

$$\begin{aligned} \text{Q12)} \quad & (2x+4)(x+3) \\ & \downarrow \quad \downarrow \\ & 2x(x+3) + 4(x+3) \\ & \quad \quad \quad \nearrow \quad \nearrow \quad \text{multiply} \\ & 2x^2 + 6x + 4x + 12 \\ & \quad \quad \quad \underbrace{\hspace{2cm}} \\ & = 2x^2 + 10x + 12 \end{aligned}$$

$$\begin{aligned} \text{Q13)} \quad & (3x+2)(2x+4) \\ & \downarrow \quad \downarrow \\ & 3x(2x+4) + 2(2x+4) \\ & \quad \quad \quad \nearrow \quad \nearrow \quad \nearrow \quad \nearrow \\ & 6x^2 + 12x + 4x + 8 \\ & \quad \quad \quad \underbrace{\hspace{2cm}} \\ & = 6x^2 + 16x + 8 \end{aligned}$$

$$\begin{aligned} \text{Q14)} \quad & (3x+1)(2x-4) \\ & \downarrow \quad \searrow \\ & 3x(2x-4) + 1(2x-4) \\ & 6x^2 - 12x + 2x - 4 \\ & \quad \quad \quad \underbrace{\hspace{2cm}} \\ & = 6x^2 - 10x - 4 \end{aligned}$$

$$\begin{aligned} \text{Q15)} \quad & (5x-2)(2x+3) \\ & \downarrow \\ & 5x(2x+3) - 2(2x+3) \\ & 10x^2 + 15x - 4x - 6 \\ & \quad \quad \quad \underbrace{\hspace{1.5cm}} \\ & = 10x^2 + 11x - 6 \end{aligned}$$

Using the grid (array) method to multiply.

Q16 $(2x-3)(x-5)$

	$2x$	-3	
x	$2x^2$	$-3x$	Like Terms.
-5	$-10x$	$+15$	

Ans = $2x^2 - 13x + 15$

Q17 $(5x+1)(3x-3)$

	$5x$	$+1$	
$3x$	$15x^2$	$+3x$	
-3	$-15x$	-3	

Ans = $15x^2 - 12x - 3$

$$Q18) (3x+1)(x^2+2x+1)$$

Brackets

$$3x(x^2+2x+1) + 1(x^2+2x+1)$$
$$\underline{3x^3} + \underline{6x^2} + \underline{3x} + \underline{1x^2} + \underline{2x} + \underline{1}$$

$$= 3x^3 + 7x^2 + 5x + 1$$

H/W pg 4 Q 19 → 23.

Grid

	x^2	$+2x$	$+1$
$3x$	$3x^3$	$+6x^2$	$+3x$
$+1$	$+x^2$	$+2x$	$+1$

$$\text{Ans} = 3x^3 + 7x^2 + 5x + 1$$