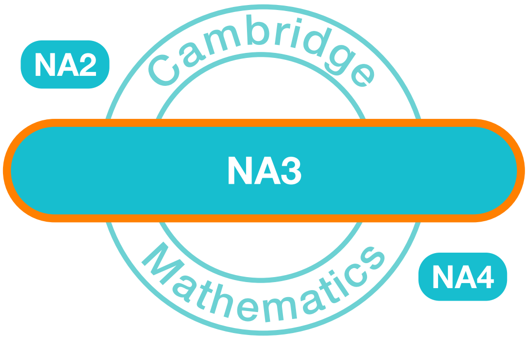

What are highest common factors and why do they matter?

Key Questions

1. What do we mean by *highest common factor* and *lowest common multiple*, and how are they related?
2. How can we find the highest common factor of two numbers?
3. What is Euclid's algorithm all about?
4. What is the *Fundamental theorem of arithmetic*, and why does it matter?

Resources

Introductory investigation - Picture this!
Worked examples - Euclid's algorithm
Scaffolded task - Factorial fun
Scaffolded task - Division game
Scaffolded task - The Fundamental Theorem of Arithmetic
Open-ended investigation - Buckets and ponds
Lucky dip - LCM sudoku
Lucky dip - A Diophantine equation
Lucky dip - There's always one, isn't there?
Lucky dip - $n^5 - n$
Go and think about it... - S-prime numbers
Go and think about it... - A BMO2 question

Pervasive Ideas

- Proof
- Conjecturing
- Visualising
- Iteration
- Generalising and specialising

Pervasive Idea Families

Concept

- Linearity (./pervasiveIdeas/PI2.html)
- Axioms and axiomatic systems (./pervasiveIdeas/PI6.html)
- Symmetry (./pervasiveIdeas/PI7.html)
- Iteration (./pervasiveIdeas/PI9.html)
- Averages (./pervasiveIdeas/PI11.html)

Context

- History of maths (./pervasiveIdeas/PI8.html)
- Group theory (./pervasiveIdeas/PI10.html)

Process

- Multiple representations (./pervasiveIdeas/PI1.html)
- Proof (./pervasiveIdeas/PI3.html)
- Conjecturing (./pervasiveIdeas/PI4.html)
- Visualising (./pervasiveIdeas/PI5.html)
- Generalising and specialising (./pervasiveIdeas/PI12.html)

Pervasive Ideas

Our tube map shows the connections between many stations, and each station contains some mathematical content. There are, however, many important mathematical ideas that do not fit naturally at a station, because they somehow span a number of stations. These are our *pervasive ideas*.

We have grouped these ideas loosely into three families.

Concepts are mathematical ideas that occur across content strands.

Context is all about how mathematical ideas fit together in a bigger picture. This family includes applications of mathematical ideas to the real world, indications of how mathematical ideas come together in more advanced mathematical topics, and historical background, for example.

Processes are about the way in which we do mathematics.

We believe that it is important and useful for students and teachers to be aware of these pervasive ideas as they are studying mathematics, and so we have highlighted occurrences of pervasive ideas at stations as well as giving information and resources for each pervasive idea at its own page. We hope that you will explore these as you travel through the CMEP tube map.