# GHS Sorted Past Paper - MC
# S1-10 Manipulation of Simple Polynomials

1. [20 - 21 S1 Final Exam - 01] (76%)

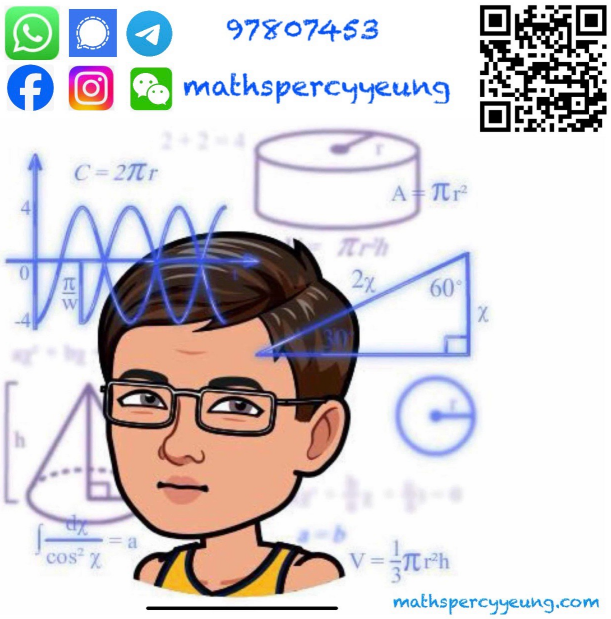
**1.** Which of the following is (are) a pair of like terms?

I. $-3, 2$

II. $\frac{2a}{3}, -5a$

III. $2x, 3x^2$

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




2. [20 - 21 S1 Final Exam - 02] (62%)

**2.** Which of the following polynomials has a degree of 5?

**A.** $x^4 - 5$

**B.** $2 - 3x^2y^2 + 6y$

**C.** $x^3y + xy^2 - 7$

**D.** $x^2y^3 - 6xy + 2x$

3. [20 - 21 S1 Mid-year Exam - 03] (89%)

**3.** Find the number of terms and the constant term of $-7x^2+6xy-5+2y-4y^2$.

| | Number of terms | Constant term |
|---|---|---|
| **A.** | 4 | 5 |
| **B.** | 4 | –5 |
| **C.** | 5 | 5 |
| **D.** | 5 | –5 |

4. [20 - 21 S1 Mid-year Exam - 04] (81%)

**4.** Consider the polynomial $-8x^2+6xy^3-7-5x^3$. Which of the following is correct?

| | Degree of polynomials | Coefficient of $x^3$ |
|---|---|---|
| **A.** | 4 | –5 |
| **B.** | 9 | –5 |
| **C.** | 4 | 5 |
| **D.** | 9 | 5 |

5. [20 - 21 S1 Mid-year Exam - 06] (83%)

**6.** Find the value of the polynomial $a^2+5a-1$ when $a=-1$.

**A.** –7
**B.** –5
**C.** –3
**D.** –1

6. [20 - 21 S1 Mid-year Exam - 10] (58%)

**10.** Expand $(x+1)^2(-5+2x)$.

**A.** $2x^3-x^2-8x-5$
**B.** $2x^3-x^2-8x+5$
**C.** $2x^3-5x^2+2x-5$
**D.** $2x^3-5x^2+2x+5$

7. [21 - 22 S1 Final Exam - 04] (83%)

**4.** Consider the polynomial $5x^3 - 8x^2 + 3x$. Which of the following is/are true?

I. The constant term of the polynomial is 0.
II. The coefficient of $x^2$ is 8.
III. The terms are arranged in ascending powers of $x$.

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

8. [21 - 22 S1 Final Exam - 15] (69%)

**15.** The degree of the polynomial $7a^6 + 10a^3b^4 - 2a^3bc^2de + 1000$ is

**A.** 4.
**B.** 6.
**C.** 8.
**D.** 21.

9. [21 - 22 S1 Mid-year Exam - 06] (68%)

**6.** Which of the following pairs of terms are like terms?

I. 0 and $-3$

II. $-4x$ and $5x^2$

III. $6ab$ and $-7ba$

**A.** None of the above

**B.** II only

**C.** III only

**D.** I and III only

10. [22 - 23 S1 Final Exam - 05] (68%)

**5.** The coefficient of $hk$ in the expansion $(4h+k)(2k-3h)$ is

**A.** 8.

**B.** 5.

**C.** 4.

**D.** $-3$.

11. [22 - 23 S1 Mid-year Exam - 05] (74%)

**5.** Which of the following pairs of terms are like terms?

I. $-3$ and $4$

II. $3y^4x^3$ and $-4x^3y^4$

III. $3x^4$ and $4x^3$

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

12. [22 - 23 S1 Mid-year Exam - 10] (72%)

**10.** Consider the polynomial $3x^2-2x-1$. Which of the following is correct?

| | Degree of the Polynomial | Constant term |
|---|---|---|
| **A.** | 2 | $-1$ |
| **B.** | 2 | 1 |
| **C.** | 3 | $-1$ |
| **D.** | 3 | 1 |

13. [22 - 23 S1 Mid-year Exam - 19] (64%)

**19.** Expand and simplify the polynomial $(2a^2-1)(-a^2+2a-3)$. The coefficient of $a^2$ is

**A.** $-7$.
**B.** $-5$.
**C.** 5.
**D.** 7.

14. [23 - 24 S1 Final Exam - 11] (50%)

**11.** The degree of the polynomial $7a^4 - 4a^2b^3 + ab^5 - 2b$ is

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

15. [23 - 24 S1 Final Exam - 22] (72%)

**22.** The coefficient of $x^2$ in the expansion of $(-3x^2 + 4x) + (x^2 + 4x)(2x - 3)$ is

**A.** $-8$.
**B.** $-3$.
**C.** 2.
**D.** 8.

16. [23 - 24 S1 Mid-year Exam - 05] (60%)

**5.** Which of the following is a monomial?

I. 3
II. $\frac{1}{x^2}$
III. $-0.25x^4$

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

17. [23 - 24 S1 Mid-year Exam - 10] (75%)

**10.** Find the constant term in $(-3k^2+2h-5h^2+7)-(-4h^2+k+3)$ after simplification.

**A.** 3
**B.** 4
**C.** 7
**D.** 10

18. [23 - 24 S1 Mid-year Exam - 13] (80%)

**13.** Which of the following polynomials has the highest degree?

**A.** 10000
**B.** $-9+8x-(7x^2+6x^3-5x^4)$
**C.** $(x+y^3)(-y-3x)$
**D.** $2xyz+3x^2y-4yz^3+5x^3z^2-6y^2$

19. [23 - 24 S1 Mid-year Exam - 14] (67%)

**14.** Find the coefficient of $h^2$ in $(-5h^2+4h-3)(2h+1)$ after simplification.

**A.** $-5$
**B.** $-2$
**C.** 3
**D.** 8

20. [24 - 25 S1 Final Exam - 10] (54%)

**10.** Which of the following are polynomials?

I. 2025

II. $2xy$

III. $\dfrac{3x}{y}$

**A.** I and II only

**B.** I and III only

**C.** II and III only

**D.** I, II and III

21. [24 - 25 S1 Final Exam - 20] (73%)

**20.** $\dfrac{a\times a\times a\times a}{a+a+a}\div\left(a-a-a\right)=$

**A.** $-1$.

**B.** $-\dfrac{2a}{3}$.

**C.** $-\dfrac{1}{3a}$.

**D.** $-\dfrac{a^2}{3}$.

22. [24 - 25 S1 Final Exam - 21] (41%)

**21.** If the degree of the polynomial $\left(x^n-x-1\right)\left(x-n\right)$ is 3, then the coefficient of $x$ is

**A.** –2.

**B.** 0.

**C.** 1.

**D.** 2.

23. [24 - 25 S1 Mid-year Exam - 10] (31%)

**10.** Which of the following is **NOT** a polynomial?

**A.** $-4+2x+3x^4-4x^5y$

**B.** $-5$

**C.** $\frac{3x}{y}+3x^2+y^3$

**D.** $-5xy^2$

24. [24 - 25 S1 Mid-year Exam - 15] (84%)

**15.** Find the constant term in $(3a^2-b+5)-(-a-4)$ after simplification.

**A.** 1

**B.** 4

**C.** 5

**D.** 9

25. [24 - 25 S1 Mid-year Exam - 16] (53%)

**16.** If the degree of the polynomial $7xy^6-5x^2y^n-2x^2y^3$ is 7, which of the following can be the value of $n$?

I. 4
II. 5
III. 6

**A.** I only

**B.** II only

**C.** I and II only

**D.** II and III only

26. [24 - 25 S1 Mid-year Exam - 17] (73%)

**17.** Find the coefficient of $x^2$ in $(-3x^2+5x-1)(2x+3)$ after simplification.

**A.** 10

**B.** 1

**C.** –3

**D.** –9

27. [24 - 25 S1 Mid-year Exam - 18] (91%)

**18.** $\dfrac{(2a^3)(6a^2)}{4a^4} =$

**A.** $2a$.

**B.** $3a$.

**C.** $2a^2$.

**D.** $3a^2$.

# GHS Sorted Past Paper - Conventional Questions
# S1-10 Manipulation of Simple Polynomials

1. [20 - 21 S1 Final Exam - 03]

**3.** Find the value of the polynomial $x^4 - 2x^3 + 6$ when $x = 2$. **(2 marks)**

2. [20 - 21 S1 Final Exam - 13]

**13.** Expand and simplify the expression $(4+y)(y-5)-(y+2)^2$. **(3 marks)**

3. [20 - 21 S1 Mid-year Exam - 03] (84%)

**3.** **(a)** Simplify $(5-6x^2+2y)-(2x^2-4y+7xy)$. **(3 marks)**

**(b)** Expand $(6+4x)(x+5)$ and arrange the terms in descending powers of $x$. **(2 marks)**

4. [20 - 21 S1 Mid-year Exam - 07] (78%)

**7.** **(a)** Simplify $\left(\frac{x^3}{xy}\right)^2$ and express your answer with positive indices. **(2 marks)**

**(b)** Simplify $\left(\frac{7x^2}{3y^3}\right)^2 \div \left(\frac{2x^2}{3y}\right)^3$ and express your answer with positive indices. **(2 marks)**

5. [21 - 22 S1 Final Exam - 01] (85%)

**1.** Simplify $(4x^3 - 3 + 8x^4) + (5x - 7 + 2x^4 - 6x^3)$. **(2 marks)**

6. [21 - 22 S1 Final Exam - 03] (61%)

**3.** Simplify $\frac{(4x^3y^5)^2}{8x^7y^7}$ and express your answer with positive indices. **(3 marks)**

7. [21 - 22 S1 Final Exam - 07] (73%)

**7.** The price of a pen and an eraser are $\$(5x+3)$ and \$3 respectively. Express the total price (in \$) of $(7x-2)$ pens and $(4+2x)$ erasers in terms of $x$ in simplest form. **(3 marks)**

8. [22 - 23 S1 Final Exam - 04] (66%)

**4.** **(a)** Simplify $2x^2-3-\left(x^2-2x+1\right)$. **(1 mark)**

**(b)** Write down the constant term of the expression in **(a)**. **(1 mark)**

9. [22 - 23 S1 Final Exam - 13] (63%)

**13.** **(a)** Simplify $3x-x^2+4x^2\div 2-3x+1$. **(2 marks)**

**(b)** Simplify $\dfrac{\left(-2m^2\right)^3}{m^9}$ and express your answer with positive indices. **(2 marks)**

10. [22 - 23 S1 Mid-year Exam - 12] (58%)

**12.** Jenny bought $(x+2)$ pens and the price of each pen is $\$(2x-3)$. If she has $\$(3x^2-5x+2)$ before buying the pens, find the remaining amount of money after buying the pens in terms of $x$. Give your answer in descending powers of $x$. **(3 marks)**

11. [23 - 24 S1 Final Exam - 03] (67%)

**3.** Simplify $\dfrac{(3x)(2x^2)}{18x^{12}}$ and express your answer with positive indices. **(3 marks)**

12. [23 - 24 S1 Final Exam - 09] (73%)

**9.** Simplify $(2x-1)(x-3)-(4x^2-3x)$. **(3 marks)**

13. [23 - 24 S1 Mid-year Exam - 05] (80%)

**5.** Simplify the following expressions.

**(a)** $4a\div 28$ **(1 mark)**

**(b)** $2p\times 3-12q\div 4+4q-9p$ **(3 marks)**

14. [23 - 24 S1 Mid-year Exam - 09] (73%)

**9.** Simplify $\dfrac{6x^3\times 2x^2}{-9x^9}$ and express your answer with positive indices. **(3 marks)**

15. [23 - 24 S1 Mid-year Exam - 12] (55%)

**12.** **(a)** Expand $(3x-y)(4y-7x)$. **(2 marks)**

**(b)** Hence, simplify $xy(x-1)(x+1)-(3x-y)(4y-7x)$, and arrange the terms in descending powers of $x$. **(3 marks)**

16. [24 - 25 S1 Final Exam - 05] (57%)

**5.** Simplify $7x^2y + 3y^2x + 10yx^2$. _____ **(1 mark)**

17. [24 - 25 S1 Final Exam - 10] (53%)

**10.** Simplify $x^5y^2 \div \frac{y^4}{x^2}$ and express your answer with positive indices. **(3 marks)**

18. [24 - 25 S1 Final Exam - 17] (60%)

**17.** Expand and simplify

**(a)** $(x+2y)(3x-4y)$, **(3 marks)**

**(b)** $(x+y)^2 - (x+2y)(3x-4y)$. **(3 marks)**

19. [24 - 25 S1 Mid-year Exam - 13] (83%)

**13. (a)** Simplify $(x+y)-(2y+z)+(3x-4z)$. **(3 marks)**

**(b)** Simplify $5y \times 2 + (y-x) - 6x \div 2$. **(3 marks)**

**(c)** Simplify $14x^2y^3 \times 3xy^5 \div (7x^4y^4)$ and express your answer with positive indices. **(3 marks)**

20. [24 - 25 S1 Mid-year Exam - 15] (68%)

**15. (a)** Expand and simplify $(5x-y)(x+2y)$. **(2 marks)**

**(b)** Hence, simplify $y(3x-y)-(x+2y)(5x-y)$. **(3 marks)**

21. [22 - 23 S1 Mid-year Exam - 14] (55%)

**14.** It is given that the general term of two sequences are $a_n = \frac{3^n \times 3^{2n+1}}{n^2}$ and $b_n = \frac{n}{9^{n+2}}$. Suppose the general term of another sequence $c_n$ is the product of $a_n$ and $b_n$.

**(a)** Express $c_n$ in terms of $n$ in the simplest form. **(3 marks)**

**(b)** Anya claims that the 6th term of the sequence $c_n$ is greater than 10. Do you agree? Explain your answer. **(2 marks)**

22. [22 - 23 S1 Mid-year Exam - 14] (55%)

**14.** It is given that the general term of two sequences are $a_n = \dfrac{3^n \times 3^{2n+1}}{n^2}$ and $b_n = \dfrac{n}{9^{n+2}}$. Suppose the general term of another sequence $c_n$ is the product of $a_n$ and $b_n$.

**(a)** Express $c_n$ in terms of $n$ in the simplest form. **(3 marks)**

**(b)** Anya claims that the 6th term of the sequence $c_n$ is greater than 10. Do you agree? Explain your answer. **(2 marks)**

23. [22 - 23 S1 Mid-year Exam - 13] (79%)

**13. (a)** Simplify $(-2a^2b)\times(3ab^3)$. **(2 marks)**

**(b)** Simplify $(2x-y-1)+(x-1)-(2y-6)$. **(2 marks)**

**(c)** Simplify $\dfrac{(4x^3)^2}{2x^4}$ and express your answer with positive indices. **(3 marks)**

24. [22 - 23 S1 Mid-year Exam - 13] (79%)

**13. (a)** Simplify $(-2a^2b)\times(3ab^3)$. **(2 marks)**

**(b)** Simplify $(2x-y-1)+(x-1)-(2y-6)$. **(2 marks)**

**(c)** Simplify $\dfrac{(4x^3)^2}{2x^4}$ and express your answer with positive indices. **(3 marks)**