

## Key Vocabulary

## Linear Number Sequences

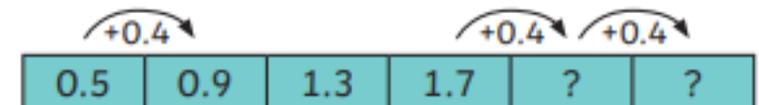
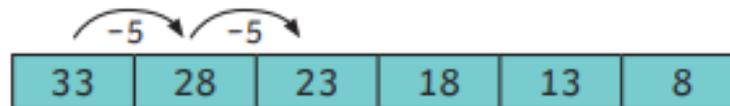
**term to term rule**

A linear number sequence is a sequence where each value increases or decreases by the same amount each time. Each number in a linear number sequence is called a **term**. The constant change between each number is called the term to term rule. To identify the **term to term rule**, find the difference between two adjacent terms.

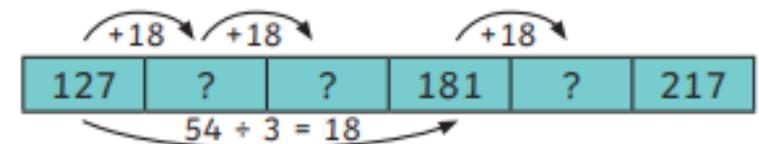
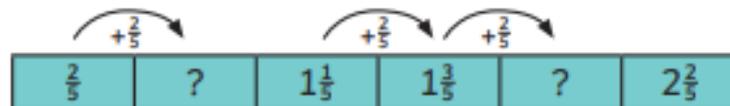
**variable**

When you know the term to term rule, you can use it to find the next number in the sequence. It can also be used to find a missing number within a sequence.

**unknown**



**expression**



**equation**

## Forming Expressions

## Forming Equations

**formula**

**one-step equation**

**two-step equation**

**substitution**

**pairs of unknowns**

**enumerate**

An expression is a group of numbers, letters and operation symbols.

Add 14 to  $a$

$$a + 14$$

Subtract 20 from  $b$

$$b - 20$$

Multiply  $c$  by 4

$$4c$$

12 more than  $d$

$$d + 12$$

Multiply  $e$  by 3 and subtract 5

$$3e - 5$$

Add 12 to  $f$  and then multiply by 2

$$2(f + 12)$$

$$a + 14 = 20$$

$$b - 20 = 15$$

$$4c = 28$$

$$d + 12 = 30$$

$$3e - 5 = 10$$

$$2(f + 12) = 44$$

An equation is a number statement with an equal sign (=). Expressions on either side of the equal sign are of equal value.

## Formulas / Formulae

(The word formula has two possible plural forms, formulae and formulas.)

A formula is a special type of equation that shows the relationship between different substituted variables. Formulas are often used in geometry to find area and volume.

Area of rectangle =  
length  $\times$  width

Area of triangle =  
(base  $\times$  height)  $\div$  2

(12.5  $\times$  hours worked)  
+ 25 = cost of job

## Equations with Pairs of Unknowns

In an equation with two unknown numbers, there may be **several** possible values for the unknowns that will balance the equation.

$ab = 18$	
a	b
1	18
2	9
3	6
6	3
9	2
18	1

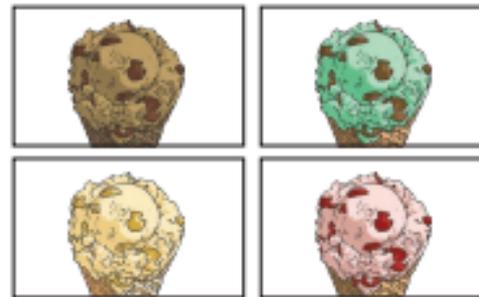
$2a + b = 10$	
a	b
2	6
3	4
4	2
5	0

## Enumerating Possibilities

Enumerating means making a complete list of answers to a problem.

- Use a system for finding the possibilities.
- Organise your findings in an ordered list or table.
- Have a way of deciding when all possibilities have been found.

There are four ice cream flavours.



Two scoops of two different flavours give six possible combinations.

- chocolate and strawberry
- chocolate and vanilla
- chocolate and mint
- strawberry and vanilla
- strawberry and mint
- vanilla and mint

## Solving One-Step and Two-Step Equations

In algebra, missing numbers in equations are represented by letters. Any letter can be used but often the letter  $x$  is used. An algebraic  $x$  is written to look different to a normal letter 'x' to avoid confusion.

$3x = 15$

The multiplication sign is not used in algebra to avoid confusing it with the algebraic  $x$  used to show a missing number. Inverse operations are used to isolate the letter on one side of the equation.

$2x + 4 = 10$