



Summary

Students will use a model to learn how to apply the distributive law when expanding algebraic expressions.



Suitable for 2-6 students



Multiple Lessons



Lesson Preparation

- **Algebra Arrays Handout** – Give one handout per student. *Note, it is worth cutting out the shapes found on the last two pages before getting to class. Make sure you collect these back at the end of the lesson and reuse them.*

LEARNING INTENTIONS

This activity helps students to develop their understanding of applying the distributive law when factorising.

- Use the shapes to represent the expansion of algebraic expressions
- See patterns when using a model
- Discover shortcuts to expand algebraic expressions without the aid of a model.

CURRICULUM LINKS

- Extend and apply the distributive law to the expansion of algebraic expressions (ACMNA190)
- Simplify algebraic expressions involving the four operations (ACMNA192)
- Apply the distributive law to the expansion of algebraic expressions, involving binomials, and collect like terms where appropriate (ACMNA213)
- Expand binomial products and factorise monic quadratic expressions using a variety of strategies (ACMNA233)

AFTER THE LESSON

In later lessons, students can use the same model to explore factorizing algebraic expressions.

Use your multiplication chart to assist you with answering the following questions.
Draw a picture in the boxes below to demonstrate your working out.

a) $4 \times 2 =$

b) $3 \times x =$

c) $4 \times y =$

d) $3 \times 2x =$

e) $2 \times 2y =$

f) $3 \times 3x =$

What patterns, if any, did you notice?

Challenge:

Can you simplify the following without having to use the multiplication chart?

a) $4 \times 2x =$

b) $5x \times 3 =$

c) $10 \times 30y =$

Use your multiplication chart to assist you with answering the following questions.
Draw a picture in the boxes below to demonstrate your working out.

a) $3x \times 2x =$

b) $2y \times x =$

c) $2x \times y =$

d) $x(y + 1) =$

e) $2x(x + 3) =$

f) $y(2x + y)$

What patterns, if any, did you notice?

Challenge:

Can you simplify the following without having to use the multiplication chart?

a) $x(2y + 3) =$

b) $2m(p + 1) =$

c) $2a(3b + y) =$

Use your multiplication chart to assist you with answering the following questions.
Draw a picture in the boxes below to demonstrate your working out.

a) $-3x \times x =$

b) $-y \times 3x =$

c) $-2x \times -y =$

d) $2(y - 1) =$

e) $-x(2x - 3) =$

f) $-2x(3 - y) =$

What patterns, if any, did you notice?

Challenge:

Can you simplify the following without having to use the multiplication chart?

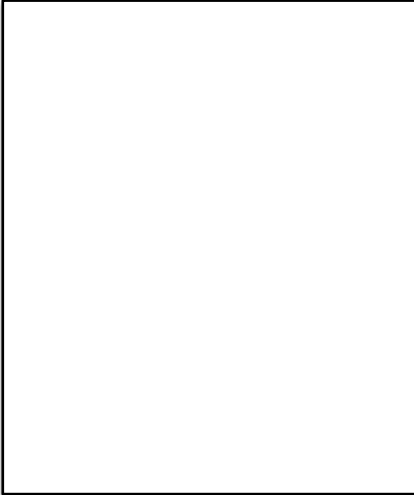
a) $-2(y + 3) =$

b) $2m(1 - p) =$

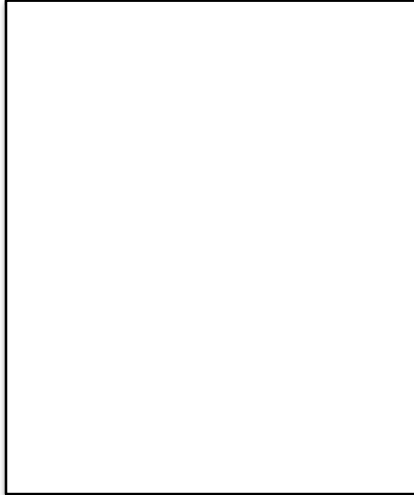
c) $-2x(3y - z) =$

Can you use your multiplication chart to answer the following questions?

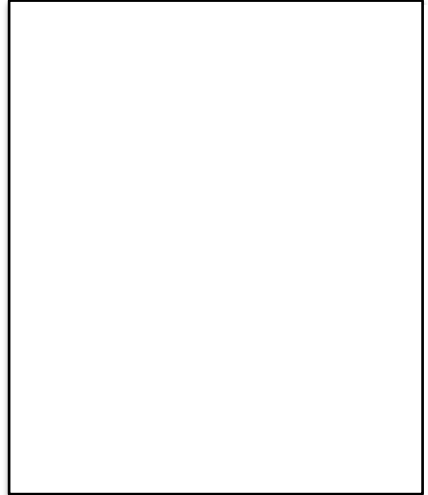
a) $(x + 1)(x + 2) =$



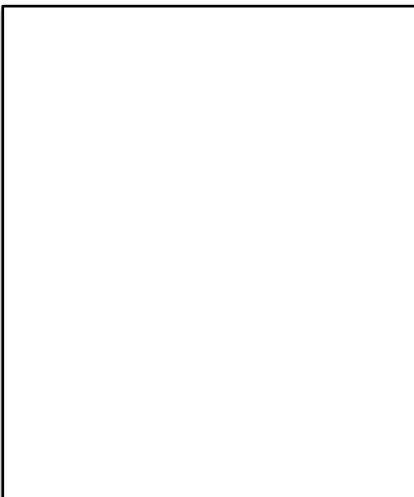
b) $(x + 4)(x + 2) =$



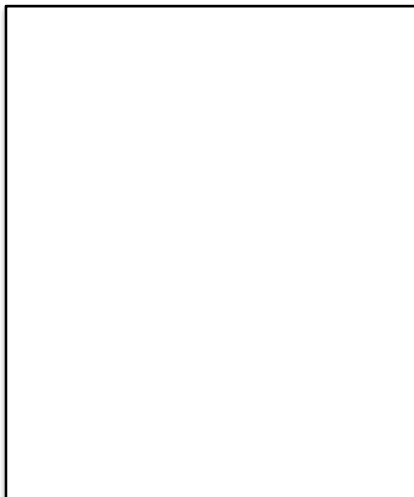
c) $(x + 3)(x + 2) =$



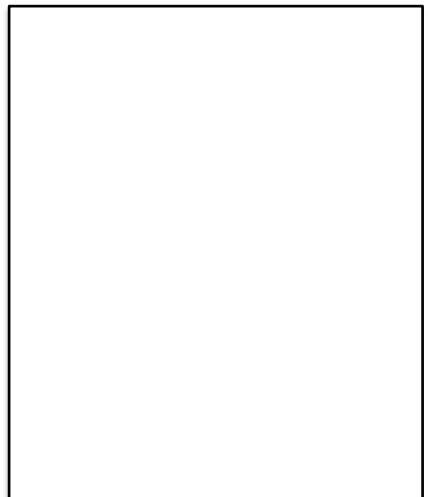
d) $(2x + 1)(x + 2) =$



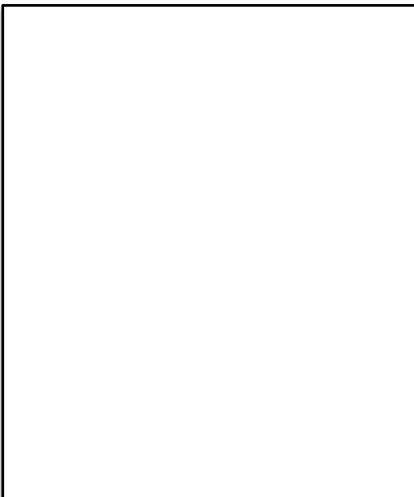
e) $(x + 1)(3x + 2) =$



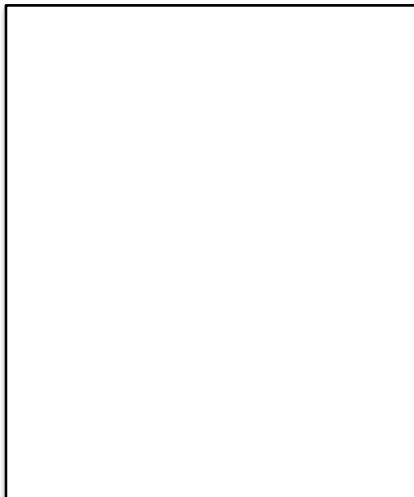
f) $(x - 3)(x + 2) =$



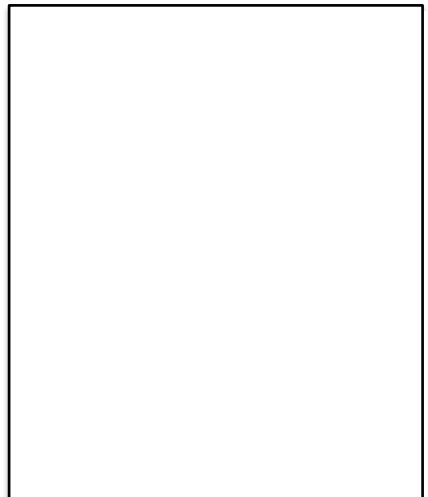
g) $(x + 4)(x - 1) =$



h) $(2x - 1)(x - 2) =$



i) $(2x - 3)(2 - 2x) =$





A blue coordinate system is shown with a horizontal x-axis and a vertical y-axis. A black 'X' mark is located in the first quadrant, representing a point in the Cartesian plane.

1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1

x	x	x
x	x	x
x	x	x
x	x	x

y	y
y	y
y	y
y	y

x^2	x^2	x^2
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x	x	x
x^2	x^2	x^2

xy	xy
xy	y^2