Grade 11u Mathematics Name_____

Binomial Theorem

Date_____

Expand completely.

1) $(1 + 2a)^5$

2) $(5b + 1)^3$

3) $(2b - 1)^3$

4) $(3u + 1)^5$

5) $(2y^4 - 1)^6$

6) $(1 + 2x^3)^5$

7) $(3x^2 - 1)^5$

8) $(4n^3 + 1)^4$

9) $(2y^2 - 1)^6$

10) $(1 + 3n^3)^4$

Find each coefficient described.

11) Coefficient of x^{20} in expansion of $(1 - 2x^4)^7$

12) Coefficient of y^4x^2 in expansion of $(2y - 3x^2)^5$

13) Coefficient of x^2y^{20} in expansion of $(x - 2y^4)^7$

14) Coefficient of x^4 in expansion of $(4x^2 - 1)^4$

15) Coefficient of y^3x^8 in expansion of $(y - 2x^2)^7$

16) Coefficient of x^4y^3 in expansion of $(3x^4 - y)^4$

17) Coefficient of x^2y^3 in expansion of $(x^2 - 3y)^4$

18) Coefficient of y^2 in expansion of $(2y^2 - 1)^6$

19) Coefficient of y^8x^3 in expansion of $(y^4 - 3x)^5$

20) Coefficient of y^4 in expansion of $(3y^4 - 1)^5$

Find each term described.

21) 4th term in expansion of $(1 - 5x^3)^3$

22) 2nd term in expansion of $(5y^3 - 1)^3$

23) 2nd term in expansion of $(1 - 3y^4)^4$

24) 2nd term in expansion of $(2x^2 - 1)^3$

25) 3rd term in expansion of $(4x^4 - 1)^4$

26) 5th term in expansion of $(1 - 4m^2)^4$

27) 2nd term in expansion of $(1 - 4v^4)^4$

28) 1st term in expansion of $(2x^4 - 1)^4$

29) 3rd term in expansion of $(3m^4 - 1)^4$

30) 2nd term in expansion of $(3u^2 - 1)^3$

Answers to Binomial Theorem

1) $1 + 10a + 40a^2 + 80a^3 + 80a^4 + 32a^5$
2) $125b^3 + 75b^2 + 15b + 1$
3) $8b^3 - 12b^2 + 6b - 1$
4) $243u^5 + 405u^4 + 270u^3 + 90u^2 + 15u + 1$
5) $64y^{24} - 192y^{20} + 240y^{16} - 160y^{12} + 60y^8 - 12y^4 + 1$
6) $1 + 10x^3 + 40x^6 + 80x^9 + 80x^{12} + 32x^{15}$
7) $243x^{10} - 405x^8 + 270x^6 - 90x^4 + 15x^2 - 1$
8) $256n^{12} + 256n^9 + 96n^6 + 16n^3 + 1$
9) $64y^{12} - 192y^{10} + 240y^8 - 160y^6 + 60y^4 - 12y^2 + 1$
10) $1 + 12n^3 + 54n^6 + 108n^9 + 81n^{12}$
11) -672
12) -240
13) -672
14) 96
15) 560
16) -12
17) -108
18) -12
19) -270
20) 15
21) $-125x^9$
22) $-75y^6$
23) $-12y^4$
24) $-12x^4$
25) $96x^8$
26) $256m^8$
27) $-16v^4$
28) $16x^{16}$
29) $54m^8$
30) $-27u^4$

Grade 11u Mathematics Name_____

Binomial Theorem

Date_____

Expand completely.

1) $(2y + 1)^5$

2) $(5x + 1)^3$

3) $(1 + 4x)^3$

4) $(3y - 1)^5$

5) $(1 - 2a^2)^6$

6) $(2v^2 - 1)^5$

7) $(2y^3 + 1)^5$

8) $(3x^2 + 1)^4$

9) $(2v^4 - 1)^5$

10) $(2m^2 + 1)^6$

Find each coefficient described.

11) Coefficient of v^4u^9 in expansion of $(v^4 - 3u^3)^4$

12) Coefficient of x^6 in expansion of $(1 - 2x^2)^7$

13) Coefficient of n^9m in expansion of $(n^3 - 3m)^4$

14) Coefficient of y^8x^2 in expansion of $(2y^2 - x)^6$

15) Coefficient of x^4y^2 in expansion of $(x^2 - 3y)^4$

16) Coefficient of m^6 in expansion of $(3m^2 - 1)^5$

17) Coefficient of x^2y^{20} in expansion of $(2x^2 - y^4)^6$

18) Coefficient of x^8 in expansion of $(3x^4 - 1)^5$

19) Coefficient of yx^{12} in expansion of $(y - 2x^2)^7$

20) Coefficient of y^4 in expansion of $(2y^4 - 1)^7$

Find each term described.

21) 4th term in expansion of $(3b^2 - 1)^3$

22) 3rd term in expansion of $(4y^3 - 1)^3$

23) 5th term in expansion of $(3n^4 - 1)^4$

24) 2nd term in expansion of $(4y^2 - 1)^3$

25) 4th term in expansion of $(1 - 2x^4)^4$

26) 4th term in expansion of $(2a^2 - 1)^3$

27) 4th term in expansion of $(1 - 4x^4)^4$

28) 4th term in expansion of $(3x^3 - 1)^3$

29) 2nd term in expansion of $(5b^3 - 1)^3$

30) 1st term in expansion of $(2n^4 - 1)^4$

Answers to Binomial Theorem

1) $32y^5 + 80y^4 + 80y^3 + 40y^2 + 10y + 1$
2) $125x^3 + 75x^2 + 15x + 1$
3) $1 + 12x + 48x^2 + 64x^3$
4) $243y^5 - 405y^4 + 270y^3 - 90y^2 + 15y - 1$
5) $1 - 12a^2 + 60a^4 - 160a^6 + 240a^8 - 192a^{10} + 64a^{12}$
6) $32v^{10} - 80v^8 + 80v^6 - 40v^4 + 10v^2 - 1$
7) $32y^{15} + 80y^{12} + 80y^9 + 40y^6 + 10y^3 + 1$
8) $81x^8 + 108x^6 + 54x^4 + 12x^2 + 1$
9) $32v^{20} - 80v^{16} + 80v^{12} - 40v^8 + 10v^4 - 1$
10) $64m^{12} + 192m^{10} + 240m^8 + 160m^6 + 60m^4 + 12m^2 + 1$

11) -108	12) -280	13) -12	14) 240
15) 54	16) 270	17) -12	18) -90
19) 448	20) 14	21) -1	22) $12y^3$
23) 1	24) $-48y^4$	25) $-32x^{12}$	26) -1
27) $-256x^{12}$	28) -1	29) $-75b^6$	30) $16n^{16}$

Grade 11u Mathematics Name_____

Binomial Theorem

Date_____

Expand completely.

1) $(2b + 1)^5$

2) $(1 + 2a)^3$

3) $(4a - 1)^3$

4) $(3v - 1)^5$

5) $(1 + 3y^2)^5$

6) $(3m^2 + 1)^4$

7) $(3y^3 - 1)^5$

8) $(2y^4 - 1)^5$

9) $(2x^2 - 1)^6$

10) $(2n^3 + 1)^5$

Find each coefficient described.

11) Coefficient of y^3 in expansion of $(2y^3 - 1)^5$

12) Coefficient of y^6x^3 in expansion of $(y^2 - 2x)^6$

13) Coefficient of x^4y^6 in expansion of $(x - 2y^2)^7$

14) Coefficient of x^4 in expansion of $(1 - 3x^2)^4$

15) Coefficient of b^4a^8 in expansion of $(2b - a^4)^6$

16) Coefficient of $u^{12}v$ in expansion of $(u^4 - 3v)^4$

17) Coefficient of a^2b^{16} in expansion of $(a - 2b^4)^6$

18) Coefficient of y^8 in expansion of $(2y^2 - 1)^7$

19) Coefficient of b^8 in expansion of $(3b^2 - 1)^5$

20) Coefficient of y^4x^2 in expansion of $(y - 3x^2)^5$

Find each term described.

21) 3rd term in expansion of $(5y^4 - 1)^3$

22) 1st term in expansion of $(4n^2 - 1)^4$

23) 4th term in expansion of $(4x^4 - 1)^3$

24) 3rd term in expansion of $(1 - 4x^4)^4$

25) 4th term in expansion of $(2x^3 - 1)^3$

26) 2nd term in expansion of $(3u^2 - 1)^4$

27) 1st term in expansion of $(2x^2 - 1)^4$

28) 1st term in expansion of $(3m^3 - 1)^3$

29) 4th term in expansion of $(4u^3 - 1)^3$

30) 2nd term in expansion of $(1 - 2y^4)^4$

Answers to Binomial Theorem

1) $32b^5 + 80b^4 + 80b^3 + 40b^2 + 10b + 1$

2) $1 + 6a + 12a^2 + 8a^3$

3) $64a^3 - 48a^2 + 12a - 1$

4) $243v^5 - 405v^4 + 270v^3 - 90v^2 + 15v - 1$

5) $1 + 15y^2 + 90y^4 + 270y^6 + 405y^8 + 243y^{10}$

6) $81m^8 + 108m^6 + 54m^4 + 12m^2 + 1$

7) $243y^{15} - 405y^{12} + 270y^9 - 90y^6 + 15y^3 - 1$

8) $32y^{20} - 80y^{16} + 80y^{12} - 40y^8 + 10y^4 - 1$

9) $64x^{12} - 192x^{10} + 240x^8 - 160x^6 + 60x^4 - 12x^2 + 1$

10) $32n^{15} + 80n^{12} + 80n^9 + 40n^6 + 10n^3 + 1$

11) 10

12) −160

13) −280

14) 54

15) 240

16) −12

17) 240

18) −560

19) −405

20) −15

21) $15y^4$

22) $256n^8$

23) −1

24) $96x^8$

25) −1

26) $-108u^6$

27) $16x^8$

28) $27m^9$

29) −1

30) $-8y^4$