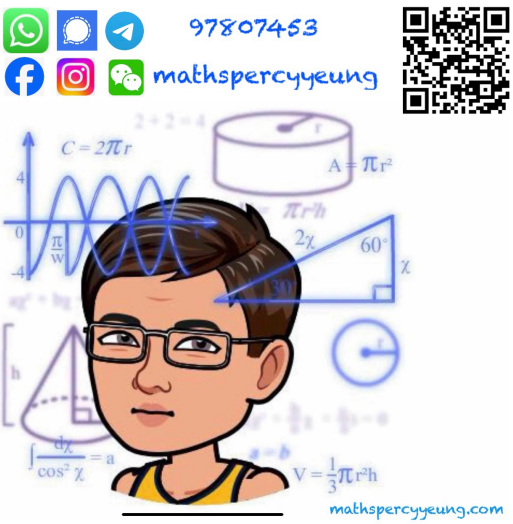
Mid-year Examination 2024 – 2025

Form 1

173 students



Mathematics
Time Allowed : 1 hour
Question/Answer Paper

Please read the following <u>instructions</u> very carefully.

1. This paper consists of TWO sections, A and B.

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

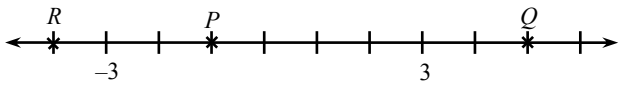
3. This paper carries 100 marks. Attempt ALL questions in this paper. Write your answers in the spaces provided in this Question/Answer Paper.

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

For Markers' Use Only	
1 – 25.	(58)
26.	(3)
27.	(3)
28.	(6)
29.	(6)
30.	(6)
31.	(6)
32.	(8)
33.	(4)
TOTAL	(100)

Section A (58%)

All rough work should be done on the rough work paper provided, but will not be marked.

		Answers	Marks
1.	Express 1470 as a product of prime factors using index notation.	1. _____	2
2.	Find the L.C.M. of $2^2 \times 3^2$, $3^2 \times 7$ and $2^2 \times 3 \times 7$.	2. _____	2
3.	Find the quotient when the cube of 6 is divided by the sum of 7 and 11.	3. _____	2
4.	Arrange the following numbers in ascending order. $0.8\ ,\ -1\ ,\ \frac{3}{4}\ ,\ -\frac{9}{8}\ ,\ -1.7$	4. _____	2
5.	Find the value of $\frac{3^2}{2}-\left(\frac{5}{7}+\frac{7}{20}\right)$.	5. _____	2
6.	Evaluate $\frac{2-(-3^2)}{(-4)^2-9}$.	6. _____	2
7.	It is given that x and y are positive numbers and z is a negative number. Which of the following expressions must give a negative value? A. $10x \div y \times z$ C. $x+8y \div z$ B. $x-y \times 9z$ D. $2x+3y-z$	7. _____	2
8.	P, Q and R are three numbers represented on the number line below. Find the value of $3P+Q-R$. 	8. _____	2
9.	Susan lost 1.4 kg in weight in the first month, gained 2.3 kg in the second month and then lost 3 kg in the third month. Find the overall gain or loss in her weight in these three months.	9. _____	2
		Subtotal:	**/18**

10. Represent the following word phrases by algebraic expressions.
    (a) Subtract 7 from the square of m and then multiply the difference by 3.
    (b) Divide the product of a and 4 by the cube of b.

10.
(a) _____ 2
(b) _____ 2

11. Simplify the following algebraic expressions.
    (a) $14y \div 2 - 4 \times 6y$
    (b) $(2a - b) - 3(a + 2b)$

11.
(a) _____ 2
(b) _____ 2

12. Consider the formula $R = \dfrac{2s}{1+t}$. Find the value of R if $s = \dfrac{1}{4}$ and $t = -\dfrac{1}{3}$.

12. _____ 2

13. Consider the formula $P = \dfrac{q^2 + 1}{r^2 - s}$. If $q = -5$, $r = 2$ and $s = -9$, find the value of P.

13. _____ 2

14. In the figure, the 1st pattern consists of 4 dots. For any positive integer n, the $(n + 1)^{th}$ pattern is formed by adding $(2n + 4)$ dots to the nth pattern. Find the number of dots in the 6th pattern.

1st pattern 2nd pattern 3rd pattern

14. _____ 2

15. Jenny has 80 candies. She distributes the candies evenly to a students and she has b candies left. Find the number of candies that each student gets in terms of a and b.

15. _____ 2

16. Solve the following equations.
    (a) $\dfrac{3 - 4x}{23} = -3$
    (b) $2y - 6(1 - 3y) = 34$

16.
(a) $x =$ _____ 2
(b) $y =$ _____ 2

17. Paul rides a bicycle at a speed of x km/h for 1.2 hours, then he walks for 2.6 km. If he travels 25.4 km in total, find the value of x.

17. _____ 2

Subtotal: **/22**

18.	Peter pays \$100 for 5 pens and 2 correction tapes and gets \$9 in change. If the price of each correction tape is less than 3 times that of a pen by \$4, find the price of a pen.	18. _____	2
19.	If 65% of 240 is m, find the value of m.	19. _____	2
20.	In a school, there are 175 S1 students, where 34 students are from S1A and 36 students are from S1B. What percentage of S1 students are from these two classes?	20. _____	2
21.	Kenneth spends \$13.2 on transportation. If his expense is 60% of Karen's transportation expense, find the difference between their expenses.	21. _____	2
22.	If the price of a car increases by \$33680 to \$244180, find the percentage increase in the price of the car.	22. _____	2
23.	Candy sold a second-hand phone for \$504 at a loss of 52%. Find the cost of the phone.	23. _____	2
24.	A tablet is \$864 cheaper if it is sold at a discount of 16% on its marked price. Find the selling price of the tablet.	24. _____	3
25.	One dozen eggs is sold for \$24 and two dozen eggs is sold for \$40. Find the discount percentage if Mr. Lee bought two dozen eggs.	25. _____	3
		Subtotal:	**/18**

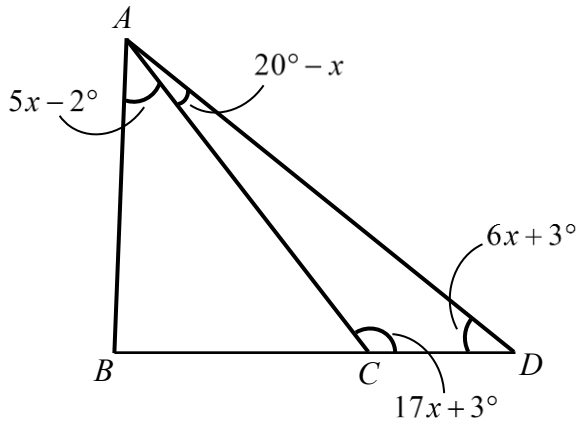
Section B (42%)

All working must be clearly shown in the spaces provided.

26. Simplify $-6+3\times 7m-8m\div 4-2$. (3 marks)

27. The prices of a pencil and a rubber eraser are \$$p$ and \$$e$ respectively. Winnie spent \$$C$ on a dozen pencils and two dozens rubber erasers.
    (a) Write down the formula for C. (1 mark)
    (b) If $p=5$ and $e=3$, how much should Winnie pay? (2 marks)

28. In the figure, BCD is a straight line.



(a) Find the value of x. (3 marks)

(b) By using the result in (a), determine whether $\triangle ABC$ is a right-angled triangle. Explain your answer. (3 marks)

29. The general term a_n of a sequence is $4n-13$.

(a) Find a_3. (1 mark)

(b) If $a_k = 47$, find the value of k. (2 marks)

(c) If $5a_3 + 2a_{m-1} = 129$, find the value of m. (3 marks)

30. The number of birds arriving at and leaving the park each day is recorded. The following table shows the records from last Monday to Saturday. It is given that '+1' represents 1 bird arriving at the park.

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Change in the number of birds	+21	−32	−10	+36	+8	−12

(a) Find the change in the number of birds from last Monday to Saturday. (2 marks)

(b) If there was a total of 34 birds leaving the park last week, find the change in the number of birds last Sunday. (2 marks)

(c) If there were 103 birds in the park at the end of last Thursday, find the number of birds at the end of last Monday. (2 marks)

31. The length of each side of a square is x cm. If the length of each side of the square is increased by 15 cm, then the perimeter of the square will be the same as that of a rectangle of width 7 cm. The length of the rectangle is less than 3 times the new length of each side of the square by 53 cm.
    (a) (i) Find the new length of each side of the square in terms of x. (1 mark)
    (ii) Find the length of the rectangle in terms of x. (1 mark)
    (b) Find the perimeter of the rectangle. (4 marks)

32. It is given that the original width and length of rectangle are 6 cm and y cm respectively. The width of the rectangle is increased by 20%. The length of the rectangle is decreased by 20% to 8 cm.
    (a) Find the new width of the rectangle. (1 mark)
    (b) Find the value of y. (2 marks)
    (c) Find the percentage change in the area of the rectangle. (2 marks)
    (d) Someone claims that the percentage change in the area of the rectangle is less than that in the perimeter of the rectangle. Do you agree? Explain your answer. (3 marks)

33. The marked price of a T-shirt is twice as its cost \$$C$ and it is sold at a discount of 40% on its marked price.
    (a) Find
        (i) the marked price in terms of C, (1 mark)
        (ii) the selling price of the T-shirt in terms of C. (1 mark)
    (b) Find the overall percentage profit or loss from selling the T-shirt. (2 marks)

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