

Binomial Expansion WS#1

Find the term being asked for. Show your work.

1) 6th term in expansion of $(x + 3)^5$

$$1 \cdot (x)^0 \cdot (3)^5 = 1 \cdot 1 \cdot 243$$

$$\boxed{243}$$

3) 5th term in expansion of $(y + 2)^5$

$$5 \cdot (y)^1 \cdot (2)^4 = 5 \cdot y \cdot 16$$

$$\boxed{80y}$$

5) 6th term in expansion of $(x + 2)^6$

$$6 \cdot (x)^1 \cdot (2)^5 = 6 \cdot x \cdot 32$$

$$\boxed{192x}$$

7) 5th term in expansion of $(2 + y)^6$

$$15 \cdot (2)^2 \cdot (y)^1 = 15 \cdot 4 \cdot y$$

$$\boxed{60y}$$

9) 5th term in expansion of $(y - 2)^6$

$$15 \cdot (y)^2 \cdot (-2)^4 = 15y^2 \cdot 16$$

$$\boxed{240y^2}$$

11) 6th term in expansion of $(2y + 1)^5$

$$1 \cdot (2y)^0 \cdot (1)^5 = 1 \cdot 1 \cdot 1$$

$$\boxed{1}$$

Expand completely.

13) $(3y - 1)^4$ $1(3y)^4(-1)^0 + 4(3y)^3(-1)^1 + 6(3y)^2(-1)^2 + 4(3y)^1(-1)^3 + 1(3y)^0(-1)^4$

$$\boxed{81y^4 - 108y^3 + 54y^2 - 12y + 1}$$

15) $(2 - b)^5$ $1(2)^5(-b)^0 + 5(2)^4(-b)^1 + 10(2)^3(-b)^2 + 10(2)^2(-b)^3 + 5(2)^1(-b)^4 + 1(2)^0(-b)^5$

$$\boxed{32 - 80b + 80b^2 - 40b^3 + 10b^4 - b^5}$$

17) $(2y + 1)^6$ $1(2y)^6(1)^0 + 6(2y)^5(1)^1 + 15(2y)^4(1)^2 + 20(2y)^3(1)^3 + 15(2y)^2(1)^4 + 6(2y)(1)^5 + 1(2y)^0(1)^6$

$$\boxed{64y^6 + 192y^5 + 240y^4 + 160y^3 + 60y^2 + 12y + 1}$$

19) $(3 - m)^5$ $1(3)^5(-m)^0 + 5(3)^4(-m)^1 + 10(3)^3(-m)^2 + 10(3)^2(-m)^3 + 5(3)^1(-m)^4 + 1(3)^0(-m)^5$

$$\boxed{243 - 405m + 270m^2 - 90m^3 + 15m^4 - m^5}$$

21) $(v - 4)^4$ $1(v)^4(-4)^0 + 4(v)^3(-4)^1 + 6(v)^2(-4)^2 + 4(v)^1(-4)^3 + 1(v)^0(-4)^4$

$$\boxed{v^4 - 16v^3 + 96v^2 - 256v + 256}$$

23) $(4 - y)^4$ $1(4)^4(-y)^0 + 4(4)^3(-y)^1 + 6(4)^2(-y)^2 + 4(4)^1(-y)^3 + 1(4)^0(-y)^4$

$$\boxed{256 - 256y + 96y^2 - 16y^3 + y^4}$$

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

$$1 \cdot (x)^4 \cdot (-4)^0 = 1 \cdot x^4 \cdot 1$$

$$\boxed{x^4}$$

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

$$5 \cdot (3y)^1 \cdot (-1)^4 = 5 \cdot 3y \cdot 1$$

$$\boxed{15y}$$

6) 2nd term in expansion of $(2y - 1)^6$

$$6 \cdot (2y)^5 \cdot (-1)^1 = 6 \cdot 32y^5 \cdot -1$$

$$\boxed{-192y^5}$$

8) 3rd term in expansion of $(1 + 3n)^4$

$$6 \cdot (1)^2 \cdot (3n)^2 = 6 \cdot 1 \cdot 9n^2$$

$$\boxed{54n^2}$$

10) 2nd term in expansion of $(2m - 1)^4$

$$4 \cdot (2m)^3 \cdot (-1)^1 = 4 \cdot 8m^3 \cdot -1$$

$$\boxed{-32m^3}$$

12) 2nd term in expansion of $(y + 3)^4$

$$4 \cdot (y)^3 \cdot (3)^1 = 4y^3 \cdot 3$$

$$\boxed{12y^3}$$

14) $(4x + 1)^4$ $1(4x)^4(1)^0 + 4(4x)^3(1)^1 + 6(4x)^2(1)^2 + 4(4x)(1)^3 + 1(4x)^0(1)^4$

$$\boxed{256x^4 + 256x^3 + 96x^2 + 16x + 1}$$

16) $(2b + 1)^5$ $1(2b)^5(1)^0 + 5(2b)^4(1)^1 + 10(2b)^3(1)^2 + 10(2b)^2(1)^3 + 5(2b)(1)^4 + 1(2b)^0(1)^5$

$$\boxed{32b^5 + 80b^4 + 80b^3 + 40b^2 + 10b + 1}$$

18) $(x - 3)^5$ $1(x)^5(-3)^0 + 5(x)^4(-3)^1 + 10(x)^3(-3)^2 + 10(x)^2(-3)^3 + 5(x)^1(-3)^4 + 1(x)^0(-3)^5$

$$\boxed{x^5 - 15x^4 + 90x^3 - 270x^2 + 405x - 243}$$

20) $(x + 4)^4$ $1(x)^4(4)^0 + 4(x)^3(4)^1 + 6(x)^2(4)^2 + 4(x)(4)^3 + 1(x)^0(4)^4$

$$\boxed{x^4 + 16x^3 + 96x^2 + 256x + 256}$$

22) $(2a - 1)^6$ $1(2a)^6(-1)^0 + 6(2a)^5(-1)^1 + 15(2a)^4(-1)^2 + 20(2a)^3(-1)^3 + 15(2a)^2(-1)^4 + 6(2a)(-1)^5 + 1(2a)^0(-1)^6$

$$\boxed{64a^6 - 192a^5 + 240a^4 - 160a^3 + 60a^2 - 12a + 1}$$

24) $(u - 5)^3$ $1(u)^3(-5)^0 + 3(u)^2(-5)^1 + 3(u)(-5)^2 + 1(u)^0(-5)^3$

$$\boxed{u^3 - 15u^2 + 75u - 125}$$