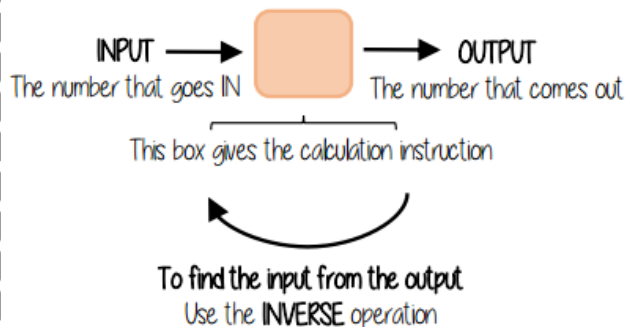
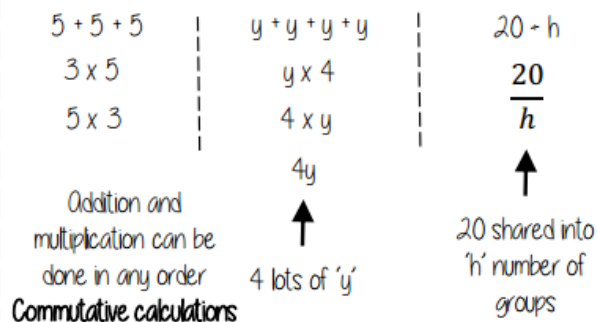


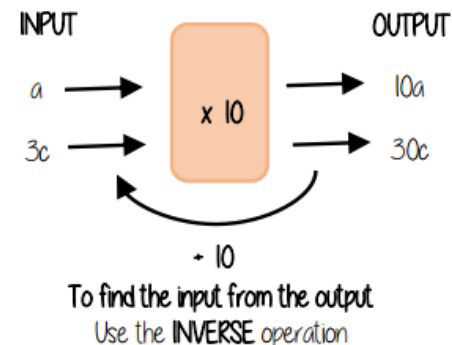
Single function machines



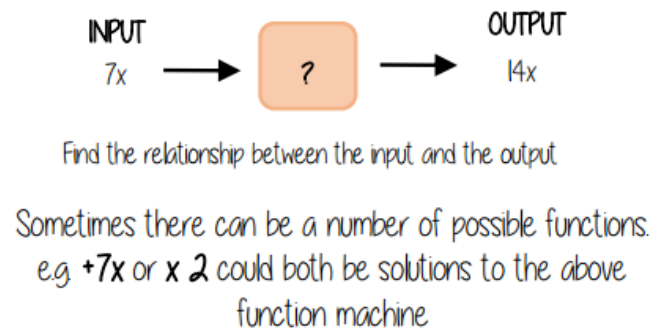
Using letters to represent numbers



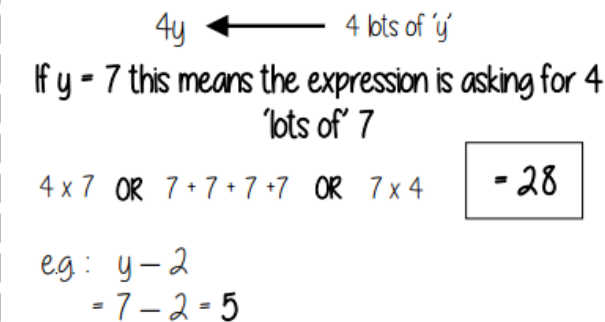
Single function machines (algebra)



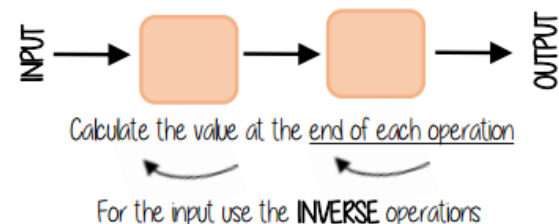
Find functions from expressions



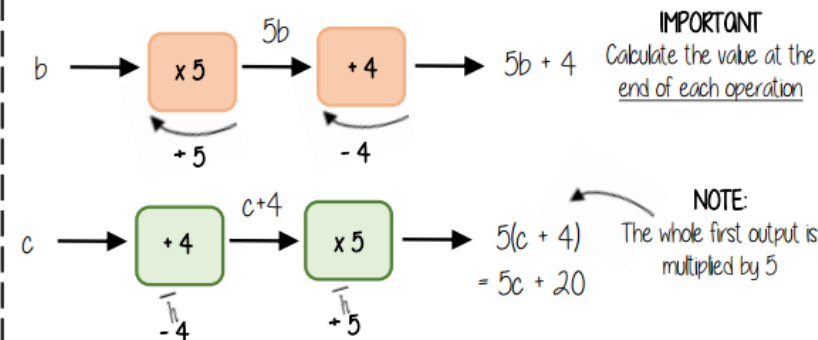
Substitution into expressions



Two step function machines



Two step function machines (algebra)

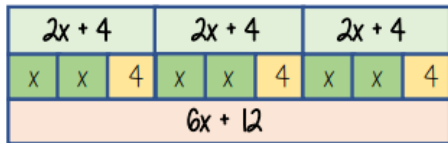
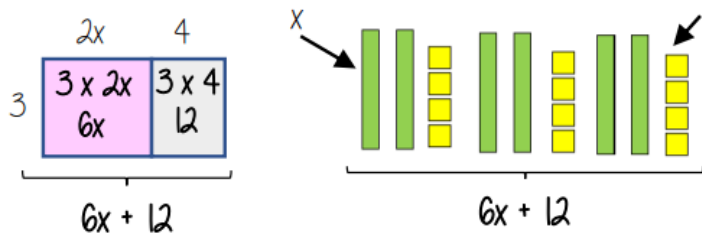


Formulae and Equations

Formulae — all expressed in symbols Substitute in values Equations — include numbers and can be solved

Multiply single brackets

$$3(2x + 4)$$



Different representations of $3(2x+4) = 6x + 12$

Equations with unknown on both sides

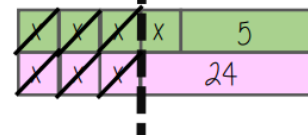
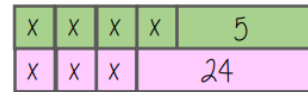
$$4x + 5 = 3x + 24$$

$$-3x \quad -3x$$

$$x + 5 = 24$$

$$-5 \quad -5$$

$$x = 19$$



Keywords

Inverse: the operation that undoes what was done by the previous operation. (The opposite operation)

Commutative: the order of the operations do not matter.

Substitute: replace one variable with a number or new variable.

Evaluate: work out

Simplify: grouping and combining similar terms

Equivalent: something of equal value

Coefficient: a number used to multiply a variable

Solve: find a numerical value that satisfies an equation

Algebraic constructs

Expression

A sentence with a minimum of two numbers and one maths operation

Equation

A statement that two things are equal

Term

A single number or variable

Identity

An equation where both sides have variables that cause the same answer includes \equiv

Formula

A rule written with all mathematical symbols e.g. area of a rectangle $A = b \times h$

Solve equations with brackets

R

$$3(2x + 4) = 30$$

Expand the brackets

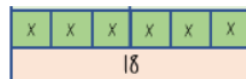
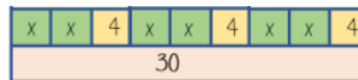
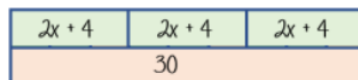
$$6x + 12 = 30$$

$$-12 \quad -12$$

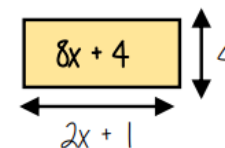
$$6x = 18$$

$$+6 \quad +6$$

$$x = 3$$



Factorise into a single bracket $8x + 4$



Try and make this the highest common factor

The two values multiply together (also the area) of the rectangle

$$8x + 4 \equiv 4(2x + 1)$$

Note:

$$8x + 4 \equiv 2(4x + 2)$$

This is factorised but the HCF has not been used