GRADE 7 MATHEMATICS

Expanding & Simplifying

Name: Date:

INQUIRY

A rectangular courtyard in a Nanjing siheyuan (traditional Chinese courtyard house) is (x + 5) metres long and 3 metres wide. Write TWO expressions for its area.

Discuss with your partner. Write your initial ideas below:

Key Vocabulary

Term	Definition
Expand	Multiply every term inside the bracket by the term outside.
Simplify	Collect like terms to write the expression in shortest form.
Factorise	Reverse of expanding — take out the highest common factor.
Distributive law	a(b + c) = ab + ac.

Part A — Expanding Single Brackets

1. Expand: 4(x + 3) [1 marks]

Show your working:

2. Expand: 5(2a – 7) [1 marks]

Show your working:

3. Expand: –3(y + 4) [2 marks]

Show your working:

4. Expand: –2(5m – 1) [2 marks]

Show your working:

Part B — Expand and Simplify

5. Expand and simplify: 3(x + 2) + 2(x – 5) [2 marks]

Show your working:

6. Expand and simplify: 4(2a + 1) – 3(a – 4) [3 marks]

Show your working:

7. Expand and simplify: 5(y – 3) + 2(3y + 1) – 4y [3 marks]

Show your working:

8. A Korean hanok house has two rooms: one is 3(x + 2) m2 and the other is 2(x – 1) m2. Write a simplified expression for the total floor area. [3 marks]

Show your working:

Part C — Factorising

9. Factorise: 6x + 18 [1 marks]

Show your working:

10. Factorise: 15a – 10 [2 marks]

Show your working:

11. Factorise: 12y + 8y2 [2 marks]

Show your working:

12. Factorise fully: 20ab – 15a [2 marks]

Show your working:

Part D — Real-World Application

13. 4 friends in Nanjing each order (a main dish + 2 side dishes). The main costs m yuan and each side costs s yuan. (a) Write an expression for the total cost. (b) Expand it. (c) If m = 38 and s = 12, calculate the total. [4 marks]

Show your working: