

This tests a small part of the New Zealand Curriculum (NZC) algebra skills.

Teacher _____

Student _____

NZC Level	Equations and expressions Achievement Objective (AO)	The part of the NZC AO being tested	Marking Guide	NZC Level
3	Record and interpret additive and simple multiplicative strategies using words, diagrams, and symbols, with an understanding of equality.	Interpret additive and simple multiplicative strategies using symbols	3 Achieved = 5 3 Merit = 10 3 Excellence = 15	
4	Form and solve simple linear equations	Working on algebraic manipulation skills that will help students do this.	4 Achieved = 20 4 Merit = 35 4 Excellence = 50	
5	Form and solve linear and simple quadratic equations	Working on algebraic manipulation skills that will help students do this.	5 Achieved = 60 5 Merit = 75 5 Excellence = 90	
6	Form and solve linear equations and in-equations, quadratic and simple exponential equations, and simultaneous equations with two unknowns.	Working with exponents.	6 Achieved = 95	
I estimate the number I got correct to be:			Total Points: Max 100	

Show your working in order to get full marks.

Finished early? Make up your own questions and answer them to show us your skills.

Yes, you might get extra marks for your extra questions!

Not Achieved	Achieved	Merit	Excellence
0 to 19	20 to 49	50 to 74	75 to 100

1. Simplify the following expressions (* represents multiplication) [NZC Level 3 and 4; 10 points]

a. $a+a+a$ _____

b. $2a+a$ _____

c. $4c-2c$ _____

d. $3a+a+2$ _____

e. $2a+3b+5a+2b$ _____

f. $2a*3$ _____

g. $3*4c$ _____

h. $b-b$ _____

i. $2x - 2x$ _____

j. $2b+3b+b$ _____

2. Explain these terms in your own words and give an example. [NZC Level 4 and 5; 10 points]

a. Simplify _____

b. Evaluate _____

c. Like Terms _____

d. Coefficient _____

e. Constant Term _____

f. Equation _____

g. Expression _____

h. Variable _____

i. Numeral _____

j. Pronumeral _____

3. Simplify the following expressions (* represents multiplication) [NZC Level 5 and 6; 10 points]

a. $b*b$ _____

b. $2g*3g$ _____

c. $8*a*a$ _____

d. $2a*3a^2$ _____

e. $2*p^2*p^3$ _____

f. $2ab*3bc$ _____

g. $a*a*a$ _____

h. $2a*3a*n$ _____

i. $3z^2*2z$ _____

j. $(-3b)*(-6c)$ _____

4. Evaluate the following expressions when $x=3$ and $y=2$ [NZC Level 4; 10 points]

a. $2x+y$ _____

b. $3x$ _____

c. $2x$ _____

d. $3x-2y$ _____

e. $x-y$ _____

f. $y-x$ _____

g. $2y-x$ _____

h. $2(y-x)$ _____

i. $(x+1)*(y-1)$ _____

j. $0x + 0y$ _____

5. Evaluate the following expressions when $x=3$ and $y=2$ [NZC Level 5; 5 points]

a. $2xy$ _____

b. $3y^2$ _____

c. $3x^2$ _____

d. y^2+1 _____

e. x^3 _____

6. Evaluate the following expressions when $x= -3$ and $y= -2$ [NZC Level 4 and 5; 5 points]

a. $2x+y$ _____

b. $3x-2y$ _____

c. $4y-x$ _____

d. $3y+x$ _____

e. y^2 _____

7. Use the Distributive Law to expand. The rule is $a(b+c)=ab+ac$. [NZC Level 4 and 5; 10 points]

a. $4(x+1)$ _____

b. $6(x-2)$ _____

c. $2(2x+1)$ _____

d. $3(2x-2)$ _____

e. $4x(x+1)$ _____

f. $6a(x-2a)$ _____

g. $2a(2a+1)$ _____

h. $3x(2x-2)$ _____

i. $-2x(x+1)$ _____

j. $-3x(x-1)$ _____

8. Expand and simplify by collecting like terms [NZC Level 4 and 5; 10 points; 2 points each]

a. $2 + 3(x+2)$ _____

b. $12(y+3) + 3(3+y)$ _____

c. $4(x+7) + 11(2+x)$ _____

d. $3(x+1) - 2(x-1)$ _____

e. $2x(x+2) - x^2$ _____

9. Expand and simplify using the distributive law [NZC Level 5 and 6; 10 points]

a. $(a+b)(c+d)$ _____

b. $(s+1)(s+2)$ _____

c. $(x+1)(x+2)$ _____

d. $(x-1)(x+3)$ _____

e. $x^2(x^4+y)$ _____

f. $(x+4)(x+5)$ _____

g. $(2x+1)(x-3)$ _____

h. $(3x-1)(2x-4)$ _____

i. $(a+b)(a-b)$ _____

j. $(x+2)^2$ _____

10. Factorise the following expressions [NZC Level 4, 5 and 6; 10 points]

- a. $3a+3b$ _____
- b. $3a+6b$ _____
- c. $3a+3b+3c$ _____
- d. $20x+10$ _____
- e. $30y+15$ _____
- f. $2a-10$ _____
- g. $2ab-ac$ _____
- h. x^2+3x+2 _____
- i. x^2+4x+4 _____
- j. $x^2+10x+25$ _____

11. Form an expression for the perimeter of the following shapes [NZC Level 4; 6 points; 2 each]

- a. A square with sides x in length

- b. A rectangle with the base 2cm longer than the height

- c. A triangle with sides of three consecutive whole number lengths, 1cm apart. For example 4cm, 5cm and 6cm. Let one of the side lengths equal x .

12. Form an expression for the area of the following shapes [NZC Level 5; 4 points; 2 each]

- a. A square with sides x in length

- b. A rectangle with the base 2cm longer than the height