$\boxed{1}$ 解答 (1) $x^2+y^2+z^2-2xy-2yz+2zx$

(2) $a^2+b^2+2ab+6a+6b+9$

(3) $a^2+b^2+4c^2+2ab+4bc+4ca$

(4) $9a^2+4b^2+16c^2+12ab-16bc-24ca$

(5) $4p^2+9q^2+r^2-12pq-6qr+4rp$

(6) $25x^2+y^2+9z^2-10xy-6yz+30zx$

(1) $(x-y+z)^2=\{(x-y)+z\}^2$

$\qquad =(x-y)^2+2(x-y)z+z^2$

$\qquad =x^2-2xy+y^2+2zx-2yz+z^2$

$\qquad =x^2+y^2+z^2-2xy-2yz+2zx$

(2) $(a+b+3)^2=\{(a+b)+3\}^2$

$\qquad =(a+b)^2+2(a+b)\times 3+3^2$

$\qquad =a^2+2ab+b^2+6a+6b+9$

$\qquad =a^2+b^2+2ab+6a+6b+9$

(3) $(a+b+2c)^2=\{(a+b)+2c\}^2$

$\qquad =(a+b)^2+2(a+b)\times 2c+(2c)^2$

$\qquad =a^2+2ab+b^2+4ca+4bc+4c^2$

$\qquad =a^2+b^2+4c^2+2ab+4bc+4ca$

(4) $(3a+2b-4c)^2=\{(3a+2b)-4c\}^2$

$\qquad =(3a+2b)^2-2(3a+2b)\times 4c+(4c)^2$

$\qquad =9a^2+12ab+4b^2-24ca-16bc+16c^2$

$\qquad =9a^2+4b^2+16c^2+12ab-16bc-24ca$

(5) $(2p-3q+r)^2=\{(2p-3q)+r\}^2$

$\qquad =(2p-3q)^2+2(2p-3q)\times r+r^2$

$\qquad =4p^2-12pq+9q^2+4rp-6qr+r^2$

$\qquad =4p^2+9q^2+r^2-12pq-6qr+4rp$

(6) $(-5x+y-3z)^2=\{(-5x+y)-3z\}^2$

$\qquad =(-5x+y)^2-2(-5x+y)\times 3z+(3z)^2$

$\qquad =25x^2-10xy+y^2+30zx-6yz+9z^2$

$=25x^2+y^2+9z^2-10xy-6yz+30zx$

$\boxed{2}$ 解答 (1) $x^2+2xy+y^2+5x+5y+6$

(2) $a^2+2ab+b^2+7a+7b-60$

(3) $x^2-4xy+4y^2-6x+12y-27$

(4) $4a^2-12ab+9b^2-6a+9b-4$

(5) $4x^2+y^2-4z^2+4xy+3yz+6zx$

(6) $16p^2+25q^2-6r^2-40pq+5qr-4rp$

(7) $7x^2+9y^2+16z^2+24xy-24yz-32zx$

(8) $28a^2+9b^2+4c^2-33ab+12bc-22ca$

(1) $(x+y+3)(x+y+2)=\{(x+y)+3\}\{(x+y)+2\}$
$$=(x+y)^2+5(x+y)+6$$
$$=x^2+2xy+y^2+5x+5y+6$$

(2) $(a+b-5)(a+b+12)=\{(a+b)-5\}\{(a+b)+12\}$
$$=(a+b)^2+7(a+b)-60$$
$$=a^2+2ab+b^2+7a+7b-60$$

(3) $(x-2y+3)(x-2y-9)=\{(x-2y)+3\}\{(x-2y)-9\}$
$$=(x-2y)^2-6(x-2y)-27$$
$$=x^2-4xy+4y^2-6x+12y-27$$

(4) $(2a-3b+1)(2a-3b-4)=\{(2a-3b)+1\}\{(2a-3b)-4\}$
$$=(2a-3b)^2-3(2a-3b)-4$$
$$=4a^2-12ab+9b^2-6a+9b-4$$

(5) $(2x+y-z)(2x+y+4z)=\{(2x+y)-z\}\{(2x+y)+4z\}$
$$=(2x+y)^2+3z(2x+y)-4z^2$$
$$=4x^2+4xy+y^2+6zx+3yz-4z^2$$
$$=4x^2+y^2-4z^2+4xy+3yz+6zx$$

(6) $(4p-5q+2r)(4p-5q-3r)=\{(4p-5q)+2r\}\{(4p-5q)-3r\}$
$$=(4p-5q)^2-r(4p-5q)-6r^2$$
$$=16p^2-40pq+25q^2-4rp+5qr-6r^2$$
$$=16p^2+25q^2-6r^2-40pq+5qr-4rp$$

(7) $(7x+3y-4z)(x+3y-4z)=\{7x+(3y-4z)\}\{x+(3y-4z)\}$
$$=7x^2+8x(3y-4z)+(3y-4z)^2$$
$$=7x^2+24xy-32zx+9y^2-24yz+16z^2$$

$$=7x^2+9y^2+16z^2+24xy-24yz-32zx$$

(8) $(4a-3b-2c)(7a-3b-2c)=\{4a-(3b+2c)\}\{7a-(3b+2c)\}$
$$=28a^2-11a(3b+2c)+(3b+2c)^2$$
$$=28a^2-33ab-22ca+9b^2+12bc+4c^2$$
$$=28a^2+9b^2+4c^2-33ab+12bc-22ca$$

$\boxed{3}$ 解答 (1) $a^2-b^2+2bc-c^2$ (2) $x^2-9y^2+30yz-25z^2$

(3) $3x^2+24xy+48y^2-7x-28y+2$ (4) $a^4+15a^3+26a^2-48a+16$

(1) $(a+b-c)(a-b+c)=\{a+(b-c)\}\{a-(b-c)\}$
$$=a^2-(b-c)^2$$
$$=a^2-(b^2-2bc+c^2)$$
$$=a^2-b^2+2bc-c^2$$

(2) $(x-3y+5z)(x+3y-5z)=\{x-(3y-5z)\}\{x+(3y-5z)\}$
$$=x^2-(3y-5z)^2$$
$$=x^2-(9y^2-30yz+25z^2)$$
$$=x^2-9y^2+30yz-25z^2$$

(3) $(x+4y-2)(3x+12y-1)=\{(x+4y)-2\}\{3(x+4y)-1\}$
$$=3(x+4y)^2-7(x+4y)+2$$
$$=3(x^2+8xy+16y^2)-7x-28y+2$$
$$=3x^2+24xy+48y^2-7x-28y+2$$

(4) $(a^2+3a-2)(a^2+12a-8)=\{a^2+(3a-2)\}\{a^2+4(3a-2)\}$
$$=(a^2)^2+5(3a-2)\times a^2+4(3a-2)^2$$
$$=a^4+15a^3-10a^2+4(9a^2-12a+4)$$
$$=a^4+15a^3-10a^2+36a^2-48a+16$$
$$=a^4+15a^3+26a^2-48a+16$$