Patterns and Algebra: Key Skill 21

YEAR 5

Identify, describe, continue and create number patterns with whole numbers, fractions or decimals

Number patterns are patterns created by numbers.

Patterns are formed by **rules**. A **rule** is used to work out any number further along in the pattern. Rules also help children to continue patterns.

Patterns help children to apply rules, check answers, and see relationships between numbers.

Children learn a lot about numbers and build strong operation skills when working with patterns.

Here are some examples of number patterns.

5 $5\frac{1}{2}$ 6 $6\frac{1}{2}$ 7 $7\frac{1}{2}$ (the number increases by a half)

4 4.5 5 5.5 6 6.5 (the number increases by 0.5)

5.6 4.6 3.6 2.6 1.6 0.6 (the number decreases by 1)

0.45 0.50 0.55 0.60 0.65 0.70 (the number increases by 0.05)

Use rhythm challenges to help learn times tables and explore patterns (check out the cup song, or some drumming games).

WEB LINKS go to:

Notes: Patterns

Video: Patterns

Video: Cup song

Patterns and Algebra: Key Skill 22

YEAR 5

Find missing numbers in number sentences (equations) involving addition, subtraction, multiplication or division on both sides of the equals sign

A **number sentence** is an equation. It uses numbers and symbols to describe a maths problem.

A **fact family** is a group of related facts in addition and subtraction, and multiplication and division. It helps children understand the relationship between operations.

4 + ▲ = 10	20 x 5 = ▲
▲ + 4 = 10	5 x 20 = ▲
10 – 4 = ▲	▲ ÷ 5 = 20
10 – ▲ = 4	▲ ÷ 20 = 5

These skills will be used by the children for the rest of their maths careers! To find missing numbers, we focus on the idea of ***equivalence*** and the role of the equals (=) sign. Remembering that the equals sign means 'the same on both sides' makes it easier to find missing numbers.

Children use their knowledge of numbers to find what is missing. Strategies include:

- guess what the missing number is, and test it to see if the equation works with that number
- use the fact family to help solve the question.

The key is to be able to explain ***how*** they got their answer (show working out).

Here are some examples of equations with missing numbers.

4 + ▲ = 16 18 – ▲ = 5 25 = ▲ + 21 75 = 13 ÷ ▲

Jack had a piece of rope and cut off 70 metres. He was left with 38 metres. How long was the rope?

▲ – 70m = 38m (remembering the fact family)
70m + 38m = ▲
70m + 38m = 108m
▲ = 108m

Jack's rope was 108m long before it was cut.

Matilda saved $83 towards a trip to the snow, and her parents gave her $100. How much more money does she need if the trip costs $300?

$83 + $100 + ▲ = $300 (take $100 from both sides)
$83 + ▲ = $200 (take $83 from both sides)
▲ = $117

Matilda needs another $117 to reach her $300 goal for the cost of her trip.

WEB LINKS go to:

Video: Missing numbers and fact family

Video: Finding missing numbers