing the consumption of electricity, the electricity company proposed the following charging plan.

Consumption per month	**Charge**
up to 50 units	\$1.5 per unit of electricity
over 50 units	For the first 50 units, \$1.5 per unit; for the consumption thereafter, \$2 per unit

(a) Jacky consumed 72 units of electricity in June, what is the charge in June? (3 marks)

(b) The charge of electricity for Doris in June is \$201. What is her consumption of electricity in June? (3 marks)

(c) Betty finds that her average charge of electricity in June is \$1.8 per unit. What is her consumption of electricity in June? (4 marks)

41. Consider the sequence $-14, -8, -2, 4, \cdots$.

(a) Write down the next three terms of the sequence. (2 marks)

(b) Subtract the fifth term from the seventh term of the sequence. Then, find the product of the difference and the third term of the sequence. (3 marks)

(c) Given that $T_n = 6n - 20$.

(i) If the kth term of the sequence is 202, find the value of k.

(ii) Peter claims that 404 is one of the terms in this sequence. Do you agree? Explain briefly.

(5 marks)

END OF PAPER