Advanced Functions – 2.5 WS: Binomial Expansions Name: Key (answers only)

I. Using combinations to expand each binomial completely. Must show work!

1.) $(m + 5)^3$ $m^3 + 15m^2 + 75m + 125$	2.) $(4x - y)^4$ $256x^4 - 256x^3y + 96x^2y^2 - 16xy^3 + y^4$
3.) $(2x + 3)^5$ $32x^5 + 240x^4 + 720x^3 + 1080x^2 + 810x + 243$	4.) $(3x^3 - 4)^3$ $27x^9 - 108x^6 + 144x^3 - 64$
5.) $(2a + 5b^2)^6$ $64a^6 + 960a^5b^2 + 6000a^4b^4 + 20000a^3b^6 + 37500a^2b^8 + 37500ab^{10} + 15625b^{12}$	6.) $(1 - 4n)^3$ $1 - 12n + 48n^2 - 64n^3$
7.) $(5m^2 - 2n^4)^4$ $625m^8 - 1000m^5n^4 + 600m^4n^8 - 160m^2n^{11} + 16n^{12}$	8.) $(4a^4 + 3b^3)^5$ $1024a^{20} + 3840a^{16}b^3 + 5760a^{12}b^6 + 4320a^8b^9 + 1620a^4b^{12} + 243b^{15}$

II. Determine the specific term using the expanded binomial. Must show work!

9.) Third term of $(1 + 2y)^5$ $40y^2$	10.) Second term of $(2x + y)^4$ $32x^3y$	11.) Fifth term of $(3x + 4)^6$ $3456x^2$
12.) Middle term of $(x - 3)^8$ $5670x^4$	13.) Fourth term of $(2 - 3a)^7$ $-15120a^3$	14.) Third term of $(4m + 1)^4$ $96m^2$
15.) Sixth term of $(x + 3y)^5$ $243y^5$	16.) Middle term of $(4x + 5)^6$ $160\,000x^3$	17.) Fifth term of $(3m + n)^5$ $15mn^4$
18.) Fourth term of $(x - 2y)^6$ $-160x^3y^3$	19.) Third term of $(2x - 5)^4$ $600x^2$	20.) Second term of $(x^2 + 4y)^5$ $20x^6y$