Grangers are Mathematicians

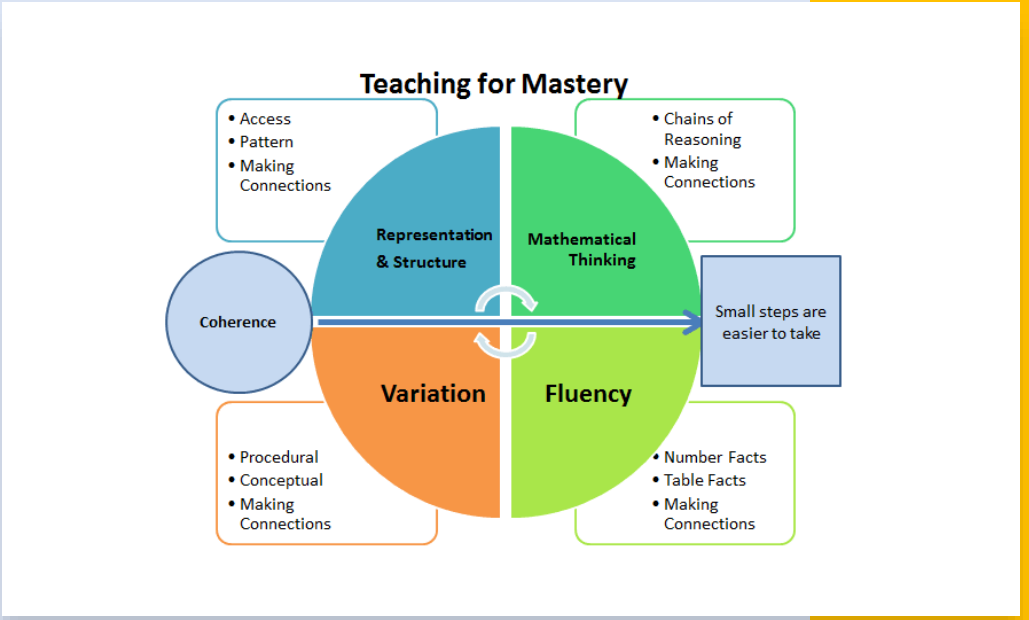
#togetherwegrow

Marches Academy Trust

Maths - Vision

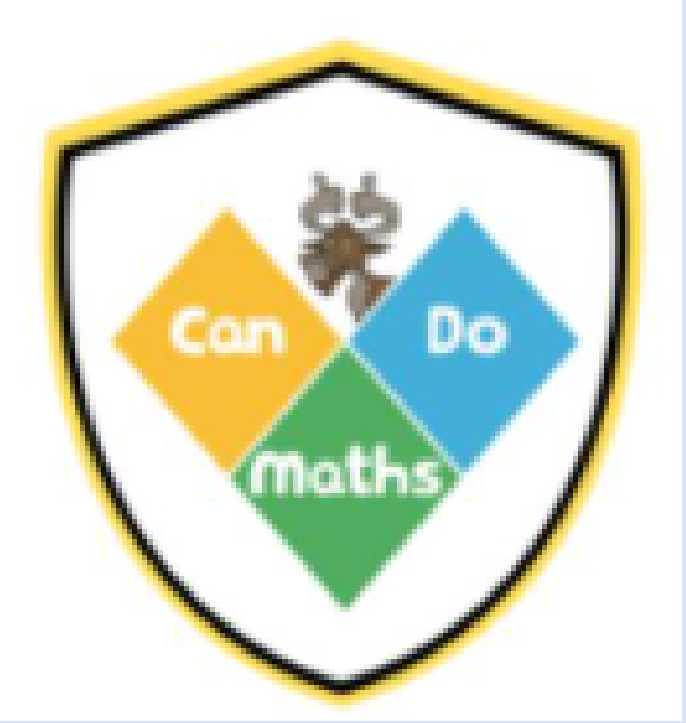
- We believe that all of our Grangers have the capacity to be excellent mathematicians.
- Mathematics is an important creative discipline that helps us to understand and change the World. We want all pupils at Grange Primary school to experience the beauty, power and enjoyment of mathematics and develop a sense of curiosity about the subject.
- At Grange Primary, we foster positive 'can do' attitudes, believe all children can achieve in mathematics, and teach for secure and deep understanding of mathematical concepts. We use mistakes and misconceptions as an essential part of learning and provide challenge through rich and sophisticated problems before acceleration through new content.





Maths – Intent

- **We aim for all pupils to:**
- + Become fluent in the fundamentals of mathematics (see Year by Year Curriculum Maps) so that they develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- + Solve problems by applying their mathematics to a variety of problems with increasing sophistication, including in unfamiliar contexts and to model real-life scenarios.
- + Reason mathematically by following a line of enquiry and develop and present a justification, argument or proof using mathematical language.
- + Have an appreciation of number and number operations, which enables mental calculations and written procedures to be performed efficiently, fluently and accurately.

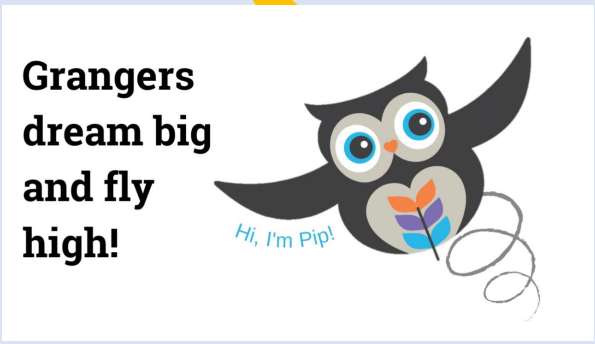




Maths – Implementation

- **How do we teach Maths at Grange Primary School?**
- **<u>Mathematics Lessons</u>**
- Each lesson focuses on a manageable step of new learning based on the NC statements.
- **Our Lesson design:**
- 1) Assessment for learning/Retrieval for learning
- 2) Hook It: Introduction
- 3)Teach It: Live modelling of the new learning with explicit use of potential misunderstandings
- 4) Practise It: All children practise together **Support & Challenge**
- 5) Do It: Up to 5 examples – 5 'What it is' or '3+2 'What it is/What it's also' **Challenge 1: Procedural Fluency**
- 6) Secure It: 1 or 2 Misunderstandings (True/false, Spot the mistake) **Challenge 2: Conceptual Understanding**
- 7) Deepen It: Apply understanding to solve new problems
- **Challenge 3: Mathematical Thinking**







Grangers dream big and fly high!



Mathematics Lessons – Teach Up M/T/W/T/F: KS2 9.00-9.45 KS1 – 10.45 -11.30		Maths on Track meetings: Keep Up 3 days per week – 13.00-13.20 – KS2
'Learning Together'	'Support & Challenge	Deliberate Practice Sessions Arithmetic/intervention/practice

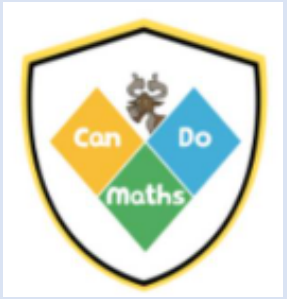
Maths – Implementation

MathsOnTrack (MOT) Meetings

- Day 1 : Arithmetic
- Day 2 : Deliberate Practice: Past and Present
- Day 3 : Deliberate Practice: Past and Present

Maths Impact



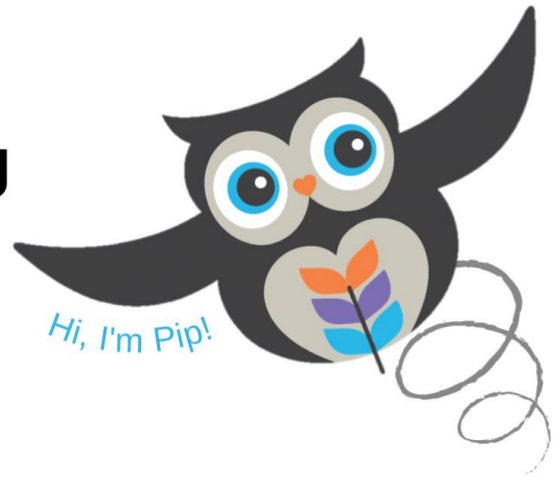


- Pupils will enjoy learning maths
- Pupils of all abilities will be able to succeed in all maths lessons
- Pupils will be able to quickly recall key facts
- Pupils will use efficient procedures for solving problems in new contexts
- Pupils will recognise relationships and make connections in maths
- Pupils will be able to reason mathematically, justifying answers
- Pupils will be able to represent concepts in a variety of ways
- The % of pupils working at ARE within each year group will be at least in line with national averages.
- The % of pupils working at Greater Depth within each year group will be at least in line with national averages
- There will be no significant gaps in the progress of different groups of pupils (e.g. disadvantaged vs non-disadvantaged)









Maths – Impact

What assessment takes places? (summative & formative)

We believe that marking and feedback is an intrinsic part of learning and knowing when you have made a mistake and having the opportunity to correct is vital in being able to master and move forward as a learner. In lessons, work is marked as a class where possible and feedback is immediate. Ensuring an 80% success rate, when teaching, enables our teachers to map where our pupils are in relation to a concept, assess and support them in mastering the concept and move them on in their learning at the right time. In the case where a pupil or group of pupils have not mastered the learning, on the day intervention is used to confidence and understanding before the next lesson. To support pupils, we have begun to develop pre-teaching in Maths to support slower graspers feel more confident when meeting new concepts again.

Three times annually, pupils take part in summative assessment weeks whereby they sit PUMA assessments to assess how well they are achieving in comparison to other pupils nationally.

Grange

Calculation Policy

Grangers dream big and fly high!

Intent

Grangers develop an appreciation of number and number operations, which enable mental calculations and written procedures to be performed efficiently, fluently and accurately is key to children being successful in mathematics.

We aim for all children to be:

- able to recall quickly and accurately basic number facts (e.g. number bonds, multiplication and division facts)

Implementation

- Before doing a calculation, all teachers and pupils look at a calculation and think *'What do I notice?'* and *'Can I do it in my head, with jottings or do I need to use a written method?'*
- All teachers use concrete and pictorial representations to teach conceptual understanding of mental and written calculation methods
- The Mathematics Curriculum prioritises time for developing conceptual understanding of calculation methods and learning facts (Maths Lessons)

Impact

- All teachers are confident and skilled to teach mental methods (in your head or with jottings) and written calculation methods
- All children have a secure understanding of mental and written methods of calculation suitable for their stage of learning.
- All children choose appropriate calculation methods depending on the numbers.
- All children can recall, understand and make connections using facts suitable for their stage of learning.

Year					
1	2	3	4	5	6
Read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs **Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ☐ – 9**	Add and subtract two two-digit numbers using concrete objects, pictorial representations progressing to formal written methods Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: * a two-digit number and ones * a two-digit number and tens * two two-digit numbers adding three one-digit numbers	Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction Add and subtract numbers mentally, including: * a three-digit number and ones * a three-digit number and tens a three-digit number and hundreds	Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition where appropriate signs Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why	Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) Add and subtract numbers mentally with increasingly large numbers	Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why Perform mental calculations, including with mixed operations and large numbers

Year					
1	2	3	4	5	6
Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher	Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	Write and calculate mathematical statements for ÷ using the x tables they know progressing to formal written methods. Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental methods Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers Recognise and use factor pairs and commutativity in mental calculations	Multiply two-digit and three-digit numbers by a one-digit number using formal written layout	Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context Multiply and divide numbers mentally drawing upon known facts Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication Divide numbers up to 4-digits by a two-digit whole number using the formal written method of short division where appropriate for the context Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context Perform mental calculations, including with mixed operations and large numbers

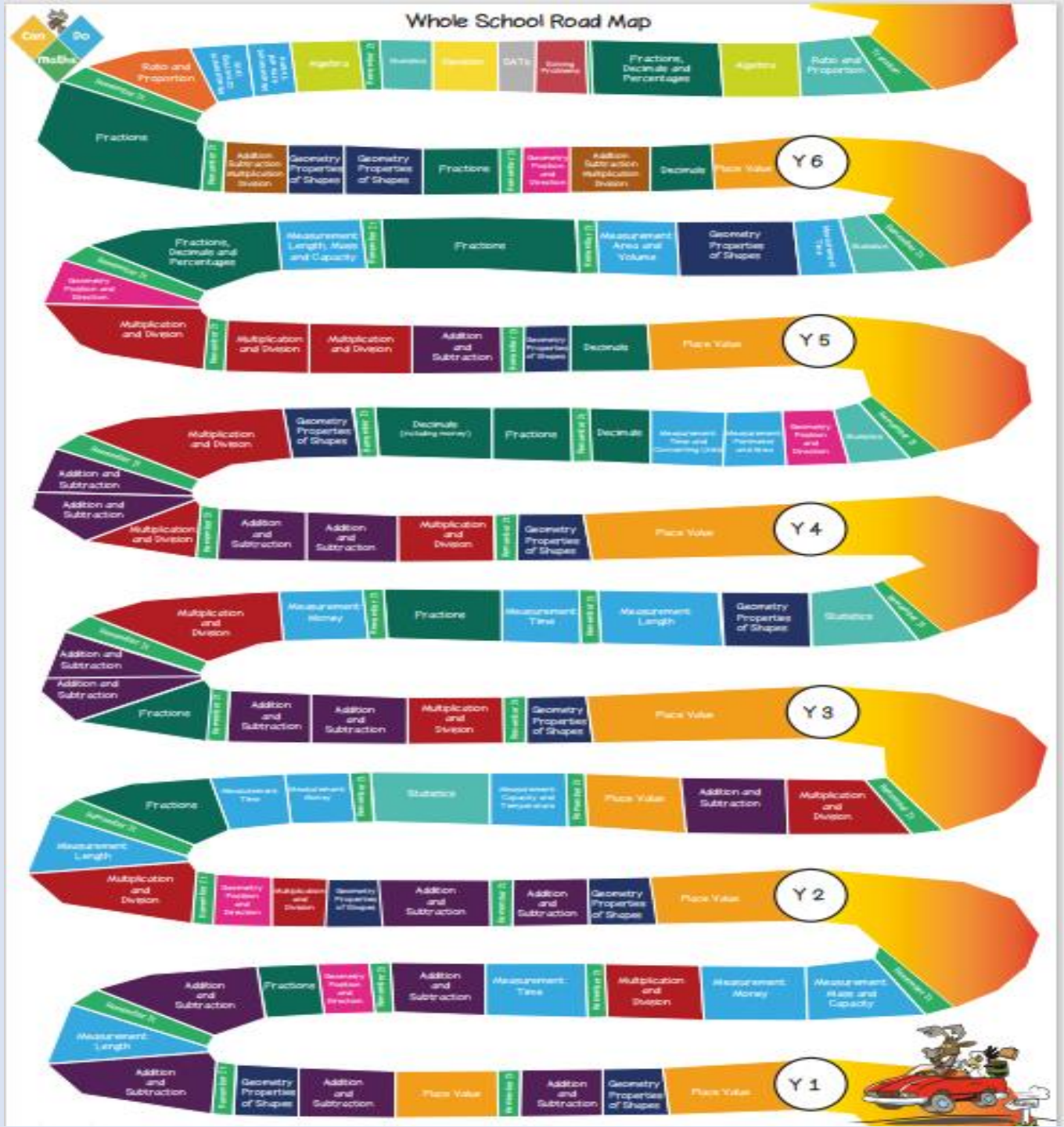
1	2	3	4	5	6
Represent & use number bonds and related subtraction facts within 20 **Add and subtract one-digit and two-digit numbers to 20, including zero**	Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 Recall and use x and ÷ facts for the 2, 5 and 10 x tables, including recognising odd and even numbers.	Recall and use x and ÷ facts for the 3, 4 and 8 times tables.	Recall x and ÷ facts for x tables up to 12 x 12.	Recall prime numbers up to 19 Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers Recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})	Recall x and ÷ facts for x tables up to 12 x 12 and use to find other related facts

Grangers dream big and fly high!



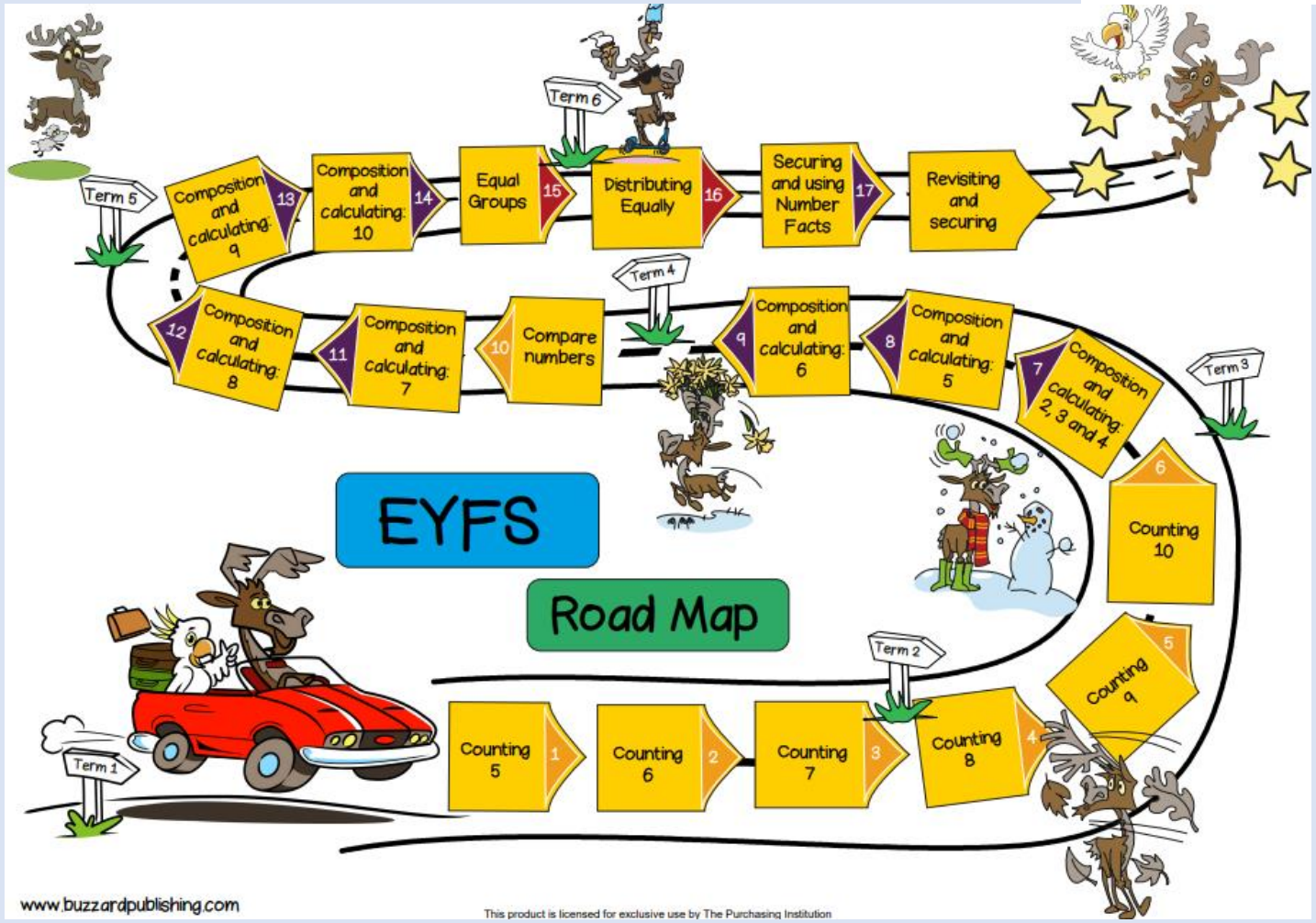
Grangers dream big and fly high!

Granger Can Do Maths Curriculum Map



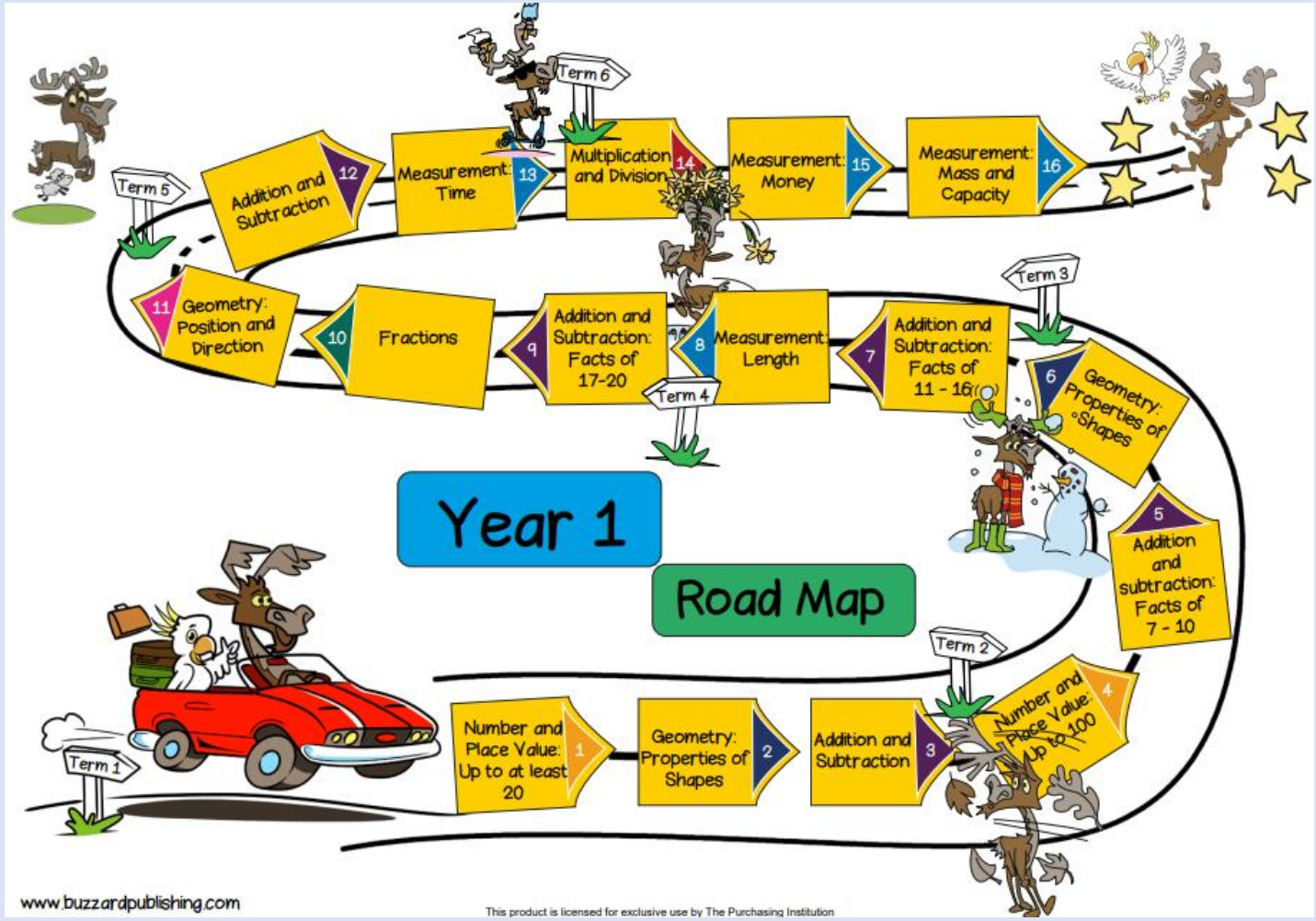
Grangers dream big and fly high!

EYFS



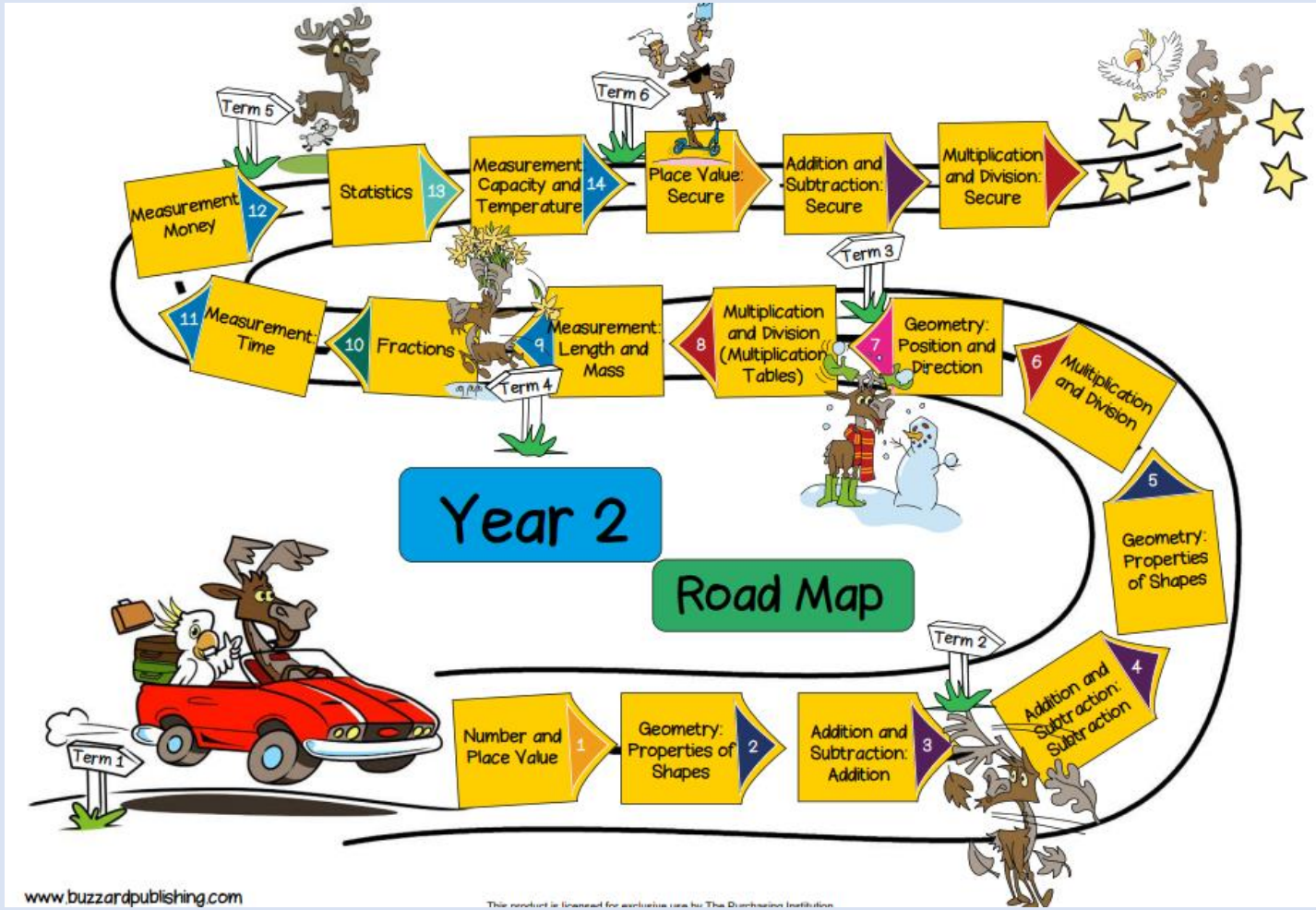
Grangers dream big and fly high!

Year 1



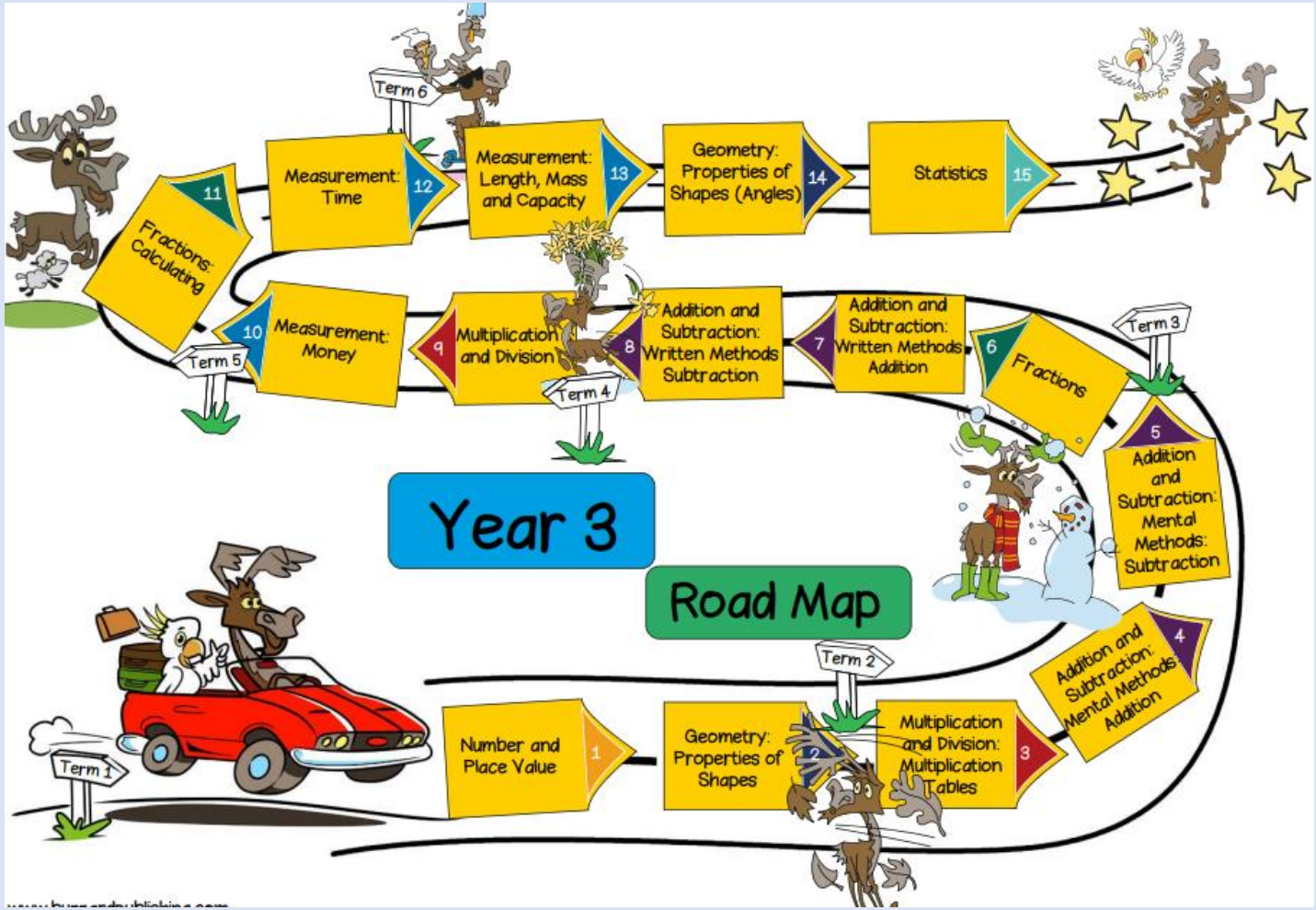
Grangers dream big and fly high!

Year 2



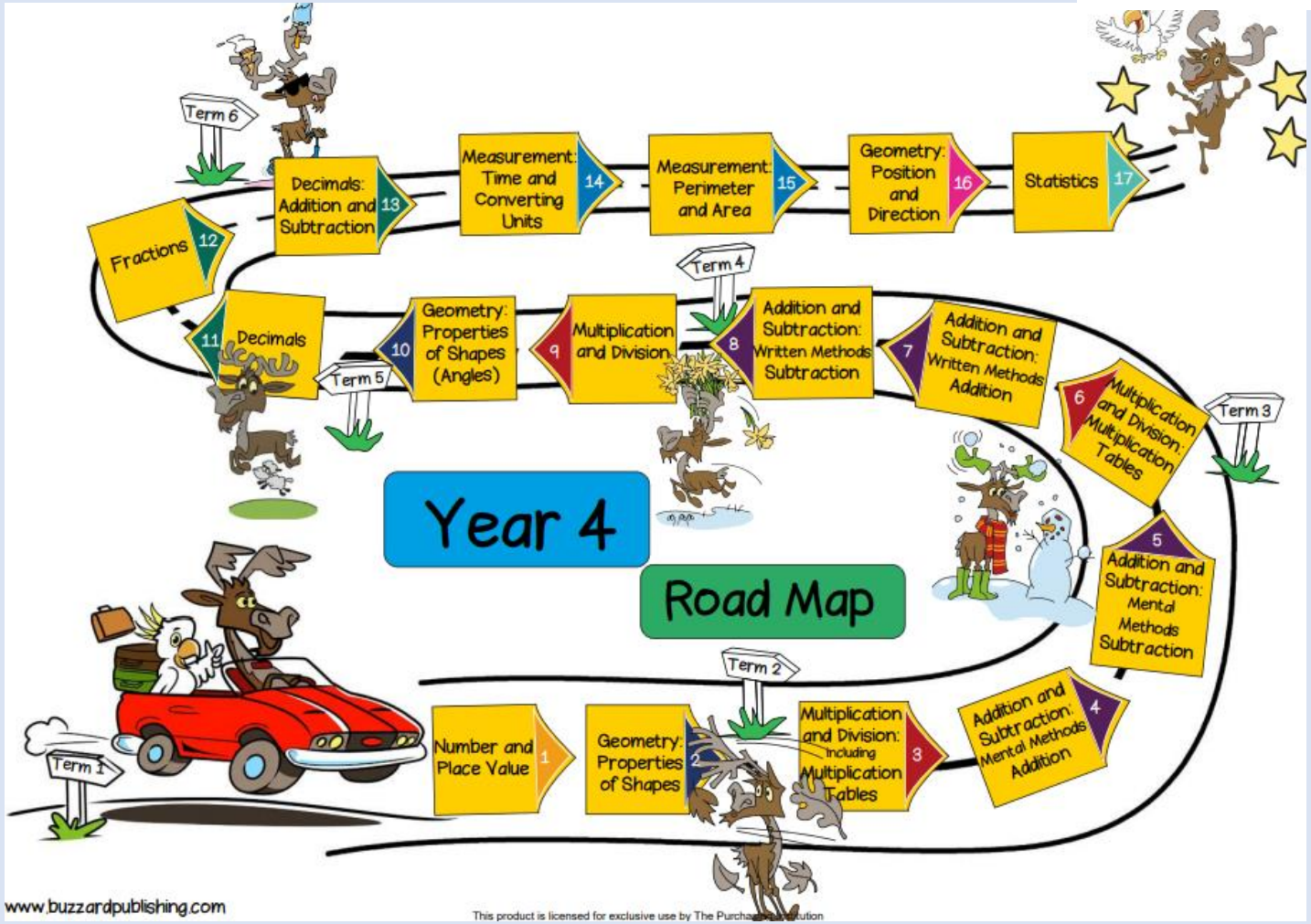
Grangers dream big and fly high!

Year 3



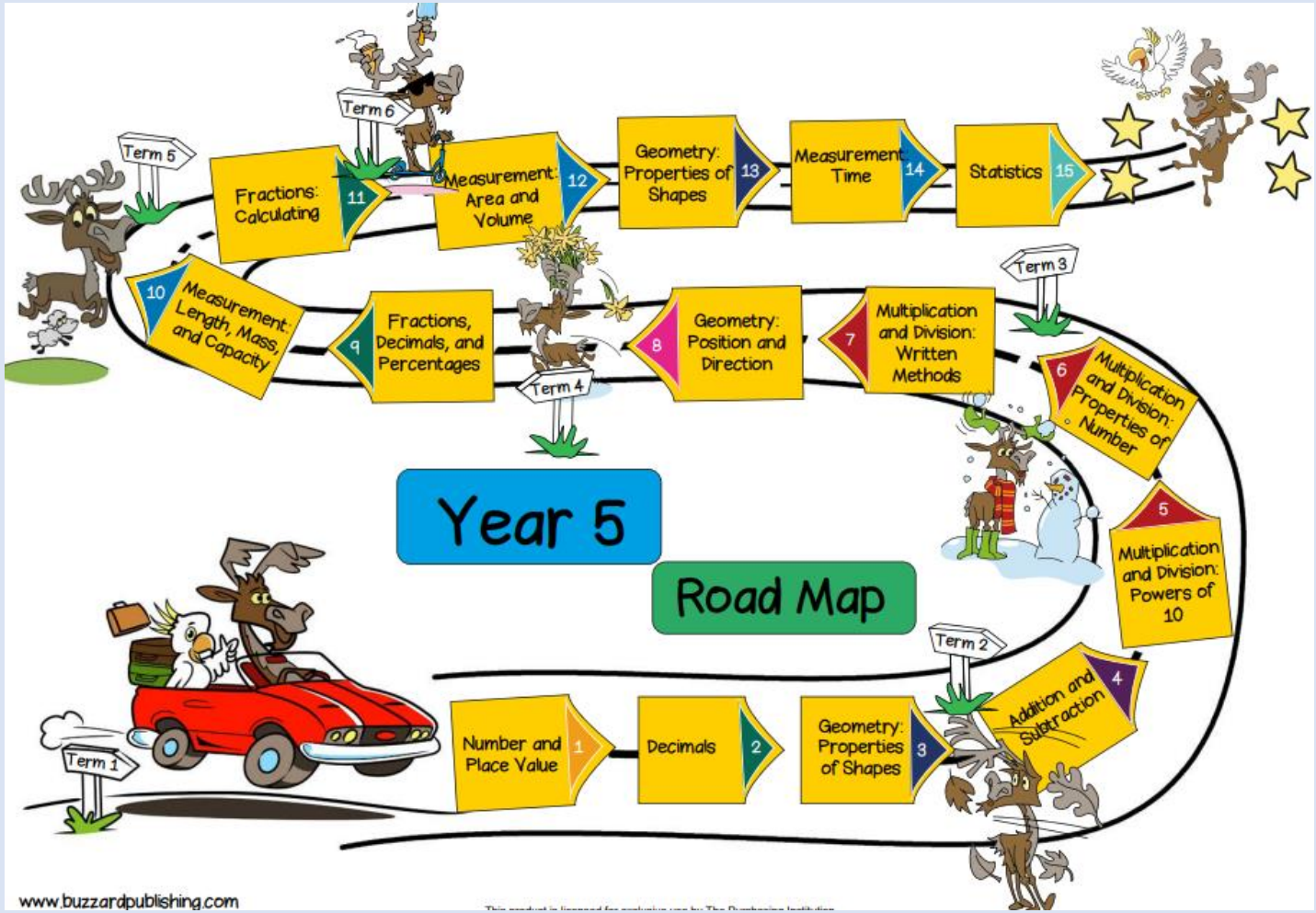
Grangers dream big and fly high!

Year 4



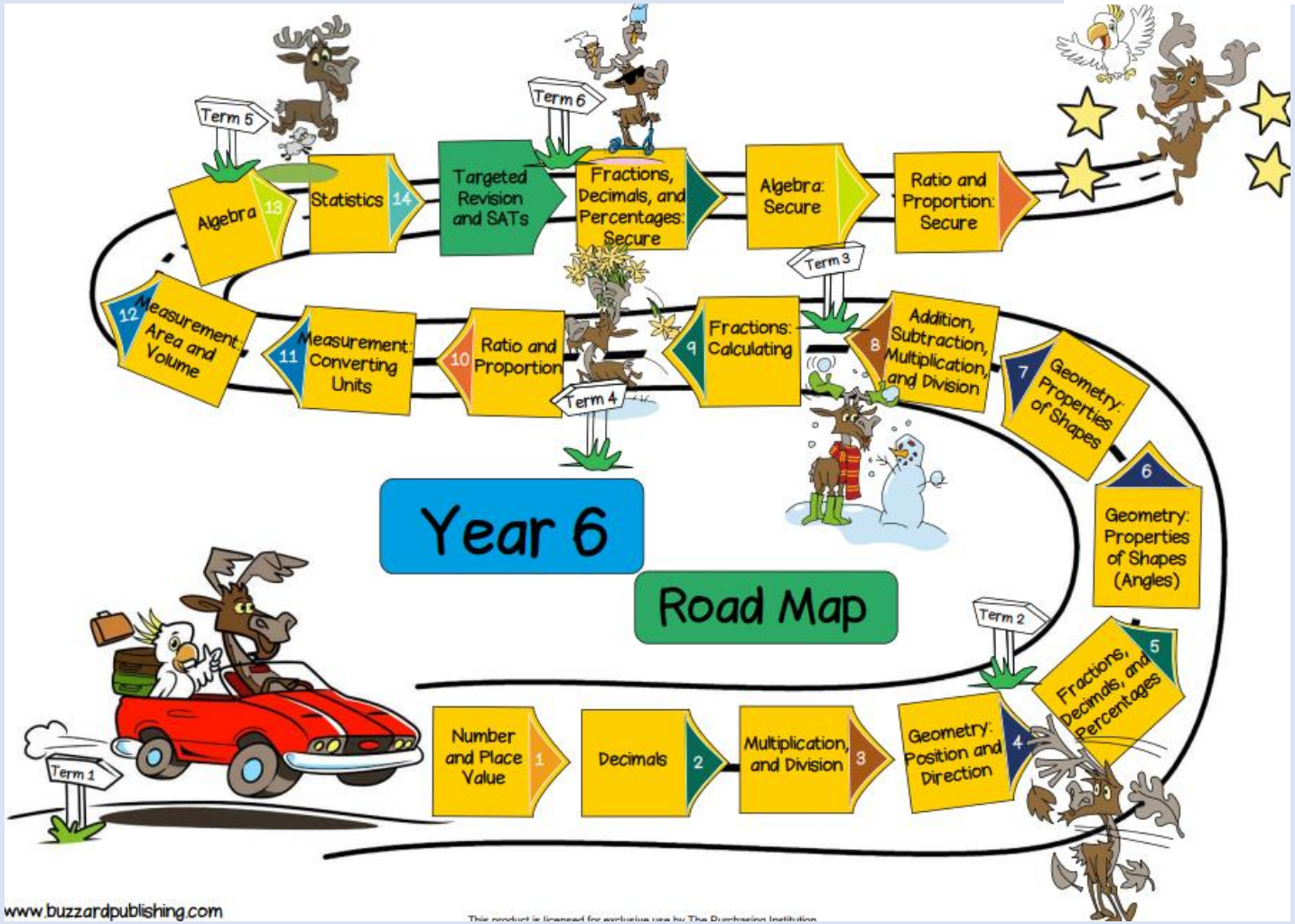
Grangers dream big and fly high!

Year 5



Grangers dream big and fly high!

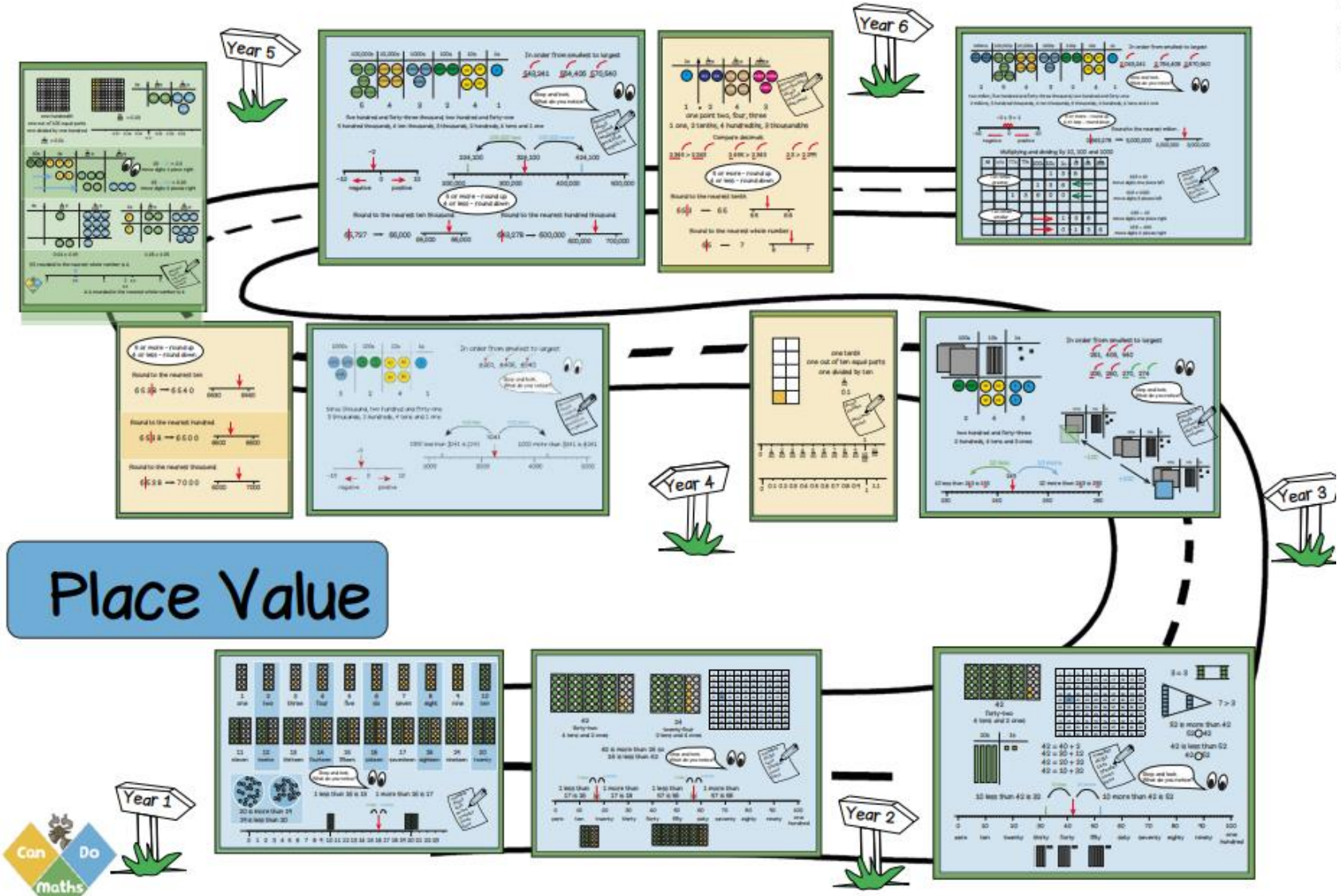
Year 6



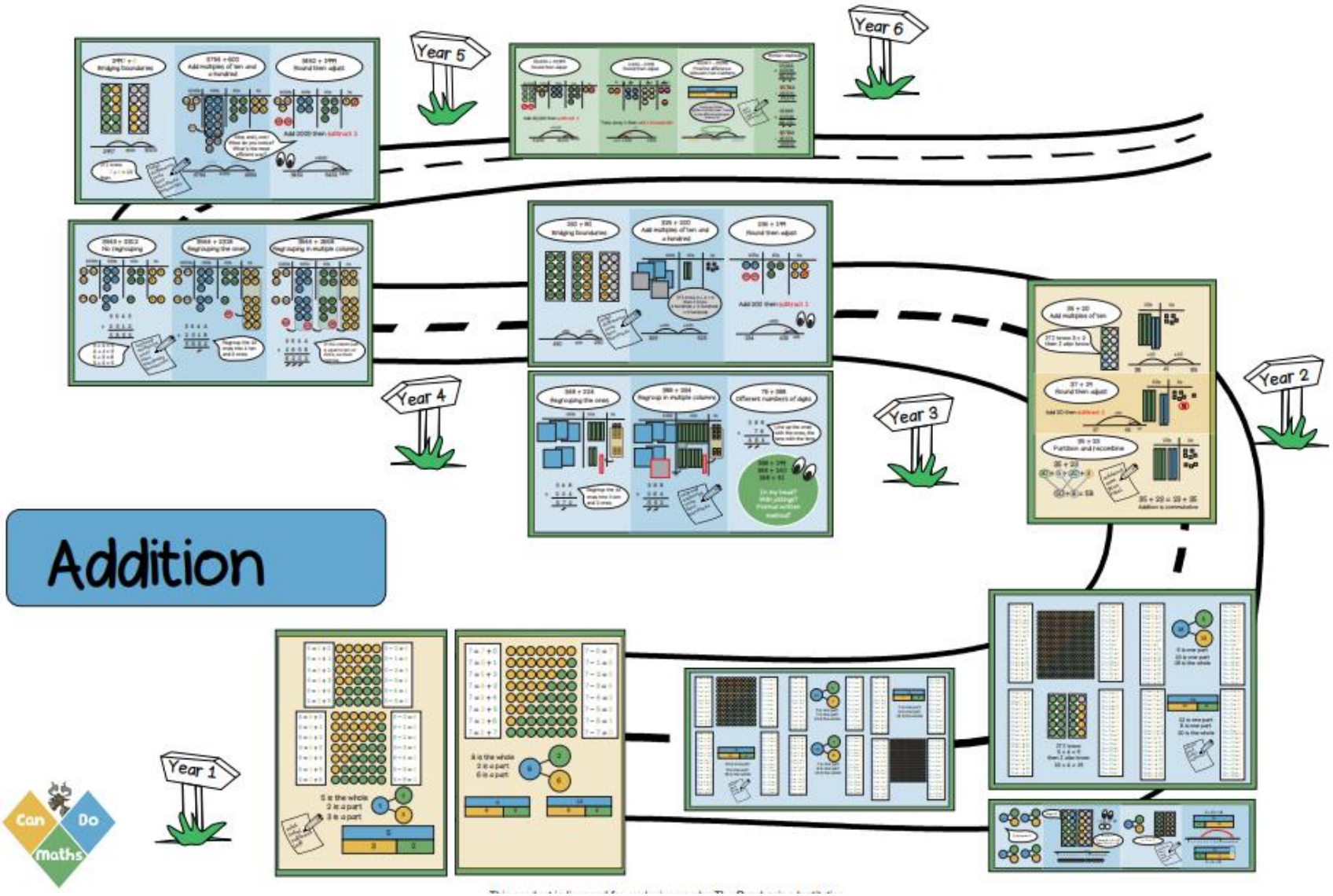
Grangers dream big and fly high!

How our Granger's skill progresses. The next few pages show how key skills in each maths subject build year by year, from year 1 to year 6, following the strands of the National curriculum. These progression organisers help to see the journey each Granger is on, what they are learning now, and how it prepares them for future success.

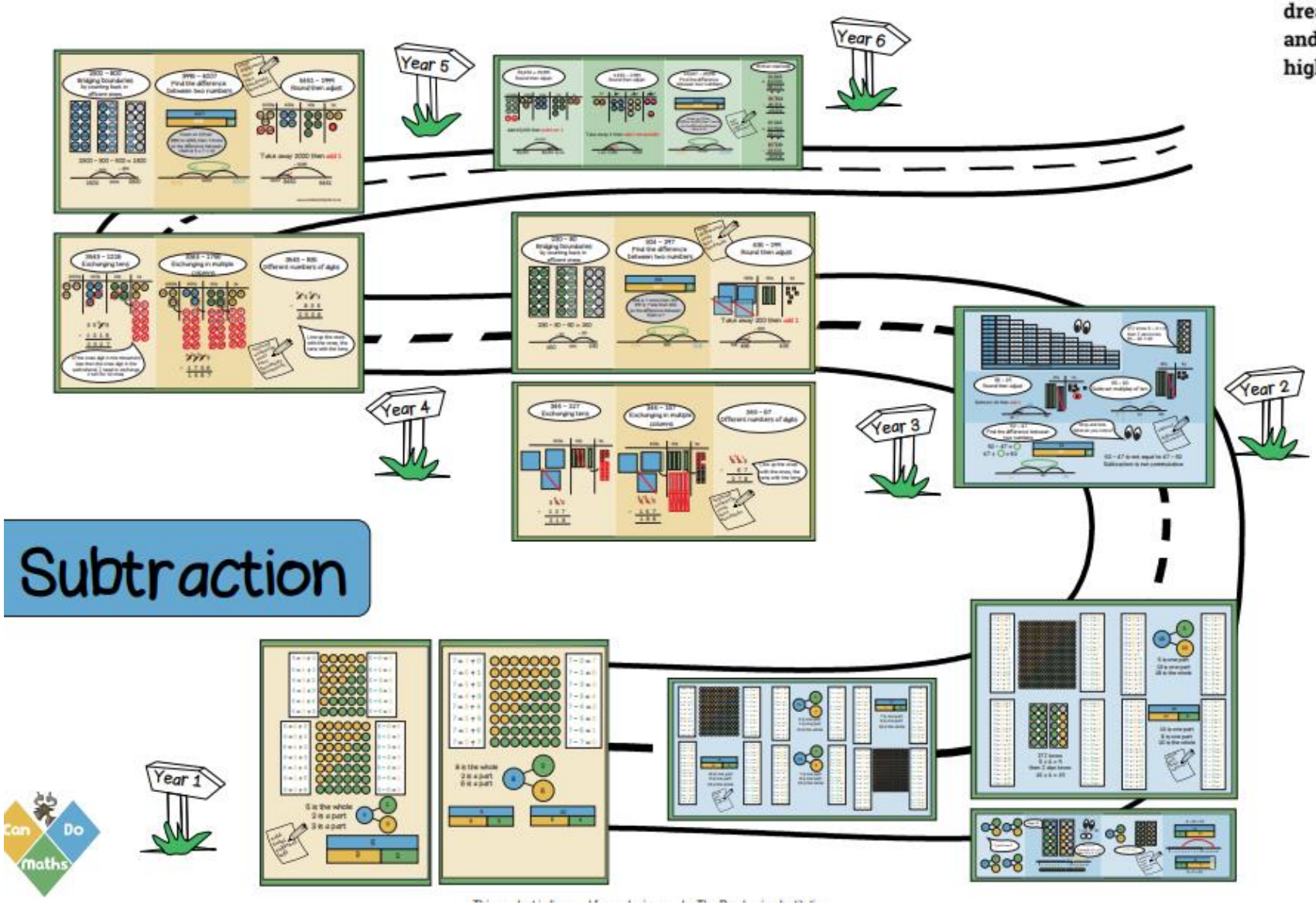
Grangers dream big and fly high!



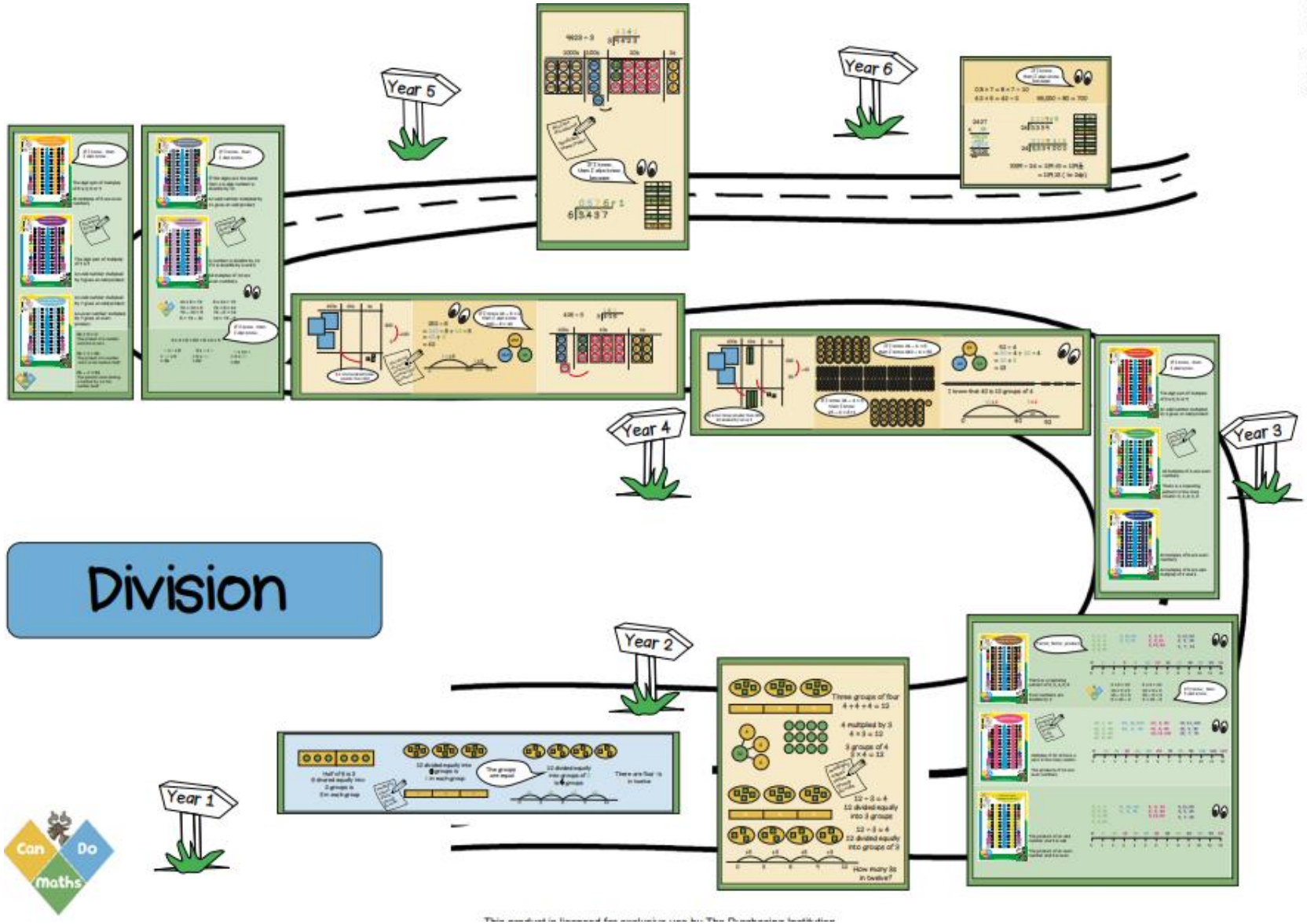
Grangers dream big and fly high!



Grangers dream big and fly high!

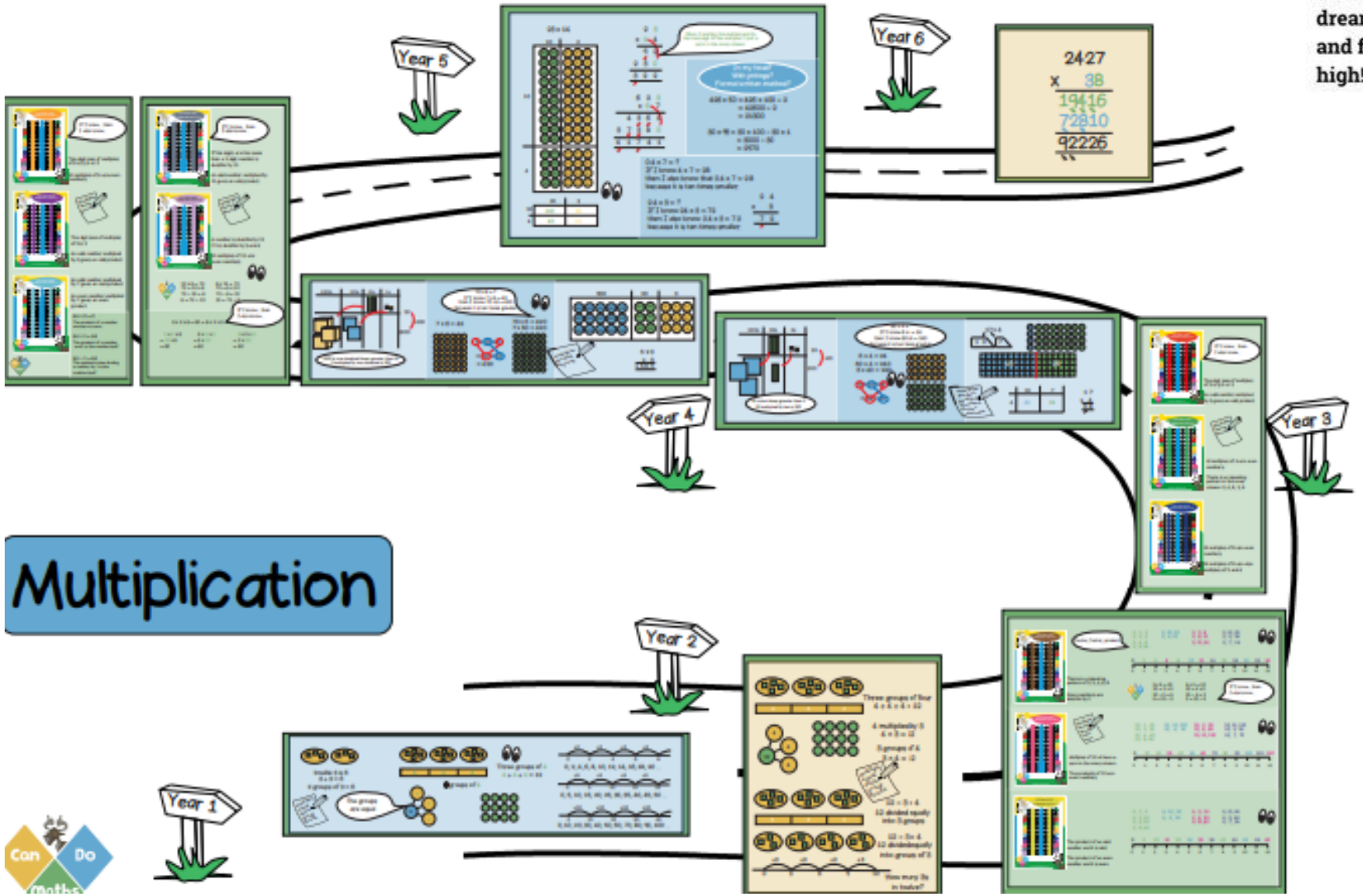


Grangers dream big and fly high!

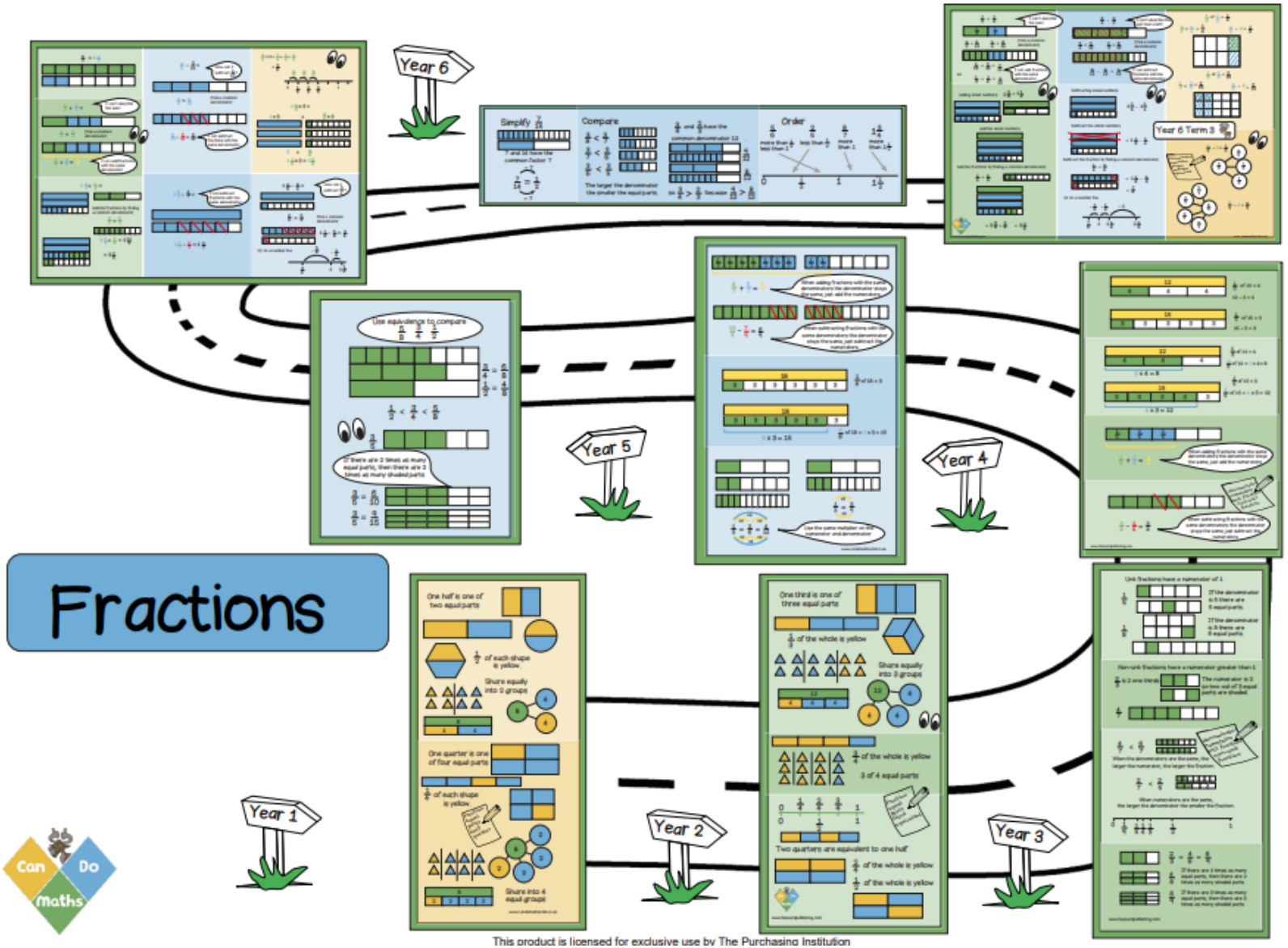


This product is licensed for exclusive use by The Dunbarnian Institution

Grangers dream big and fly high!

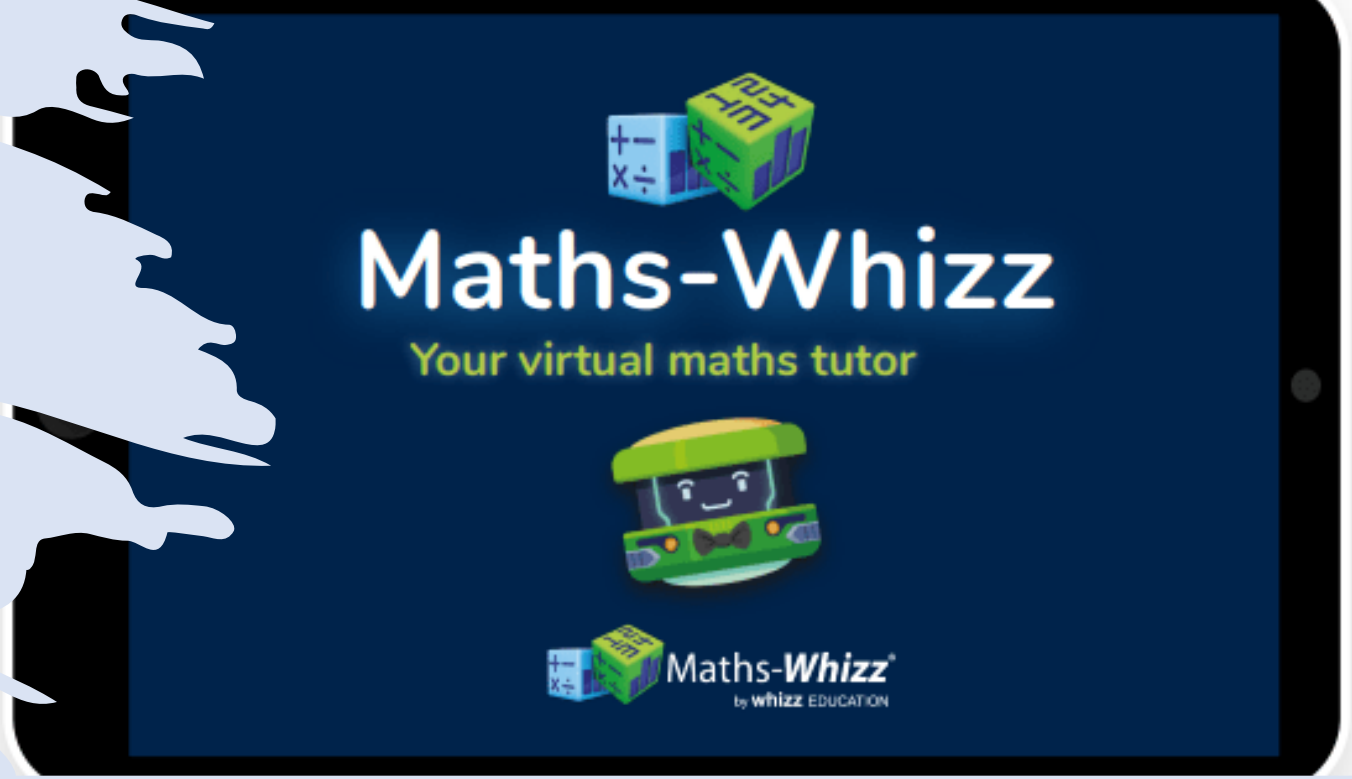


Grangers dream big and fly high!



This product is licensed for exclusive use by The Purchasing Institution

Grangers use technology to enhance their maths learning







Grangers in action!

Grangers dream big and fly high!





