

## **Big Ideas**

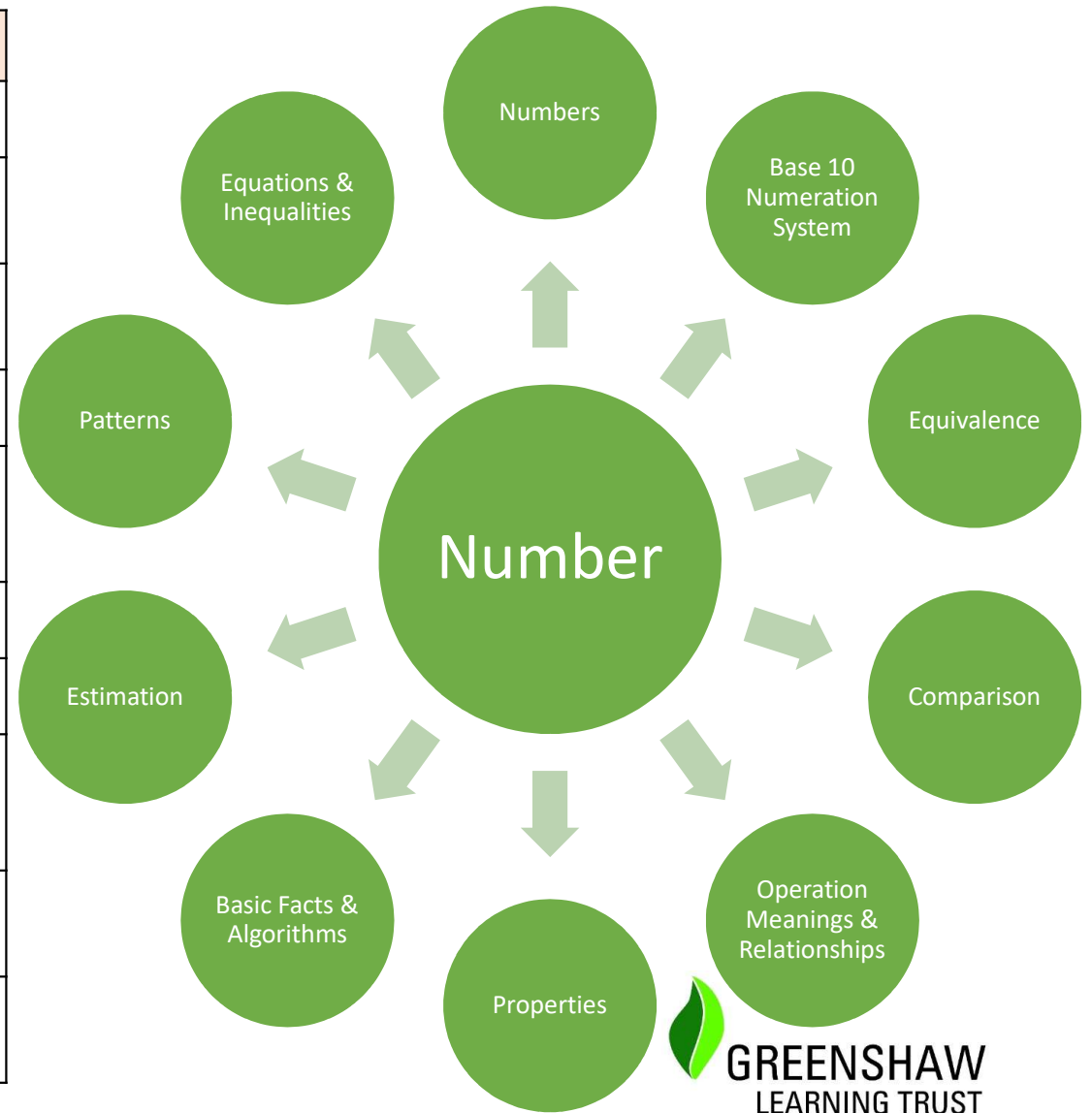
Big Ideas are the building blocks of subjects. They are: -

- Concepts and ideas that helps us make sense of lots of otherwise isolated or disconnected facts.
- Principles, theories, or processes that serve as a focal point of a subject.
- Something that changes the way a we think about information or schema.

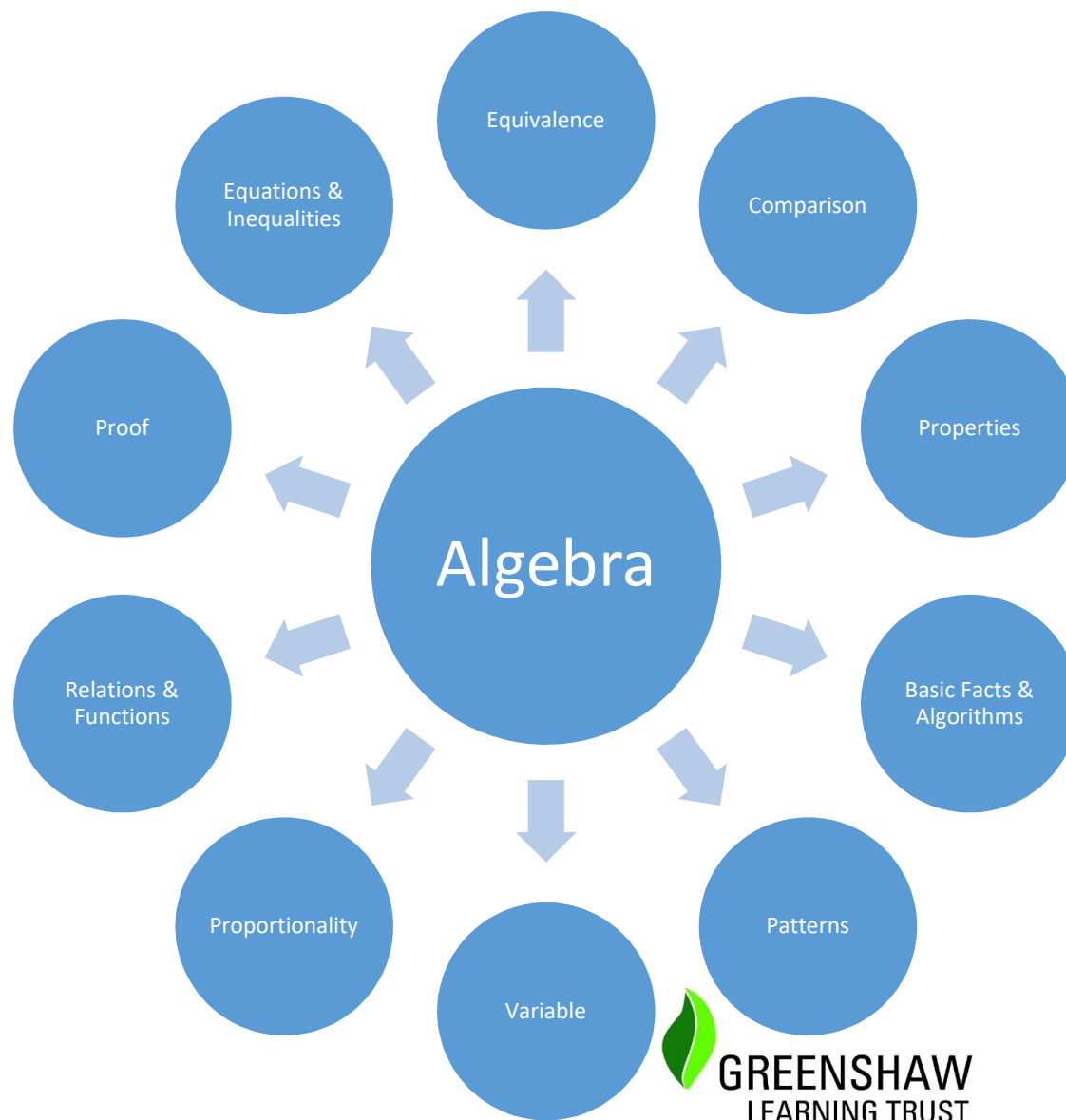
The big ideas in this subject are: -

- Number
- Algebra
- Ratio and Proportion
- Geometry
- Statistics and Probability

Big Idea	Description
Numbers	The set of real numbers is infinite, and each real number can be associated with a unique point on the number line.
Base 10 Numeration System	Base ten numeration system is a scheme for recording numbers using digits 0-9, groups of ten, and place value.
Equivalence	Any number, measure, numerical expression, algebraic expression, or equation can be represented in an infinite number of ways that have the same value.
Comparison	Numbers, expressions, and measures can be compared by their relative values.
Operation Meanings & Relationships	The same number sentence (e.g. $12-4 = 8$ ) can be associated with different concrete or real-world situations, AND different number sentences can be associated with the same concrete or real-world situation.
Properties	For a given set of numbers there are relationships that are always true, and these are the rules that govern arithmetic and algebra.
Basic Facts & Algorithms	Basic facts and algorithms for operations with rational numbers use notions of equivalence to transform calculations into simpler ones.
Estimation	Numerical calculations can be approximated by replacing numbers with other numbers that are close and easy to compute with mentally. Measurements can be approximated using known referents as the unit in the measurement process.
Patterns	Relationships can be described and generalizations made for mathematical situations that have numbers or objects that repeat in predictable ways.
Equations & Inequalities	Rules of arithmetic and algebra can be used together with notions of equivalence to transform equations and inequalities so solutions can be found.



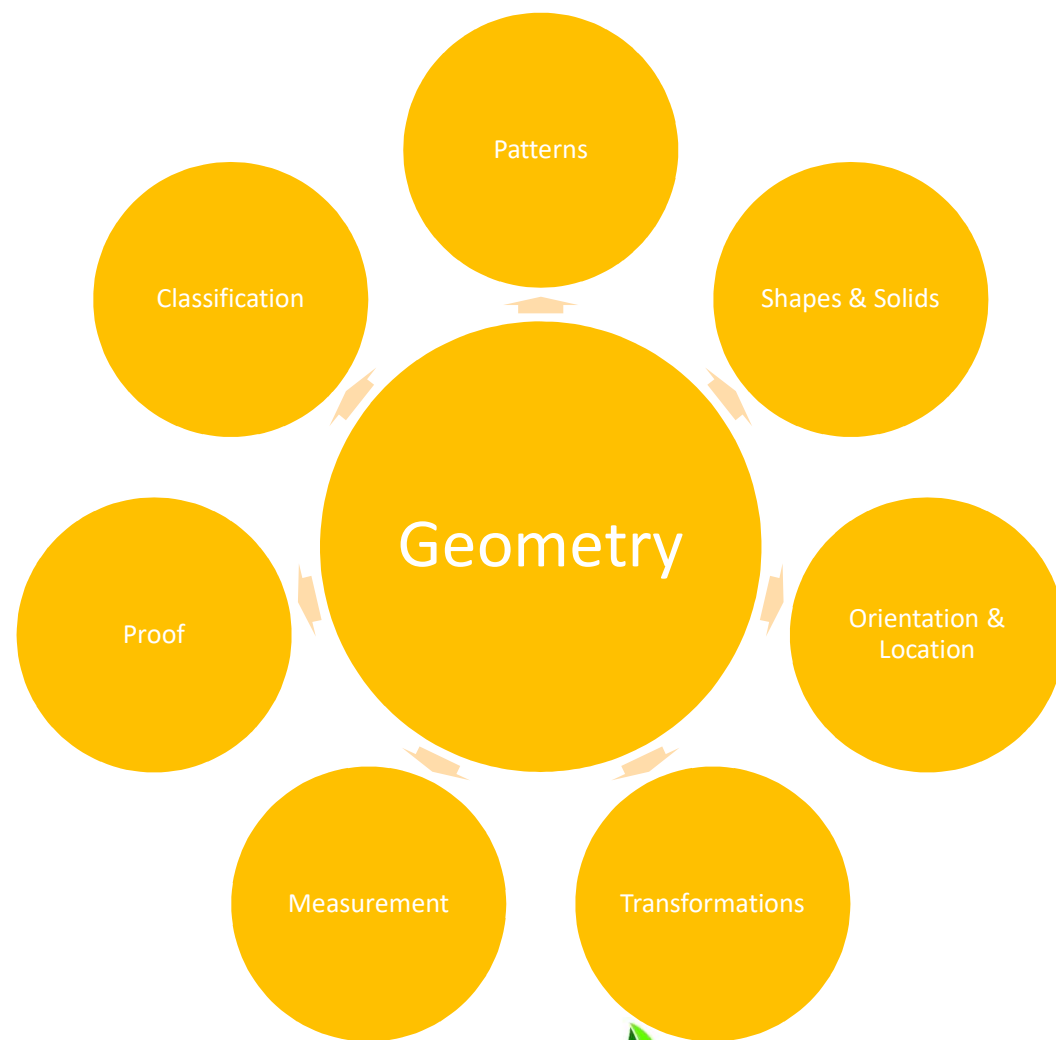
Big Idea	Description
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Comparison	Numbers, expressions, and measures can be compared by their relative values.
Properties	For a given set of numbers there are relationships that are always true, and these are the rules that govern arithmetic and algebra.
Basic facts & algorithms	Basic facts and algorithms for operations with rational numbers use notions of equivalence to transform calculations into simpler ones.
Patterns	Relationships can be described and generalizations made for mathematical situations that have numbers or objects that repeat in predictable ways.
Variable	Mathematical situations and structures can be translated and represented abstractly using variables, expressions, and equations.
Proportionality	If two quantities vary proportionally, that relationship can be represented as a linear function.
Relations & functions	Mathematical rules (relations) can be used to assign members of one set to members of another set. A special rule (function) assigns each member of one set to a unique member of the other set.
Proof	Mathematical statements can be proved or disproved using previously established statements, self-evident truths or assumed statements. This may be through the use of physical objects, diagrams, manipulatives, or algebra.
Equations & inequalities	Rules of arithmetic and algebra can be used together with notions of equivalence to transform equations and inequalities so solutions can be found.



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Operation Meanings & Relationships	The same number sentence (e.g. $12-4 = 8$ ) can be associated with different concrete or real-world situations, AND different number sentences can be associated with the same concrete or real-world situation.
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Patterns	Relationships can be described and generalizations made for mathematical situations that have numbers or objects that repeat in predictable ways.
Shapes & Solids	Two- and three-dimensional objects with or without curved surfaces can be described, classified, and analysed by their attributes.
Orientation & Location	Objects in space can be oriented in an infinite number of ways, and an object's location in space can be described quantitatively.
Transformations	Objects in space can be transformed in an infinite number of ways, and those transformations can be described and analysed mathematically.
Measurement	Some attributes of objects are measurable and can be quantified using unit amounts.
Proof	Mathematical statements can be proved or disproved using previously established statements, self-evident truths or assumed statements. This may be through the use of physical objects, diagrams, manipulatives, or algebra.
Classification	Abstract and concrete mathematical items can be grouped according to their characteristics.



Big Idea	Description
Data Collection	Some questions can be answered by collecting and analysing data, and the question to be answered determines the data that needs to be collected and how best to collect it.
Data Representation	Data can be represented visually using tables, charts, and graphs. The type of data determines the best choice of visual representation.
Data Distribution	There are special numerical measures that describe the centre and spread of numerical data sets.
Chance	The chance of an event occurring can be described numerically by a number between 0 and 1 inclusive and used to make predictions about other events.

