

Content	Communication	Overall
4147	4	

²⁴ Part A (18 marks) – Attempt all questions before moving on to Part B

1. Simplify.

[3]

a) $(y^8)(y^2)$
 $= y^{8+2}$
 $= y^{10}$

b) $(x^2)^3$
 $= x^{2 \times 3}$
 $= x^6$

c) $\frac{w^7}{w^6}$
 $= w^{7-6}$
 $= w$

2. Simplify. [6]

[6]

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

b) $6a + 3b + a + 5b$
 $= 7a + 8b$

c) $2(x+y)$
 $= 2x + 2y$

d) $(5x^2 + 8x - 2) + (4x^2 - 5x - 3)$
 $= 5x^2 + 8x - 2 + 4x^2 - 5x - 3$
 $= 9x^2 + 3x - 5$

e) $6x^3 - 3 + 4x - 4x^3 + x + 1$
 $= 6x^3 + 3 + 4x - 4x^3 + x + 1$
 $= 2x^3 + 5x + 4$

3. Given the polynomial $3x^2 - 4x - 6$

[3]

a) How many terms does it have? 3

b) What is the constant? -6

c) Name the polynomial. Trinomial

4. Simplify. Don't leave negative exponents

[6]

a) $\frac{x^7 y^6}{x^3 y}$
 $= x^{7-3} y^{6-1}$
 $= x^4 y^5$

b) $(-3a^5 b^2)(5ab^3)$
 $= -15a^{5+1} b^{2+3}$
 $= -15a^6 b^5$

c) $\frac{18w^3 z^5}{3w^2 z^3}$
 $= 6w^{3-2} z^{5-3}$
 $= 6wz^2$

5. Simplify. Show steps for full marks.

[6]

a) $2(a-2) + 5(a+3)$
 $= 2a - 4 + 5a + 15$
 $= 7a + 11$

b) $3x(x+2)$
 $= 3x^2 + 6x$

c) $(w^2 - w - 3) - (2w^2 - 4w + 1)$
 $= w^2 - w - 3 - 2w^2 + 4w - 1$
 $= -w^2 + 3w - 4$

Part B (23 marks) Show your work for full marks.

6. A friend has a different answer than you do. They show you, their work. Circle the errors. Correct the errors and explain what they did wrong. [4]

- ① Either did -2×4 or $(-2)^3$
- ② $(a^3)^4 \neq a^{12}$! they added
- ③ Added terms, incorrectly
- ④ They did $8-3$ instead of $\frac{8}{3}$

$$\frac{(-2a^3)^4}{2a^2(a^3)} = \frac{(-2)^4(a^3)^4}{2a^{2+3}} = \frac{16a^{12}}{2a^5} = 8a^7$$

7. Simplify. Remember to show all work. [10]

a) $(-2xy^3)^3 (3x^3y^4)^2$
 $= (-2)^3(x^3)(y^3)^3 \cdot (3)^2(x^3)^2(y^4)^2$
 $= -8x^3y^9 \cdot 9x^6y^8$
 $= -72x^9y^{17}$ ✓

b) $\frac{(a^4a^2)^3}{(a^3a^5)^2} = \frac{(a^6)^3}{(a^8)^2} = \frac{a^{18}}{a^{16}} = a^2$ ✓

c) $\frac{(3a^{-4}b)(8b^5)}{2a^{-2}b^3} = \frac{24a^{-4}b^6}{2a^{-2}b^3} = 12a^{-2}b^3 = \frac{12b^3}{a^2}$ ✓

d) $\frac{(2x^2y)(-3xy^3)^3}{(3xy^5)^2} = \frac{(2x^2y)(-27x^3y^9)}{9x^2y^{10}} = \frac{-54x^5y^{10}}{9x^2y^{10}} = -6x^3$ ✓

8. Simplify

a) $-5x(2x-3x^3) = -10x^2 + 15x^4$

b) $2[x+3(2x-4)] = 2(x+6x-12) = 2(7x-12) = 14x-24$

9. Find the missing side given the perimeter of the rectangle is $10x+6$ cm. Show all your work. [3]

$10x+6 - 2(2x-5)$
 $= 10x+6 - 4x+10$
 $= 6x+16$

One side = $\frac{1}{2}(6x+16)$
 $= 3x+8$

Both missing sides

