⑨ a. $x+x = \boxed{2x}$
b. $x \times x = \boxed{x^2}$
c. $2x+x = \boxed{3x}$
d. $3x+2 = \boxed{3x+2}$
e. $2x \times x = \boxed{2x^2}$
f. $x^2+x = \boxed{x^2+x}$
g. $0 \times x = \boxed{0}$
h. $1+2x = \boxed{1+2x}$
i. $0+x = \boxed{x}$
j. $5x \times 6x = \boxed{30x^2}$
k. $4x \times x \times 5 = \boxed{20x^2}$
l. $x \times x + x = \boxed{x^2+x}$

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10. a. $5x+3x = (5+3)x = \boxed{8x}$
b. $3x-8x = (3-8)x = \boxed{-5x}$
c. $-4x+15x = (-4+15)x = \boxed{11x}$
d. $-9x-6x = (-9-6)x = \boxed{-15x}$

11a. $12x-y+2 = \boxed{12x-y+2}$
b. $7y+12-13y = 7y-13y+12 = \boxed{-6y+12}$
c. $10-8d+3 = -8d+10+3 = \boxed{-8d+13}$
d. $8-x+x^2+5x = x^2-x+5x+8 = \boxed{x^2+4x+8}$
e. $3t-12t+t^2-7 = t^2+3t-12t-7 = \boxed{t^2-9t-7}$
f. $a^2+b-a+3b = a^2-a+b+3b = \boxed{a^2-a+4b}$

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1. $A = 5+(2x+3)$
$= 5+2x+3$
$= 5+3+2x$
$= 8+2x$
$= \boxed{2x+8}$

$B = 5x-(3-4x)$
$= 5x-3-(-4x)$
$= 5x-3+4x$
$= 5x+4x-3$
$= \boxed{9x-3}$

$C = (x-4)-6$
$= x-4-6$
$= \boxed{x-10}$

$D = (4x+2)+(-6x-2)$
$= 4x+2+(-6x)+(-2)$
$= 4x-6x+2-2$
$= \boxed{-2x}$

$E = -(-3x-1)+(x-3)$
$= -(-3x)-(-1)+x-3$
$= 3x+1+x-3$
$= \boxed{4x-2}$

$F = 8x-(5x+2)+(3-4x)$
$= 8x-5x-(+2)+3+(-4x)$
$= 8x-5x-2+3-4x$
$= 8x-5x-4x-2+3$
$= \boxed{-x+1}$

②

2. $A = (x+3) + (4x-5)$

$= x+3+4x-5$

$= 5x-2$

$B = 6-2t-(4t-8)$

$= 6-2t-4t-(-8)$

$= -2t-4t+6+8$

$= -6t+14$

$C = -(8a+3)-4a$

$= -8a-3-4a$

$= -12a-3$

$D = (3y+7)+(-5y+3)$

$= 3y+7+(-5y)+(+3)$

$= 3y-5y+7+3$

$= -2y+10$

$E = 5z-6-(7-2z)+3z$

$= 5z-6-7-(-2z)+3z$

$= 5z+2z+3z-6-7$

$= 10z-13$

$F = (3-4x)-(-2x+8)$

$= 3-4x-(-2x)-(+8)$

$= 3-4x+2x-8$

$= -4x+2x+3-8$

$= -2x-5$

14 A $= (-3+y) \times 9$

$= -3 \times 9 + y \times 9$

$= -27+9y$

$B = -6(2x-7)$

$= -6 \times 2x - 6 \times (-7)$

$= -12x+42$

$C = (3t+2) \times 8$

$= 3t \times 8 + 2 \times 8$

$= 24t+16$

$D = -8(9-7x)$

$= -8 \times 9 - 8 \times -7x$

$= -72+56x$

$= 56x-72$

$E = -8z(4-3z)$

$= -8z \times 4 - 8z \times (-3z)$

$= -32z + 24z^2$

$= 24z^2 - 32z$

$F = 3y(-4+6y)$

$= 3y \times (-4) + 3y \times 6y$

$= -12y + 18y^2$

$= 18y^2 - 12y$

③

15. $A = x(x+4)$
$= x \times x + x \times 4$
$= x^2 + 4x$

$B = 7y(2-9y)$
$= 7y \times 2 + 7y \times -9y$
$= 14y - 63y^2$
$= -63y^2 + 14y$

$C = -2y(5-y)$
$= -2y \times 5 - 2y \times (-y)$
$= -10y + 2y^2$

$D = (9-3t) \times 4t$
$= 9 \times 4t - 3t \times 4t$
$= 36t - 12t^2$
$= -12t^2 + 36t$

16. $A = 11 + 2(x-6)$
$= 11 + 2x - 12$
$= 2x - 12 + 11$
$= 2x - 1$

$B = -3(2y - 4) - 2y$
$= -3 \times 2y - 3 \times (-4) - 2y$
$= -6y + 12 - 2y$
$= -8y + 12$

$C = 7 - 4(8 - 2a) + a$
$= 7 - 4 \times 8 - 4 \times -2a + a$
$= 7 - 32 + 8a + a$
$= 9a - 25$

$D = -15 - 9(-5 + 3b)$
$= -15 - 9 \times -5 - 9 \times 3b$
$= -15 + 45 - 27b$
$= -27b + 30$

$E = -5(6 - 3z) - 9 + z$
$= -5 \times 6 - 5 \times -3z - 9 + z$
$= -30 + 15z - 9 + z$
$= 16z - 39$

$F = 12x - 4(6 - 3x)$
$= 12x - 4 \times 6 - 4 \times (-3x)$
$= 12x - 24 + 12x$
$= 24x - 24$

17. $A = 3x - 5 + 5(2x - 2)$
$= 3x - 5 + 5 \times 2x + 5 \times (-2)$
$= 3x - 5 + 10x - 10$
$= 13x - 15$

$B = 4y - 6(3 - 2y) + 4(y - 1)$
$= 4y - 6 \times 3 - 6 \times -2y + 4 \times y + 4 \times (-1)$
$= 4y - 18 + 12y + 4y - 4$
$= 20y - 22$

$C = 5t^2 + 3(2t - 3) - 2t(t - 5)$
$= 5t^2 + 3 \times 2t + 3 \times (-3) - 2t \times t - 2t \times (-5)$
$= 5t^2 + 6t - 9 - 2t^2 + 10t$
$= 3t^2 + 16t - 9$

(4)

19 $A = 3\left(\frac{1}{4}+x\right)-\frac{1}{4} = 3\times\frac{1}{4}+3\times x-\frac{1}{4}$

$= \frac{3}{4}+3x-\frac{1}{4}$

$= 3x+\frac{2}{4}$

$= \boxed{3x+2}$

$B = \frac{2}{3}x+5\left(x-\frac{1}{6}\right) = \frac{2}{3}x+5\times x+5\times\left(-\frac{1}{6}\right)$

$= \frac{2}{3}x+5x-\frac{5}{6}$

$= \frac{2}{3}x+\frac{15}{3}x-\frac{5}{6}$

$= \boxed{\frac{17}{3}x-\frac{5}{6}}$

$C = \frac{3}{4}(x-5)+\frac{1}{2} = \frac{3}{4}\times x+\frac{3}{4}\times(-5)+\frac{1}{2}$

$= \frac{3}{4}x-\frac{15}{4}+\frac{2}{4}$

$= \boxed{\frac{3}{4}x-\frac{13}{4}}$

$D = 2+3\left(\frac{1}{5}x-\frac{1}{3}\right) = 2+3\times\frac{1}{5}x+3\times-\frac{1}{3}$

$= 2+\frac{3}{5}x-1$

$= \boxed{\frac{3}{5}x+1}$

⑤

20. $A = (x+4)(x+3)$

$= x \times x + x \times 3 + 4 \times x + 4 \times 3$

$= x^2 + 3x + 4x + 12$

$= \boxed{x^2 + 7x + 12}$

$C = (3z+4)(5-6z)$

$= 3z \times 5 + 3z \times -6z + 4 \times 5 + 4 \times \frac{1}{2}$

$= 15z - 18z^2 + 20 - 24z$

$= \boxed{-18z^2 - 9z + 20}$

$B = (y+3)(2y+8)$

$= y \times 2y + y \times 8 + 3 \times 2y + 3 \times 8$

$= 2y^2 + 8y + 6y + 24$

$= \boxed{2y^2 + 14y + 24}$

$D = (-7t+8)(3-5t)$

$= -7t \times 3 - 7t \times (-5t) + 8 \times 3 + 8 \times (-5t)$

$= -21t + 35t^2 + 24 - 40t$

$= \boxed{35t^2 - 61t + 24}$

21 $A = (7-3x)(9x-3) =$

$= 7 \times 9x + 7x - 3 - 3x \times 9x - 3x - 3$

$= 63x - 21 - 27x^2 + 9x$

$= \boxed{-27x^2 + 72x - 21}$

$C = (4a+6)(-3-5a)$

$= 4a \times -3 + 4a \times -5a + 6 \times -3 + 6 \times -5a$

$= -12a - 20a^2 - 18 - 30a$

$= \boxed{-20a^2 - 42a - 18}$

$B = (-2-3y)(4-8y)$

$= -2 \times 4 - 2 \times -8y - 3y \times 4 - 3y \times -8y$

$= -8 + 16y - 12y + 24y^2$

$= \boxed{24y^2 + 4y - 8}$

$D = (5z-7)(8z+2)$

$= 5z \times 8z + 5z \times 2 - 7 \times 8z - 7 \times 2$

$= 40z^2 + 10z - 56z - 14$

$= \boxed{40z^2 - 46z - 14}$

22. $A = (a+1)^2$

$= (a+1)(a+1)$

$= a \times a + a \times 1 + 1 \times a + 1 \times 1$

$= a^2 + a + a + 1$

$= a^2 + 2a + 1$

$B = (3y-4)^2$

$= (3y-4)(3y-4)$

$= 3y \times 3y + 3y \times -4 - 4 \times 3y - 4 \times (-4)$

$= 9y^2 - 12y - 12y + 16$

$= \boxed{9y^2 - 24y + 16}$

$C = (5x+2)^2$

$= (5x+2)(5x+2)$

$= 5x \times 5x + 5x \times 2 + 2 \times 5x + 2 \times 2$

$= 25x^2 + 10x + 10x + 4$

$= \boxed{25x^2 + 20x + 4}$

$D = (4-x)^2$

$= (4-x)(4-x)$

$= 4 \times 4 + 4 \times (-x) - x \times 4 - x \times (-x)$

$= 16 - 4x - 4x + x^2$

$= 16 - 8x + x^2$

$= \boxed{x^2 - 8x + 16}$

⑥

23. $A = 3(x+1)(x-5)$

$= (3x+3)(x-5)$

$= 3x \times x + 3x \times -5 + 3x \times x + 3 \times -5$

$= 3x^2 - 15x + 3x - 15$

$= \boxed{3x^2 - 12x - 15}$

$B = 2(-3-t)(t-7)$

$= (-6-2t)(t-7)$

$= -6t - 6 \times (-7) - 2t \times t - 2t \times (-7)$

$= -6t + 42 - 2t^2 + 14t$

$= \boxed{-2t^2 + 8t + 42}$

$C = -(y+5)(3y-6)$

$= (-y-5)(3y-6)$

$= -3y^2 - y \times (-6) - 5 \times 3y - 5 \times (-6)$

$= -3y^2 + 6y - 15y + 30$

$= \boxed{-3y^2 - 9y + 30}$

$D = x(2x-5)(2-x)$

$= (2x^2 - 5x)(2-x)$

$= 2x^2 \times 2 + 2x^2 \times (-x) - 5x \times 2 - 5x \times (-x)$

$= 4x^2 - 2x^3 - 10x + 5x^2$

$= \boxed{-2x^3 + 9x^2 - 10x}$

25. a. $P = 2x+4 + 4x+7 + 2x+4 + 4x+7$

$= \boxed{12x + 22}$

b. $A = (4x+7)(2x+4)$

c. $A = (4x+7)(2x+4)$

$= 4x \times 2x + 4x \times 4 + 7 \times 2x + 7 \times 4$

$= 8x^2 + 16x + 14x + 28$

$= \boxed{8x^2 + 30x + 28}$