MEMO 2015-9ED-00001(1)

NO CALCULATOR MAY BE USED!

(1) Consider the following algebraic expression: $5(x^3y - 2) + 8 - 6y^{12} + 7x$

(a) How many terms are in the expression? **4**

(b) Write the constant term. **+8**

(c) State the degree in: (i) x: **3** (ii) y: **12**

(2) If $x = 0$; $y = -2$; $z = \frac{1}{4}$ and $w = 5$, calculate the value of:

(a) $xy + zw$

$= (0)(-2) + \left(\frac{1}{4}\right)(5)$

$= 0 + \frac{5}{4}$

$= \frac{5}{4}$

$= 1\frac{1}{4}$

(b) $-y + 3w$

$= -(-2) + 3 \times (5)$

$= 2 + 15$

$= 17$

(c) $3(4z - y)$

$= 3\left(4 \times \frac{1}{4} - (-2)\right)$

$= 3(1 + 2)$

$= 3(3)$

$= 9$

(d) $\frac{x}{y} - w^3$

$= \frac{0}{-2} - (5)^3$

$= 0 - 125$

$= -125$

(e) $3(x - y - w)^x$

$= 3\,[0 - (-2) - 5]^0$

$= 3 \times 1$

$= 3$

(f) $(w - 2y)^2$

$= [5 - 2(-2)]^2$

$= (5 + 4)^2$

$= (9)^2$

$= 81$

(3) Simplify:

(a) $5mn^2(mn - 3m^4)$

$= 5m^1n^2(m^1n^1 - 3m^4)$

$= 5m^2n^3 - 15m^5n^2$

(b) $(x - 5)^2$

$= (x - 5)(x - 5)$

$= x^2 - 5x - 5x + 25$

$= x^2 - 10x + 25$

(c) $(pr + 2)(pr - 2)$

$= p^2r^2 - 2pr + 2pr - 4$

$= p^2r^2 - 4$

(d) $(t - 8)(t + 3)$

$= t^2 + 3t - 8t - 24$

$= t^2 - 5t - 24$

(e) $-(3y + 6)^2$

$= -(3y + 6)(3y + 6)$

$= -(9y^2 + 18y + 18y + 36)$

$= -(9y^2 + 36y + 36)$

$= -9y^2 - 36y - 36$

(f) $4(k + 3) + 2(7 - k)$

$= 4k + 12 + 14 - 2k$

$= 2k + 26$

(g) $(x^2 - 5) - 1(4 - x) + x(x - 1)$

$= 1x^2 - 5 - 4 + 1x + 1x^2 - 1x$

$= 2x^2 - 9$

(h) $-3m^3n^4t^1(5m^3n^1t^5 - 1)$

$= -15m^6n^5t^6 + 3m^3n^4t$

(4) Write the following as algebraic expressions:

(a) The sum of the product of p and q, and 17.

$p \times q + 17$

$= pq + 17$

(b) The sum of two consecutive numbers, decreased by 3.

Assume the numbers are x and $x + 1$

$\therefore (x + x + 1) - 3$

$\therefore (x + x + 1) - 3$

$\therefore 2x - 2$

(c) I have R25. You have t rand less than I have. How much money do you have?

$25 - t$

(d) The price of one chocolate is y rand. How much will k chocolates cost you?

$y \times k = ky$