Expand the following binomials.

a. $(a+b)^4$

$$1a^4 + 4a^3b^1 + 6a^2b^2 + 4a^1b^3 + 1b^4$$

b. $(x+y)^6$

$$1x^6 + 6x^5y^1 + 15x^4y^2 + 20x^3y^3 + 15x^2y^4 + 6xy^5 + 1y^6$$

c. $(x+2)^3$

$$1 \cdot x^3 \cdot 2^0 + 3 \cdot x^2 \cdot 2^1 + 3 \cdot x^1 \cdot 2^2 + 1 \cdot x^0 \cdot 2^3$$

$$\boxed{1x^3 + 6x^2 + 12x + 8}$$

d. $(2x+b)^5$

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

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

e. $(x-y)^3$ $1(x)^3(-y)^0 + 3(x)^2(-y)^1 + 3(x)^1(-y)^2 + 1(x)^0(-y)^3$

$$= 1x^3 - 3x^2y + 3xy^2 - 1y^3$$

f. $(h-2t)^7$

$$1(h)^7(-2t)^0 + 7(h)^6(-2t)^1 + 21(h)^5(-2t)^2 + 35(h)^4(-2t)^3 + 35(h)^3(-2t)^4 + 21(h)^2(-2t)^5 + 7(h)^1(-2t)^6 + 1(h)^0(-2t)^7$$

$$1h^7 - 14h^6t^1 + 84h^5t^2 - 280h^4t^3 + 560h^3t^4 - 672h^2t^5 + 448ht^6 - 128t^7$$

g. $(3x+2y)^4$

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

$$= 81x^4 + 216x^3y^1 + 216x^2y^2 + 96x^1y^3 + 16y^4$$