

# Expanding Brackets



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(linear expressions)

## Example 1

Multiply out the bracket  $3(2a + 4)$

$3(2a + 4)$  means  $3 \times (2a + 4)$

### METHOD 1 (DIAGRAM)

$$3 \times (2a + 4) =$$

x	2a	+ 4
3	6a	+12

$$3 \times 2a = 6a \quad 3 \times +4 = +12$$

$$3 \times (2a + 4) = 6a + 12$$

### METHOD 2 (ARROWS)

$$3 \times (2a + 4) =$$

$$3 \times (2a + 4) = \underline{6a} + \underline{12}$$

$$3 \times (2a + 4) = 6a + 12$$

**YOUR TURN:** Multiply out the bracket:

$$5(3a + 10) =$$

$$2(5a - 3) =$$

$$4a(3a + 2) =$$

## Example 2

$$3(2a + 4) + 5 =$$

$$= 6a + 12 + 5 =$$

$$= 6a + 17$$

Use any method from Example 1 to multiply out the bracket. Remember to copy down any number not used yet. Then collect the like terms.

## Example 3

$$3(2a + 4) + 5(3a + 2) + 3 =$$

$$= 6a + 12 + 15a + 10 + 3 =$$

$$= 21a + 25$$

Multiply out the first and then second bracket. Remember to copy down any number not used yet. Then collect the like terms.

**YOUR TURN:** Simplify expression involving bracket:

$$6(2a + 10) + 4 =$$

$$4(3a - 3) - 6 =$$

$$4a(3a + 2) + 3(2a - 5) + 2 =$$