

$$\begin{aligned}
 4\text{(iv)} \quad & (4m+5n)^2 + (5m+4n)^2 \\
 &= (4m)^2 + 2 \times 4m \times 5n + (5n)^2 + (5m)^2 + 2 \times 5m \times 4n + (4n)^2 \\
 &= 16m^2 + 40mn + 25n^2 + 25m^2 + 40mn + 16n^2 \\
 &= 41m^2 + 80mn + 41n^2
 \end{aligned}$$

$$\begin{aligned}
 4\text{(v)} \quad & (2.5p - 1.5q)^2 - (1.5p - 2.5q)^2 \\
 &= [2.5p - 1.5q - (1.5p - 2.5q)] \\
 &\quad [2.5p - 1.5q + (1.5p - 2.5q)] \\
 &= (2.5p - 1.5q - 1.5p + 2.5q) \\
 &\quad (2.5p - 1.5q + 1.5p - 2.5q) \\
 &= (p+q)(4p-4q) \\
 &= 4(p+q)(p-q) \\
 &= 4(p^2 - q^2) \\
 &= 4p^2 - 4q^2
 \end{aligned}$$

$$\begin{aligned}
 4\text{(vi)} \quad & (ab+bc)^2 - 2ab^2c \\
 &= a^2b^2 + b^2c^2 + 2ab \times bc - 2ab^2c \\
 &= a^2b^2 + b^2c^2 + 2ab^2c - 2ab^2c \\
 &= a^2b^2 + b^2c^2
 \end{aligned}$$