

# Algebra

is using letters to represent unknowns.


1. Order of Operations
2. Arrange like terms
3. Simplify
4. Substitute and solve

Numbers with no letters cannot be grouped with the letters!

## Multiplication

$$4 \times y = 4y$$

$$2 \times (6y + 3) = 12y + 6$$

Remember your  order of operations!

## Division

$$12y \div 3 = 4y$$

$$5y \div 9 = \frac{5y}{9}$$

## Addition

$$3y + 4 + 2y + 6 = 5y + 10$$

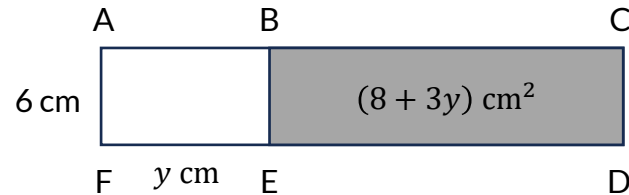
## Subtraction

$$5y + 7 - 3y - 4 = 2y + 3$$



Adapted from PSLE 2017

The figure is made up of two rectangles ABEF and BCDE.  $AF = 6$  cm,  $FE = y$  cm and the area of BCDE is  $(8 + 3y)$  cm<sup>2</sup>.



(a) Find the area of ACDF in terms of  $y$ . Give your answer in the simplest form.

$$\begin{aligned} \text{Area of ABEF} &= 6 \text{ cm} \times y \text{ cm} \\ &= 6y \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Area of BCDE} &= 6 \text{ cm} \times (8 + 3y) \text{ cm} \\ &= (48 + 18y) \text{ cm}^2 \end{aligned}$$

$$\text{Area of ACDF} = 6y \text{ cm}^2 + (48 + 18y) \text{ cm}^2$$

$$= 6y \text{ cm}^2 + 18y \text{ cm}^2 + 48 \text{ cm}^2$$

$$= (24y + 48) \text{ cm}^2$$

- Order of operations
- \* Multiplication affects everything in the brackets

- Arrange like terms

- Simplify

(b) If  $y = 3$ , solve for the area of ACDF.

$$\text{Area of ACDF} = (24 \times 3 + 48) \text{ cm}^2$$

$$= (72 + 48) \text{ cm}^2$$

$$= 120 \text{ cm}^2$$

- Substitute 3 into  $y$
- Order of operations
- \* Multiplication before addition

- Solve