

National 5 Final Exam Practice	
Algebraic Skills	Completing the Square
Average Score	2 / 3 Marks

Questions 1,2 and 3 should be used to perfect skills in the process of completing the square.

- Write each of the following expressions in the form $(x + a)^2 + b$:

a) $x^2 + 6x + 12$	b) $x^2 + 8x + 18$	c) $x^2 + 6x + 11$	d) $x^2 + 2x + 7$
e) $x^2 + 12x + 5$	f) $x^2 + 4x + 7$	g) $x^2 + 10x + 11$	h) $x^2 + 6x - 5$
i) $x^2 + 8x - 3$	j) $x^2 + 6x - 1$	k) $x^2 + 2x - 9$	l) $x^2 + 10x - 7$
m) $x^2 + 2x + 5$	n) $x^2 + 6x + 6$	o) $x^2 + 10x + 11$	p) $x^2 + 6x + 17$
- Write each of the following expressions in the form $(x - a)^2 + b$:

a) $x^2 - 4x + 7$	b) $x^2 - 8x + 9$	c) $x^2 - 12x - 2$	d) $x^2 - 10x - 6$
e) $x^2 - 10x - 1$	f) $x^2 - 2x + 9$	g) $x^2 - 6x + 7$	h) $x^2 - 8x - 13$
i) $x^2 - 8x - 3$	j) $x^2 - 12x - 6$	k) $x^2 - 10x + 10$	l) $x^2 - 4x + 23$
m) $x^2 - 8x + 4$	n) $x^2 - 6x + 13$	o) $x^2 - 12x - 8$	p) $x^2 - 10x + 4$
- Write each of the following expressions in the form $(x + a)^2 + b$, and write down the values of a and b.

a) $x^2 - 6x + 8$	b) $x^2 + 8x - 9$	c) $x^2 - 12x + 40$	d) $x^2 - 8x + 6$
e) $x^2 + 10x + 1$	f) $x^2 - 6x + 9$	g) $x^2 - 2x - 7$	h) $x^2 - 4x + 13$
i) $x^2 - 8x - 5$	j) $x^2 - 10x + 6$	k) $x^2 - 14x + 11$	l) $x^2 - 6x + 3$
m) $x^2 - 12x + 8$	n) $x^2 - 6x + 1$	o) $x^2 - 2x + 8$	p) $x^2 - 12x + 24$

The following questions are representative of those asked in the external exam, although there is usually a supplementary part to these questions. "Graphs of Quadratic Functions" will be covered later and also forms part of the Algebraic Skills.

- Write $x^2 - 6x - 6$ in the form $(x - a)^2 + b$, and state the values of a and b.
- Write $x^2 + 12x + 15$ in the form $(x + a)^2 + b$.
- Express $x^2 - 14x + 33$ in the form $(x + a)^2 + b$.
- Express $x^2 - 10x + 4$ in the form $(x - a)^2 + b$, stating the values of a and b.
- Write $x^2 + 6x - 1$ in the form $(x - a)^2 + b$.
- Write $x^2 - 8x - 3$ in the form $(x - a)^2 + b$ stating the values of a and b.
- Write $x^2 + 10x + 19$ in the form $(x + a)^2 + b$ and state the values of a and b.