

SOLUTION

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

Expand the bracket:

$$\begin{aligned} &4b^2 - ab + (a + 9b)(a + 9b) - a^2 \\ &= 4b^2 - ab + a^2 + 18ab + 81b^2 - a^2 \end{aligned}$$

Group like terms:

$$\begin{aligned} &= 4b^2 + 81b^2 - ab + 18ab + a^2 - a^2 \\ &= 4b^2 + 81b^2 - ab + 18ab \\ &= 85b^2 + 17ab \end{aligned}$$

Factorize 17b out:

$$= 17b(5b + a)$$