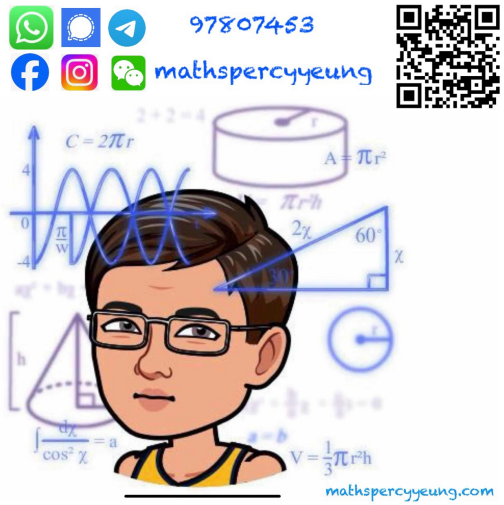
# Mid-year Examination 2021 – 2022

**Form 1**

**165 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.

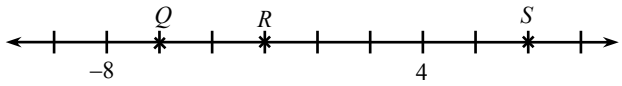
3. This paper carries 100 marks. Attempt ALL questions in this paper. Write your answers in the spaces provided in this Question/Answer Paper.

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

| For Markers' Use Only | |
|---|---|
| **1 – 25.** | (58) |
| **26.** | (6) |
| **27.** | (3) |
| **28.** | (4) |
| **29.** | (5) |
| **30.** | (5) |
| **31.** | (7) |
| **32.** | (6) |
| **33.** | (6) |
| **TOTAL** | (100) |

**Section A (58%)**

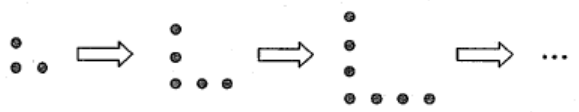
***All rough work should be done on the rough work paper provided, but will not be marked.***

| | | Answers | Marks |
|---|---|---|---|
| 1. | The cube of –6 is divided by the square of –3. Find the quotient. | 1. _____ | 2 |
| 2. | Find the H. C. F. of $2^2 \times 3 \times 11$ and $3^3 \times 5 \times 11$. | 2. _____ | 2 |
| 3. | Find the difference between the cube of 5 and the 3rd multiple of 5. | 3. _____ | 2 |
| 4. | Given 38♥6 is a 4-digit number where ♥ is a prime number. If 38♥6 is divisible by 8, find ♥. | 4. ♥ = _____ | 3 |
| 5. | Evaluate $(-2)-(+12)\div\left(-4\frac{4}{5}\right)$. | 5. _____ | 2 |
| 6. | Arrange the following numbers in ascending order: $-\frac{2}{5}, 0, -\frac{2}{7}, +2\frac{3}{7}, +\frac{26}{7}$ | 6. _____ | 2 |
| 7. | *Q, R* and *S* are three numbers represented on the number line below. Find the value of $Q-(2R\div S)$.   | 7. _____ | 2 |
| 8. | Represent the following word phrase by an algebraic expression: Subtract half of the product of *a* and *b* from the square of *c*. | 8. _____ | 2 |
| 9. | Simplify the following algebraic expressions. (a) $20\div 4b\times 5ab$ (b) $(6\times a\times a\times b)\times(-2\times b\times a)$ | 9. (a) _____ (b) _____ | 2 2 |
| 10. | Which of the following is/are NOT a formula? A. $v=3-v$ C. $2R=D$ B. $a=\frac{u+v}{2}$ D. $b^2-4ac$ | 10. _____ | 2 |
| 11. | In a Mathematics test, Susan's mark is $b + 5$ higher than twice of Mary's mark. If Mary's mark is $4b$, find Susan's mark. | 11. _____ | 3 |
| 12. | Consider the formula $B=(c+d)(c^2-d^2)$. If $c = -3$ and $d = 2$, find the value of *B*. | 12. _____ | 2 |
| | | **Subtotal:** | **/28** |

13. Consider the formula $s = \dfrac{27b - 2ac}{b}$. If $b = \dfrac{1}{3}$ and $ac = 4$, find the value of $s$.

13. _____ 2

14. In the figure, the 1st pattern consists of 3 dots. For any positive integer $n$, the $(n + 1)^{th}$ pattern is formed by adding 2 dots to the $n$th pattern. Find the number of dots in the $7^{th}$ pattern.



14. _____ 2

15. Solve the following equations.

(a) $3(5 - 2x) = 39$

(b) $\dfrac{y + 16}{5} = 8 - 3y$

15. (a) $x =$ _____ 2

(b) $y =$ _____ 2

16. Dick buys $x$ books. The price of each book is \$38. He gives three \$100 notes to the cashier and gets \$34 in change. Find $x$.

16. _____ 2

17. In a kiosk, the total price of a chicken leg and a rice dumpling is \$17.5. Four chicken legs are as expensive as three rice dumplings. How much should Ben pay for two rice dumplings and a chicken leg?

17. _____ 2

18. Find the sum of one-fifth of a round angle and $\dfrac{4}{3}$ of a straight angle.

18. _____ 2

19. If 42% of $a$ is 315, find the value of $a$.

19. _____ 2

20. What percentage of 50 cm is 1 m?

20. _____ 2

21. There are 36 students in a class. If 9 of them are boys, what percentage of the students are girls?

21. _____ 2

22. Among 120 balls in a box, 35% of them are red and there are 54 green balls. If the rest of the balls are blue, what percentage of the balls are blue?

22. _____ 2

23. The weight of Helen has dropped by 5% and she weighs 47.5 kg now. What is her original weight?

23. _____ 2

24. The marked price of a bike is \$250. Wilson buys it at a discount of 30%. If Wilson wants to sell the bike at a profit of 20%, what should the selling price be?

24. _____ 3

25. Peter sold two phones for \$9999 each. He lost 10% on one and gained 10% on the other. After two transactions, find the overall profit or loss that he had.

25. _____ 3

**Subtotal:** **/30**

**Section B (42%)**

***All working must be clearly shown in the spaces provided.***

26. The following table shows the time differences of some cities from Hong Kong local time (in hours). It is given that '+1' represents 1 hour ahead of the local time of Hong Kong.

| City | Paris | Osaka | Singapore | London |
|---|---|---|---|---|
| Time difference (h) | –7 | +1 | 0 | –8 |

(a) By how many hours is the local time in Paris ahead of / behind the local time in Osaka? (2 marks)

(b) By how many hours is the local time in Singapore ahead of / behind the local time in London? (2 marks)

(c) Kelvin departs from Hong Kong at 8:30 am and takes an 18-hour flight to Paris. What will the local time be when he arrives in Paris? (2 marks)

27. Simplify $7a+8-24a\div 6+3\times 5a-2$. (3 marks)

28. Janet works $x$ hours and $y$ hours per day at fast food restaurants $A$ and $B$ respectively. She is paid \$$a$ and \$$b$ per working hour by restaurants $A$ and $B$ respectively. Let \$$T$ be the amount Janet earns for working for a week.
    (a) Find the formula for $T$. (2 marks)
    (b) It is given that restaurant $A$ pays \$40 per hour and restaurant $B$ pays \$45 per hour. If she works at most 10 hours per day and at least 3 hours per day in restaurant $A$, how much can she earn at most in a week? (2 marks)

29. It is given that the general term $a_n$ of a sequence is $13n - 11$.

(a) If $a_r = 67$, find the value of $r$. (2 marks)

(b) Find the $(r + 2)^{th}$ term of the sequence. (3 marks)

30. (a) Kenneth has 48 sweets. If the number of his sweets is 60% of Karen's sweets, find the total number of their sweets. (3 marks)

(b) What percentage of the total number of sweets is Karen's? (2 marks)

31. A pair of sunglasses of marked price \$600 is sold at a 20% discount.

(a) Find the selling price of the pair of sunglasses. (2 marks)

(b) Suppose the percentage profit is 20%, find the cost of the pair of sunglasses. (2 marks)

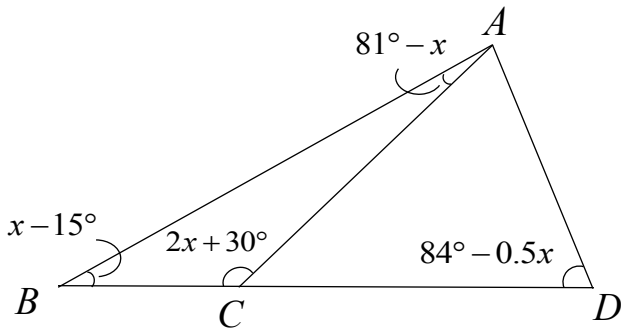
(c) If the seller wants to make a profit percentage at 30% with the same discount offered to customers, find the new marked price of the pair of sunglasses. (3 marks)

32. Jason's age is $\frac{1}{4}$ of his father's age. 28 years later, Jason's age will be $\frac{3}{5}$ of his father's age.

(a) How old was Jason's father when Jason was born? (4 marks)

(b) How old was Jason when his age was $\frac{1}{5}$ of his father's age? (2 marks)

33. In the figure, *BCD* is a straight line.




(a) Find *x*. (3 marks)

(b) Hence, show that Δ*ABD* is a right-angled triangle. (3 marks)

**--- End of Paper ---**