

RISING STARS
ASSESSMENT

Progression
Frameworks

FOR
MATHEMATICS
YEAR 6

Developed in Association with



CORNWALL
LEARNING

Introduction

The Progression Framework for mathematics is organised by domain in the Programme of Study.

The content of each domain is further broken down into strands. These are:

- Number (which is split into the following three sub-domains):
 - ◆ Number and place value
 - ◆ Calculations and fractions
 - ◆ Decimals and percentages

- Measurement
- Geometry – shape and position
- Statistics
- Ratio and proportion (Year 6 only)
- Algebra (Year 6 only).

See the separate document 'About the Progression Framework for mathematics' for more detailed information.

Rising Stars Progression Framework for mathematics, Year 6

Domain: Number						
Strand	Sub-strand	Progression statement	NAHT key performance indicator (Y/N)	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)
1) Number and place value	a) Count	6.1.a.1 Calculate intervals across zero (^)	Y	The pupil can work out the difference between -8 and zero.	The pupil can work out the difference between 4 and -5 .	The pupil can work out the connection between finding the difference between negative numbers and subtracting them.
		6.1.a.2 Consolidate counting forwards or backwards in steps of powers of 10 for any given number to $1\ 000\ 000$ (+)	N	The pupil can count backwards from $374,920$ in steps of $10,000$.	The pupil can count backwards from $902,401$ in steps of $100,000$, $10,000$, 1000 , 100 and 10 .	The pupil can reduce any number to zero by subtracting the appropriate number of each of the appropriate powers of 10 .
		6.1.a.3 Consolidate counting in multiples of 2 , through to 10 , 25 and 50 (+)	N	The pupil can count up in $6s$, $9s$ and $12s$ using their knowledge of counting up in $3s$, and in $12s$ using their knowledge of counting up in $4s$ and $6s$.	The pupil can decide whether a number is a multiple of any number by counting up in multiples of that number, developing more efficient strategies than enumerating every multiple.	The pupil can identify whether numbers are in more than one of the sequences with which they are familiar, developing efficient strategies for deciding.
	b) Represent numbers	6.1.b.1 Read and write numbers to $10\ 000\ 000$ and determine the value of digits (^)	N	The pupil can read and write numbers to ten million that are multiples of 100 .	The pupil can form a number with up to seven digit cards and write it in words.	The pupil can relate megabytes, gigabytes and terabytes and express each in terms of the others.

Rising Stars Progression Framework for mathematics, Year 6

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1) Number and place value	b) Represent numbers	6.1.b.2 Consolidate reading Roman numerals to 1000 (M) and recognising years written in Roman numerals (+)	N	The pupil can write the numbers from 1 to 20 using Roman numerals, and write the year 2100 using Roman numerals.	The pupil can write the date using Roman numerals and identify the year a film was made.	The pupil can explain why calculation with large numbers is difficult with Roman numerals and how our place value system is better for doing so.
		6.1.b.3 Use negative numbers in context (^)	Y	The pupil can answer questions such as 'How much colder is -5°C than 10°C ?'	The pupil can answer questions such as 'How much warmer is -2°C than -10°C ?'	The pupil can solve problems such as ordering the changes in temperature between day and night on the planets in the solar system.
	c) Order and compare	6.1.c.1 Order and compare numbers up to 10 000 000 (^)	N	The pupil can choose the smaller number out of 800,000 and 8,000,000.	The pupil can place the correct sign (=, < and >) in statements such as between 8,282,828 and 28,282,828.	The pupil can solve problems involving ordering the distances in light years to stars and galaxies.
	d) Solve number problems	6.1.d.1 Solve number problems and practical problems with number and place value from the Year 6 curriculum (*)	N	The pupil can solve problems such as 'The temperature is zero at 10 a.m. It drops to -4°C by 5 p.m. How much has it dropped?'	The pupil can solve problems such as 'The temperature at sunrise is -5°C and rises to 8°C by midday. How much has it risen?'	The pupil can solve problems such as 'What is 10,000 less than 236.7?'
	e) Round numbers	6.1.e.1 Round whole numbers to 10 000 000 to a required degree of accuracy (*)	Y	The pupil can round 68 to the nearest 20.	The pupil can round 8,438 to the nearest 50.	The pupil can identify a number over 1000 that rounds to the same number when rounded to the nearest 20 and nearest 50.

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2) Calculation	a) Understand calculation	6.2.a.1 Use knowledge of the order of operations (^)	N	The pupil can correctly calculate $7 + 2 \times 3$ as 13.	The pupil can correctly calculate $3 - 5 \times 8 + 1$ as -36 , and $3 \times (5 + 7)$ as 36.	The pupil can correctly calculate any expression involving brackets and a mixture of the four operations. They solve problems such as 'Insert signs to make the calculation correct: $(3 \ ? \ 7) \ ? \ 6 = 100 \ ? \ 5 \ ? \ 17$ '.
		6.2.a.2 Consolidate their understanding of the equals sign as representing equivalence between two expressions (+)	N	The pupil can interpret instances of the equals sign such as $4 + 8 \times 2 = 10 + 10$.	The pupil can deal with a variety of instances of the equals sign including $30 - ? = 12 + 3 \times 5$.	The pupil can solve problems such as $3 + 5 \times ? = 5 \times 10 - 3 \times 4$.
		6.2.a.3 Consolidate understanding of the structure of numbers (+)	N	The pupil can apply their understanding of multiples to learning the multiplication table facts.	The pupil can apply their understanding of factors to simplifying fractions, for example.	The pupil can apply their understanding of factors and primes to a variety of problems.
		6.2.a.4 Consolidate knowledge of types of number (+)	N	The pupil can identify factors and multiples of familiar numbers.	The pupil can identify factors and multiples of numbers up to 50 and prime numbers up to 20.	The pupil can identify factors and multiples of many numbers and prime numbers beyond 20.

Rising Stars Progression Framework for mathematics, Year 6

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2) Calculation	b) Calculate mentally	6.2.b.1 Perform mental calculations, including with mixed operations and large numbers	N	The pupil can work out $10 \times 6 - 3 \times 4$ mentally.	The pupil can work out $12 \times 70 + 3 \times 20$ mentally.	The pupil can solve problems such as 'Using the numbers 6, 3, 5, 9, 25 and 100 once each, use any of the four operations to make the target number of 673'.
		6.2.b.2 Consolidate knowledge of addition facts and the related subtraction facts, deriving further related facts as required (+)	N	The pupil can write several calculations derived from $105 + 60 = 165$.	The pupil can write a variety of calculations derived from $105 + 632 = 737$.	The pupil can write a variety of calculations derived from $105 + 632 = 737$ and generalise to describe further calculations.
		6.2.b.3 Identify common factors, common multiples and prime numbers greater than 100 (*)	N	The pupil can decide, given 30 and 45, what their common factors and multiples are, with prompts. The pupil can identify prime numbers below 30. They do this using recall, mental calculation and jottings.	The pupil can decide, given 35 and 80, what their common factors and multiples are. The pupil can decide whether 133 is a prime number. They do this using recall, mental calculation and jottings.	The pupil can identify, given 35 and 80, the highest common factor and the least common multiple without listing all of the common factors and common multiples. They do this using recall, mental calculation and jottings.
		6.2.b.4 Consolidate multiplying and dividing whole numbers and decimals by 10, 100 and 1000 (+)	N	The pupil can work out $2.1 \times 10 = 21$ and $56 \div 10 = 5.6$, applying this in the context of measurement.	The pupil can work out $2.3 \times 1000 = 2300$ and $98 \div 1000 = 0.098$, applying this in the context of metric measures.	The pupil can calculate $0.012 \times 600 = 7.2$, applying this in a variety of contexts including measures.

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2) Calculation	c) Solve calculation problems	6.2.c.1 Solve multi-step addition and subtraction problems in less familiar contexts, deciding which operations and methods to use and why (*)	Y	The pupil can solve problems such as 'I buy a shirt for \$15 and a pair of jeans for \$26 and 50 cents. How much change do I get from \$50?'	The pupil can solve problems such as 'Jim puts down a deposit of £25 when he hires a rotavator. He pays £12 for the first day and £8.50 for subsequent days. He damages the rotavator on a large stone and loses £12 of his deposit. He hires the rotavator for two days, what does he pay?'	The pupil can devise a toolkit for solving multi-step addition and subtraction problems and show how it works on a variety of problems.
		6.2.c.2 Consolidate solving problems using more than one of the four operations (+)	N	The pupil can solve problems such as 'Jack buys a bottle of water at £1.20 and a banana at 20p and pays with a £5 note. What change does he get?'	The pupil can solve problems such as 'Jack buys seven bottles of water and a pizza for £3.50 and gets 20p change when he pays with a £10 note. How much is each bottle of water?'	The pupil can make up problems involving several steps and prompting different calculation strategies such as 'Use the numbers 5, 4, 6, 7, 25 and 75 once each and any combination of the four operations to make the number 612'.
		6.2.c.3 Solve multi-step calculation problems involving combinations of all four operations (+)	N	The pupil can solve problems such as 'Zoe has £5. She buys three pints of milk at 59p each. She wants to buy some tins of soup which cost 85p each. How many can she afford?', using a strategy which avoids division for example.	The pupil can solve problems such as 'A fence is 2.4 m long. It consists of three panels and the posts are 12 cm wide. How wide is each panel?'	The pupil can solve problems such as 'Use some or all of the numbers 1, 2, 3 and 4, no more than once each, and any combination of the four operations to make as many as possible of the numbers 1 to 50'.
		6.2.c.4 Consolidate solving calculation problems involving scaling by simple fractions and simple rates (+)	N	The pupil can solve problems such as 'One packet of biscuits weighs 200 g. How much does 1/4 of a packet weigh?'	The pupil can solve problems such as 'One packet of biscuits weighs 200 g. How much does 4/5 of a packet weigh?'	The pupil can make up problems such as 'One packet of biscuits weighs 200 g. How much does 3/8 of a packet weigh?'

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2) Calculation	d) Recall	6.2.d.1 Consolidate knowledge of multiples and factors, including all factor pairs of a number, and common factors of two numbers (+)	N	The pupil can list the factors of numbers below 20 and arrange them in pairs that multiply to give 24. The pupil can also list multiples of numbers in the multiplication tables.	The pupil can identify multiples or factors of a number from a set of numbers below 80 and list the factors of 50 as 1, 50; 2, 25; 5, 10. The pupil recognises that 8 is a common factor of 40 and 64.	The pupil can solve problems involving factors and multiples such as 'Numbers are co-prime if they have no factors in common. Find all of the numbers below 50 that are co-prime with 36. What do you notice? Can you explain this?'
		6.2.d.2 Consolidate recall of square numbers and cube numbers and the notation for them (+)	N	The pupil can list the first ten square numbers and interpret 8^2 as $8 \times 8 = 64$.	The pupil can identify whether a given number is a square number or cube number up to 200, interpret 6^2 as $6 \times 6 = 36$ and $2^3 = 2 \times 2 \times 2 = 8$.	The pupil can sort the numbers below 500 into a Venn diagram with two sets: square numbers and cube numbers. The pupil can also interpret 3^4 as $3 \times 3 \times 3 \times 3 = 81$ and extend the idea to higher powers.
		6.2.d.3 Consolidate recall of prime numbers up to 19 (+)	N	The pupil can identify the prime numbers below 12.	The pupil can correctly and promptly list the prime numbers up to 19.	The pupil can apply their knowledge of the prime numbers below 20 to quickly test numbers up to 400 to ascertain whether they are prime.
	e) Use written calculation	6.2.e.1 Consolidate adding and subtracting whole numbers with more than 4 digits, including using formal written columnar addition and subtraction (+)	N	The pupil can calculate $8238 + 3261$ and $8237 - 3265$ using formal columnar methods, with some prompting.	The pupil can calculate $187,234 + 321,465$ and $807,234 - 372,465$ using formal columnar methods.	The pupil can calculate $987,234 + 132,465$ and $867,234 - 352,465$ using formal columnar methods, describing why each step in the algorithm is used.

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2) Calculation	e) Use written calculation	6.2.e.2 Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication	Y	The pupil can calculate 417×15 using the formal method of long multiplication, with jottings to support the process.	The pupil can calculate 2187×34 using the formal method of long multiplication.	The pupil can calculate $267,914 \times 73$ using the formal method of long multiplication.
		6.2.e.3 Divide numbers up to 4 digits by a two-digit whole number using the formal methods of short or long division, and interpret remainders as appropriate for the context as whole numbers, fractions or by rounding (*)	Y	The pupil can calculate $364 \div 13$ using the formal method of long division, with supporting jottings for the layout.	The pupil can calculate $3612 \div 42$ using the formal method of long division.	The pupil can calculate $57,324 \div 68$ using the formal method of long division.

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2) Calculation	f) Check	6.2.f.1 Check answers to calculations with mixed operations and large numbers, choosing the most appropriate method, including estimation, and determining, in the context of a problem, an appropriate degree of accuracy (*)	Y	The pupil can choose an appropriate level of accuracy for the answer to a problem such as '£10 is shared equally between three people. How much do they get each?': $10 \div 3 = 3.333 \dots$ by rounding it to £3.33.	The pupil can check the answer to any calculation using an appropriate method, choosing to round it if appropriate, e.g. 'I buy 1.5 m of gold trimming for 14 decorations. How much do I need for each?': $1.5 \div 14 = 0.10714$ m, so the answer is rounded to 10 cm.	The pupil can check the answer to any calculation using an appropriate method, choosing to round it if appropriate, e.g. 'I buy 1.5 m of gold trimming for 14 decorations. How much do I need for each?': $1.5 \div 14 = 0.10714$ m, so the answer is rounded to 10 cm, justifying their choice of accuracy.
		6.2.f.2 Check answers to calculations with all four operations involving any numbers by rounding (*)	N	The pupil can check the answer to 8.9×1.9 by rounding and working out $9 \times 2 = 18$.	The pupil can check the answer to $8.9 \div 1.9 + 0.49$ by rounding and working out $9 \div 2 + 0.5 = 5$.	The pupil can check the answer to $8.9 \div 1.9 + 0.49 \times 3.4$ by rounding and working out $9 \div 2 + 0.5 \times 3 = 6$, deploying the correct order for the operations.

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3) Fractions, decimals and percentages	a) Understand FDP	6.3.a.1 Associate a fraction with division (^)	N	The pupil can recognise that $1/7$ can be interpreted as $1 \div 7$ and that $1 \div 5$ can be interpreted as one-fifth.	The pupil can recognise that three-fifths can also be interpreted as $3 \div 5$ and that $7 \div 5$ can be interpreted as seven-fifths or one and two-fifths.	The pupil can choose whether to interpret $3/7$ as three-sevenths or $3 \div 7$ depending on the context, justifying their choice.
		6.3.a.2 Consolidate understanding of equivalent fractions by extending to improper fractions (+)	N	The pupil can recognise that $3/2$ and $6/4$ are equivalent.	The pupil can recognise that $7/5$ and $14/10$ are equivalent.	The pupil can recognise that $1 \frac{2}{8}$ is equivalent to $1 \frac{1}{4}$.
		6.3.a.3 Identify the value of each digit in numbers given to three decimal places	N	The pupil can identify the 7 in 5.78 as meaning seven-tenths.	The pupil can identify the 7 in 9.587 as meaning seven-thousandths.	The pupil can identify the 7 in 6.578 as meaning seven-hundredths or 70-thousandths.
		6.3.a.4 Multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places (^)	N	The pupil can calculate $5 \times 10 = 50$ and $34 \times 100 = 3400$ and, with prompting, work out $7 \div 10 = 0.7$.	The pupil can calculate $23 \div 100 = 0.23$, and $306 \div 1000 = 0.306$.	The pupil can extend their understanding of multiplying and dividing whole numbers by 10, 100 and 1000 to calculating $5.8 \div 100 = 0.058$ and $4.402 \times 100 = 440.2$.
		6.3.a.5 Consolidate recognition of the per cent symbol and understanding that per cent relates to 'number of parts per hundred' (+)	N	The pupil can identify 20% as meaning 20 parts out of 100.	The pupil can relate their knowledge of hundredths to percentages. They know that 1%, one hundredth, 0.01 and $1/100$ all represent the same amount and that is one in every hundred.	The pupil can readily recognise percentages as hundredths and apply this to solving problems.

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3) Fractions, decimals and percentages	b) Convert FDP	6.3.b.1 Use common factors to simplify fractions (^)	N	The pupil can identify that the numerator and denominator of $\frac{4}{8}$ can both be halved and then do so. With prompting, the pupil can then repeat the process to obtain $\frac{1}{2}$.	The pupil can identify that four is a common factor for the numerator and denominator of $\frac{8}{12}$ and divide by it to get $\frac{2}{3}$.	The pupil can identify the common factors for the numerator and denominator of a fraction, realising that the highest common factor is needed to reach the simplest form in one step.
		6.3.b.2 Use common multiples to express fractions in the same denomination (^)	N	The pupil can express halves, quarters and eighths all as eighths.	The pupil can change $\frac{1}{3}$ to twelfths by multiplying both the numerator and denominator by four, and $\frac{3}{4}$ to twelfths by multiplying both the numerator and the denominator by three.	The pupil can express $\frac{2}{3}$ and $\frac{4}{5}$ as fifteenths, knowing that 15 is a common multiple of 3 and 5.
		6.3.b.3 Consolidate understanding of the relation between tenths, hundredths and thousandths and decimal notation (+)	N	The pupil can identify 0.2 as the decimal equivalent of $\frac{1}{5}$ by converting $\frac{1}{5}$ to $\frac{2}{10}$.	The pupil can identify 0.125 as the decimal equivalent of $\frac{1}{8}$ by deducing it from the decimal equivalent of $\frac{1}{4}$	The pupil can interpret any fraction with a power of 10 as its denominator in terms of decimal notation.
		6.3.b.4 Calculate decimal fraction equivalents for a simple fraction (^)	N	The pupil can calculate 0.2 as the decimal equivalent of $\frac{1}{5}$ by converting $\frac{1}{5}$ to $\frac{2}{10}$.	The pupil can calculate 0.125 as the decimal equivalent of $\frac{1}{8}$ by deducing it from the decimal equivalent of $\frac{1}{4}$ or use a calculator to do $1 \div 8$.	The pupil can convert any fraction to its decimal equivalent by dividing the numerator by the denominator, either using a calculator or long division.
		6.3.b.5 Consolidate understanding of the connection between fractions, decimals and percentages (+)	N	The pupil can use manipulatives to show that 25% and $\frac{1}{4}$ are equivalent.	The pupil can draw diagrams to show why 25%, $\frac{1}{4}$ and 0.25 are equivalent.	The pupil can explain why 20%, $\frac{1}{5}$ and 0.2 are equivalent.

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Strand	Sub-strand	Progression statement	NAHT key performance indicator (Y/N)	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)
3) Fractions, decimals and percentages	b) Convert FDP	6.3.b.6 Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts	Y	The pupil can recall the decimal and percentage equivalents of halves, quarters and tenths, with prompting.	The pupil can recall the decimal and percentage equivalents of halves, quarters, thirds, fifths and tenths in a variety of contexts.	The pupil can recall the decimal and percentage equivalents of halves, quarters, thirds, fifths and tenths in a variety of contexts, selecting the most appropriate form to use for that context and the numbers involved.
	c) Use FDP as numbers	6.3.c.1 Compare and order fractions, including fractions > 1	N	The pupil can select the larger fraction out of $\frac{2}{3}$ and $\frac{3}{4}$ using appropriate images.	The pupil can select the larger fraction out of $\frac{17}{20}$ and $\frac{5}{7}$.	The pupil can devise a general set of instructions for selecting the larger of two fractions.
		6.3.c.2 Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions	N	The pupil can calculate $\frac{1}{3} + \frac{1}{2}$ with supporting diagrams.	The pupil can calculate $\frac{3}{4} + \frac{2}{5} = 1\frac{3}{20}$.	The pupil can calculate $\frac{3}{4} + \frac{2}{5} - \frac{1}{6} = \frac{59}{60}$.
		6.3.c.3 Multiply simple pairs of proper fractions (^)	N	The pupil can calculate $\frac{1}{2} \times \frac{1}{3}$ using appropriate images and with prompts.	The pupil can calculate $\frac{1}{3} \times \frac{1}{4}$ using appropriate diagrams or images.	The pupil can show how to multiply $\frac{1}{3}$ and $\frac{1}{5}$ using an appropriate array.
		6.3.c.4 Divide proper fractions by whole numbers (^)	N	The pupil can calculate $\frac{1}{3} \div 2$ using an appropriate diagram and suitable prompts.	The pupil can calculate $\frac{1}{4} \div 5$ using a diagram.	The pupil can explain how to divide a fraction by a whole number and why it works.
		6.3.c.5 Round decimals to three decimal places or other approximations depending on the context (+)	N	The pupil can round an answer involving decimals of pounds to two decimal places as it is to the nearest penny.	The pupil can round 0.6666 ... to 0.667 when working with length and 0.67 when working with money.	The pupil can justify rounding to a particular number of decimal places by referring to the context.

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3) Fractions, decimals and percentages	c) Use FDP as numbers	6.3.c.6 Use written division methods in cases where the answer has up to two decimal places	Y	The pupil can calculate $17 \div 5$ using jottings and with appropriate prompts.	The pupil can calculate $317 \div 25$ using jottings or a more formal written method.	The pupil can apply the formal methods of short or long division to calculations which have answers of several decimal places.
		6.3.c.7 Multiply one-digit numbers with up to two decimal places by whole numbers	N	The pupil can calculate 2.6×12 using an appropriate written method including jottings.	The pupil can calculate 3.78×27 using an appropriate written method.	The pupil can apply the formal method of long multiplication or the grid method to work out 23.38×83 .
	d) Solve FDP problems	6.3.d.1 Multiply a quantity that represents a unit fraction to find the whole quantity (+)	N	The pupil can solve problems such as 'Half a packet of biscuits is ten biscuits. How many biscuits are in the whole packet?'	The pupil can solve problems such as 'One-quarter of a packet of biscuits is five biscuits. How many biscuits are in the whole packet?'	The pupil can solve problems such as 'A packet of biscuits plus a third of a packet of biscuits is 36 biscuits. How many biscuits are in one packet of biscuits?' (answer 27).
		6.3.d.2 Solve problems which require decimal answers to be rounded to specified degrees of accuracy	Y	The pupil can solve problems such as 'I have £5 to share between three people. How much do they get each?' (answer £1.66 with 2p to be given to charity!).	The pupil can solve problems such as 'I have £20 to share between 15 people. How much do they get each?' (answer £1.33 with 1p to be given to charity).	The pupil can make up problems involving fractions, decimals and percentages which require the answer to be rounded in some way.
		6.3.d.3 Solve problems with FDP from the Year 6 curriculum (+)	N	The pupil can solve problems such as 'Which is greater: $\frac{3}{4}$ of £15 or 20% of £50?'	The pupil can solve problems such as 'Place the following in ascending order of size: 65%, $\frac{2}{3}$, 0.6, $\frac{5}{7}$ '.	The pupil can make up problems involving fractions, decimals and percentages which involve at least three steps.

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Domain: Measurement					
Strand	Progression statement	NAHT key performance indicator (Y/N)	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)
1) Understand units of measure	6.1.1 Continue to develop understanding of how analogue and digital clocks tell the time (+)	N	The pupil can work out time intervals by looking at an analogue clock.	The pupil can work out time intervals from both an analogue and digital clock.	The pupil can work out time intervals by selecting the most appropriate method from the alternatives available.
	6.1.2 Consolidate understanding of converting between units of time (+)	N	The pupil can write 15 minutes as one-quarter of an hour.	The pupil can convert from smaller to larger units of time such as minutes to hours.	The pupil can convert between units of time in order to solve problems.
	6.1.3 Consolidate fluency in using money expressed in £ and p (+)	N	The pupil can write an amount in pence as £, using decimal notation.	The pupil can apply their skills in converting between p and £ in context.	The pupil can explain why £ and p are an example of numbers with two decimal places.
	6.1.4 Use, read and write standard units with up to three decimal places, including converting from smaller to larger units and vice versa (*)	Y	The pupil can solve problems using measures expressed using decimals with one decimal place, with prompting.	The pupil can solve problems using measures expressed using decimals with up to three decimal places.	The pupil can solve problems using measures expressed using decimals with any number of decimal places.
	6.1.5 Convert between miles and kilometres and use a conversion graph (^)	N	The pupil can use the relationship that 5 miles = 8 km to convert multiples of 5 miles to km and multiples of 8 km to miles and use a conversion graph to change inches to centimetres for example, with prompting.	The pupil can use the relationship that 5 miles = 8 km to convert between miles and km and use a conversion graph to change inches to centimetres for example.	The pupil can change the relationship 5 miles = 8 km to a single multiplier to convert between miles and km and devise a conversion graph, with a formula expressed in words or algebra, and a ready reckoner to convert inches to centimetres.
	6.1.6 Recognise that shapes with the same areas can have different perimeters and vice versa	N	The pupil can work out the perimeter of a rectilinear figure and consider, with prompting, the effect of changing the area.	The pupil can work out the perimeter for different pentominoes (made with five squares joined full edge to full edge) and then explore what other 'ominoes could also have those perimeters.	The pupil can work out what changes to a rectilinear shape will alter the area but not the perimeter, and which will alter the perimeter but not the area.

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2) Make measurements	6.2.1 Consolidate fluency in working with time (+)	N	The pupil can tell whether they have enough time to perform short tasks.	The pupil can calculate time intervals in order to plan ahead.	The pupil can work out time in a diverse range of situations.
	6.2.2 Consolidate fluency in recording the time (+)	N	The pupil can write down the time in a variety of ways, with prompting.	The pupil can write down the time in a variety of ways.	The pupil can write down the time in a wide variety of ways.
	6.2.3 Continue to measure and compare using different standard units of measure (+)	N	The pupil can interpret simple scales on measuring instruments.	The pupil can interpret scales on a range of measuring instruments.	The pupil confidently reads scales on a wide variety of measuring instruments.
	6.2.4 Consolidate skills in identifying and measuring perimeter (+)	N	The pupil can identify which lengths make up the perimeter of a shape.	The pupil can measure perimeter reliably.	The pupil can identify, estimate and measure the perimeter of shapes.
	6.2.5 Estimate volume of cubes and cuboids (^)	N	The pupil can estimate the size of a cubic metre using their knowledge of the length of a metre.	The pupil can estimate the volume of a cuboid by comparing it with a known volume such as a cubic metre.	The pupil can estimate the volume of a cuboid by comparing it with a known volume such as a cubic metre and use this to estimate its weight.

Rising Stars Progression Framework for mathematics, Year 6

Domain: Measurement					
Strand	Progression statement	NAHT key performance indicator (Y/N)	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)
3) Solve measurement problems	6.3.1 Consolidate skills in solving problems converting between units of time (+)	N	The pupil can solve problems such as 'How many days have you been alive?'	The pupil can solve problems such as 'How many hours have you been alive?'	The pupil can solve problems such as 'How many seconds have you been alive?'
	6.3.2 Add and subtract positive and negative measurements such as temperature (+)	N	The pupil can work out the difference in temperature between -4°C and -1°C .	The pupil can work out the difference in temperature between -4°C and 11°C .	The pupil can work out the largest difference in temperature between day and night for the planets of the solar system.
	6.3.3 Continue to solve problems involving money using the four operations (+)	N	The pupil can solve problems such as 'Which is the better buy: ten packs costing £12 or six packs costing £6.99?'	The pupil can solve problems such as 'Which is the better buy: 500 ml at £3.99 or 200 ml at £1.75?'	The pupil can solve a wide variety of best buy problems.
	6.3.4 Solve measurement problems with decimal notation up to three decimal places and approximate equivalences between metric and imperial measurements (*)	N	The pupil can solve problems such as 'One litre is approximately one pint. How many pints is four litres?'	The pupil can solve problems such as 'I buy 2 m of wood. I cut off eight 9 inch lengths for some shelving. How much is left in centimetres?'	The pupil can solve problems such as 'I buy 20 pounds of potatoes. How much is that in kilograms?'

Rising Stars Progression Framework for mathematics, Year 6

Domain: Measurement					
Strand	Progression statement	NAHT key performance indicator (Y/N)	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)
3) Solve measurement problems	6.3.5 Consolidate skills in calculating perimeter (+)	N	The pupil can use the formula for the area of a triangle to work out the area of a given triangle, with support, and solve problems such as 'A cube measures 2 cm by 2 cm by 2 cm. How many fit inside a cube with internal measurements of 6 cm by 6 cm by 6 cm?' with support. They recognise that using a formula to calculate the area of a rectangle is more efficient.	The pupil can calculate the perimeter of rectilinear shapes and other shapes given the dimensions.	The pupil can explain how to calculate the perimeter for a variety of shapes.
	6.3.6 Calculate the area of parallelograms and triangles	N	The pupil can use the formula for the area of a triangle to work out the area of a given triangle, with prompting.	The pupil can use the formula for the area of a triangle to work out the area of a given triangle.	The pupil can explain how the formulae for the area of triangles and parallelograms relate to more informal methods.
	6.3.7 Recognise when it is possible to use formulae for area and volume of shapes	N	The pupil can recognise that using a formula to calculate the area of a rectangle is more efficient.	The pupil can use the appropriate formula to calculate area and volume for rectilinear shapes.	The pupil can apply their knowledge of formulae to calculate the surface area and volume of a cuboid.
	6.3.8 Calculate and compare volume of cubes and cuboids using standard units (+)	N	The pupil can solve problems such as 'A cube measures 2 cm by 2 cm by 2 cm. How many fit inside a cube with internal measurements of 6 cm by 6 cm by 6 cm?' with prompting.	The pupil can solve problems such as 'A cuboid measures 4 cm by 10 cm by 3 cm. How many cubic centimetres is its volume?'	The pupil can work out how many cubic centimetres there are in one cubic metre. They calculate the volume of a cuboid.

Rising Stars Progression Framework for mathematics, Year 6

Domain: Geometry					
Strand	Progression statement	NAHT key performance indicator (Y/N)	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)
1) Make and visualise shapes	6.1.1 Draw 2-D shapes accurately using given dimensions and angles (*)	N	The pupil can draw a rectangle from written instructions such as AB = 8 cm, BC = 9 cm, CD = 8 cm and AD = 9 cm.	The pupil can draw a triangle from written instructions such as AB = 8 cm, BC = 9 cm and $\angle ABC = 56^\circ$.	The pupil can draw a triangle from written instructions such as AB = 8 cm, BC = 9 cm and $\angle BCA = 56^\circ$, realising that there are two different triangles that could be drawn.
	6.1.2 Use conventional markings and labels for lines and angles (+)	N	The pupil can label a rectangle from written instructions such as AB = 8 cm, BC = 9 cm, CD = 8 cm and AD = 9 cm.	The pupil can label a triangle from written instructions such as AB = 8 cm, BC = 9 cm and $\angle ABC = 56^\circ$.	The pupil can label a triangle from written instructions such as AB = 8 cm, BC = 9 cm and $\angle BCA = 56^\circ$, realising that there are two different triangles that satisfy these conditions.
	6.1.3 Build simple 3-D shapes, including making nets	N	The pupil can construct the net for a cuboid and make it.	The pupil can construct the net for a tetrahedron and make it.	The pupil can construct the net for an octahedron and make it.
2) Classify shapes	6.2.1 Compare and classify geometric shapes based on increasingly complex geometric properties and sizes	Y	The pupil can sort a set of geometric shapes into a Carroll diagram for a variety of different criteria such as 'equal diagonals', 'pairs of parallel lines' and line symmetry, with prompting.	The pupil can sort a set of geometric shapes into a Carroll diagram for a variety of different criteria such as 'equal diagonals', 'pairs of parallel lines' and line symmetry.	The pupil can sort a set of geometric shapes into a Carroll diagram for a variety of different criteria such as 'equal diagonals', 'pairs of parallel lines' and line symmetry and devise shapes to go into empty cells or explain why it is not possible to do that.

Rising Stars Progression Framework for mathematics, Year 6

Domain: Geometry					
Strand	Progression statement	NAHT key performance indicator (Y/N)	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)
2) Classify shapes	6.2.2 Illustrate and names parts of circles, including radius, diameter and circumference and know that the diameter of a circle is twice the radius	N	The pupil can label a diagram of a circle, identifying the radius, diameter and circumference, with prompting.	The pupil can label a diagram of a circle, identifying the radius, diameter and circumference. They deduce that the diameter is twice the radius.	The pupil can relate radius, diameter and circumference to everyday instances of circles such as the circumference of a bicycle wheel equals the distance moved when the wheel goes round once.
	6.2.3 Recognise 3-D shapes from their nets	N	The pupil can sort pentominoes (made of five squares joined exactly edge to edge) into those that are nets of open cubes and those that are not, with prompting.	The pupil can sort hexominoes (made of six squares joined exactly edge to edge) into those that are nets of cubes and those that are not.	The pupil can sort hexominoes (made of six squares joined exactly edge to edge) into those that are nets of cubes and those that are not, explaining how they know without folding them up.
3) Solve shape problems	6.3.1 Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles	N	The pupil can solve some missing angle problems that require use of 'angles at a point sum to 360° ' and 'angles on a straight line sum to 180° ', with prompting.	The pupil can solve missing angle problems that require use of 'angles at a point sum to 360° ' and 'angles on a straight line sum to 180° '.	The pupil can solve a wide variety of missing angle problems that require use of 'angles at a point sum to 360° ' and 'angles on a straight line sum to 180° '.
	6.3.2 Check solutions to missing angle problems by estimating (+)	N	The pupil can solve some missing angle problems and check by estimating whether the angle is greater or less than a half turn.	The pupil can solve missing angle problems and check by estimating whether the angle is greater or less than a right angle.	The pupil can solve a wide variety of missing angle problems and check their answers by estimating the size of the missing angle.
	6.3.3 Find unknown angles and lengths in triangles, quadrilaterals, and regular polygons (^)	Y	The pupil can solve problems involving several shapes such as arranging a rectangular photograph in a frame with an equal distance between the photograph and the frame on each side.	The pupil can solve problems involving several shapes such as arranging six rectangular photographs in a frame with the same.	The pupil can solve a wide variety of problems that require shapes to be arranged next to each other according to a variety of constraints.

Rising Stars Progression Framework for mathematics, Year 6

Domain: Geometry					
Strand	Progression statement	NAHT key performance indicator (Y/N)	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)
4) Describe position	6.4.1 Use positions on the full coordinate grid (all four quadrants)	N	The pupil can locate a point in any quadrant such as $(-3, -5)$, knowing that it marks the intersection of two gridlines and that 3 represents the distance moved 'along' so -3 represents the distance 'back' and 5 the distance moved 'up' so -5 is the distance moved 'down', with support.	The pupil can plot a point in any quadrant such as $(-3, -5)$, knowing that it marks the intersection of two gridlines and that 3 represents the distance moved 'along' so -3 represents the distance 'back' and 5 the distance moved 'up' so -5 is the distance moved 'down'.	The pupil can plot a point in any quadrant such as $(-3, -5)$, knowing that it marks the intersection of two gridlines and that 3 represents the distance moved 'along' so -3 represents the distance 'back' and 5 the distance moved 'up' so -5 is the distance moved 'down'. They realise that a change in origin would change the coordinates of any point.
	6.4.2 Draw and label rectangles (including squares), parallelograms and rhombuses specified by coordinates in the four quadrants, predicting missing coordinates using the properties of shapes (+)	N	The pupil can identify the fourth vertex of a rectangle on a coordinate grid.	The pupil can identify the fourth vertex of a rhombus on a coordinate grid.	The pupil can identify the fourth vertex of a rhombus on a coordinate grid and explain how they used its properties to do so.
5) Describe movement	6.5.1 Draw and translate simple shapes on the coordinate plane, and reflect them in the axes	Y	The pupil can draw the image of a shape following a translation or reflection on the coordinate grid, with prompting.	The pupil can draw the image of a shape following a translation or reflection on the coordinate grid.	The pupil can draw the image of a shape following a combination of translations and reflections on the coordinate grid.

Rising Stars Progression Framework for mathematics, Year 6

Domain: Statistics

Strand	Progression statement	NAHT key performance indicator (Y/N)	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)
1) Interpret data	6.1.1 Interpret data in pie charts (^)	Y	The pupil can answer questions such as 'Which is the most popular pet?' from an appropriate pie chart.	The pupil can answer questions such as 'There are 60 people represented on the pie chart. Estimate how many had dogs as pets' from an appropriate pie chart.	The pupil can write some questions that can be answered from a pie chart and some that cannot unless additional information is given.
	6.1.2 Consolidate skills in interpreting more complex tables, including timetables (+)	N	The pupil can answer questions such as 'I get to the bus stop at 8:35 a.m. and catch the first bus that arrives. How long do I have to wait if it is on time?' by interpreting an appropriate bus timetable, with prompting.	The pupil can answer questions such as 'I get to the bus stop at 8:35 a.m. and catch the first bus that arrives. What time do I arrive at Penzance?' by interpreting an appropriate bus timetable.	The pupil can answer questions such as 'I need to get to Penzance by 9:45 a.m. What is the latest bus that I can catch from St Ives?' by interpreting an appropriate bus timetable.
2) Present data	6.2.1 Present data using pie charts and line graphs (*)	N	The pupil can construct a pie chart to represent appropriate data, with support and prompting.	The pupil can construct a pie chart to represent appropriate data.	The pupil can write some instructions for constructing a pie chart to represent appropriate data.
	6.2.2 Consolidate skills in completing tables, including timetables (+)	N	The pupil can complete tables, deducing what is needed from the available information, with support.	The pupil can complete tables and timetables, deducing what is needed from the available information.	The pupil can complete tables and devise timetables, deducing what is needed from the available information.

Rising Stars Progression Framework for mathematics, Year 6

Domain: Statistics					
Strand	Progression statement	NAHT key performance indicator (Y/N)	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)
3) Solve data problems	6.3.1 Solve problems using pie charts and line graphs (*) (^)	Y	The pupil can collect data about favourite meals of children in their class. They represent it in a pie chart and make a comment about it. They answer questions about changes over time by interpreting line graphs.	The pupil can collect data about favourite meals of children in their class. They represent it in a pie chart and interpret it. They ask and answer questions about changes over time by interpreting line graphs.	The pupil can collect data about favourite meals of children in their class. They represent it in a pie chart and interpret it. They explain what question they are answering by collecting the data. They investigate questions about changes over time by interpreting line graphs.
	6.3.2 Calculate and interpret the mean as an average	Y	The pupil can calculate the mean length of rivers in England and compare it with the mean length of rivers in Wales. They state which is larger.	The pupil can calculate the mean length of rivers in England and compare it with the mean length of rivers in Wales. They deduce which country has longer rivers.	The pupil can calculate the mean length of rivers in England and compare it with the mean length of rivers in Wales. They deduce which country has longer rivers and seek an explanation of their results referring to the terrain in each country.

Rising Stars Progression Framework for mathematics, Year 6

Domain: Ratio					
Strand	Progression statement	NAHT key performance indicator (Y/N)	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)
	6.1.1 Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts	N	The pupil can convert a recipe for two people to a recipe for four people.	The pupil can convert a recipe for four people to a recipe for 12 people.	The pupil can convert a recipe for four people to a recipe for ten people.
	6.1.2 Solve problems involving the calculation of percentages and the use of percentages for comparison (^)	Y	The pupil can work out 5% of 200 kg.	The pupil can work out whether 20% off £15 is a better deal than 1/3 off £15.	The pupil can increase £24 by 15%.
	6.1.3 Solve problems involving similar shapes where the scale factor is known or can be found	N	The pupil can work out the length and width of a photograph which has been enlarged by a scale factor of two from 15 cm by 10 cm.	The pupil can work out the length and width of a photograph which has been enlarged by a scale factor of two from 7 inches by 5 inches.	The pupil can identify rectangles which are enlargements of each other by comparing corresponding sides to check if they are in the same ratio.
	6.1.4 Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples	Y	The pupil can solve problems such as 'There are 30 pupils in the class. One-third are boys. How many boys are there in the class?'	The pupil can solve problems such as 'Two-thirds of the class are girls and there are 18 girls. How many boys are there in the class?'	The pupil can solve problems such as 'Three-fifths of the class are girls. There are six boys. How many girls are there in the class?'

Rising Stars Progression Framework for mathematics, Year 6

Domain: Algebra					
Strand	Progression statement	NAHT key performance indicator (Y/N)	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)
1) Understand formulae	6.1.1 Express missing number problems algebraically	N	The pupil can solve problems such as 'If $x + 3 = 17$, work out x '.	The pupil can solve problems such as 'If $3x - 5 = 16$, find x '.	The pupil can formulate the missing number problem using x and then solve it.
	6.1.2 Use simple formulae	Y	The pupil can work out the area of a rectangle using the formula $\text{area} = \text{length} \times \text{width}$.	The pupil can work out the area of a rectangle using the formula $a = lw$.	The pupil can deduce from the formula $a = lw$ that the formula for the width, if you know the area and length, is $w = a/l$.
2) Solve algebra problems	6.2.1 Find pairs of numbers that satisfy an equation with two unknowns	N	The pupil can find values for a and b such that $a + b = 24$, with prompting.	The pupil can find values for a and b such that $2a + b = 24$.	The pupil can find values for a and b such that $2a + b = 24$, and $a - b = 6$.
	6.2.2 Enumerate possibilities of combinations of two variables	N	The pupil can list all of the pairs of whole numbers that have a sum of 20.	The pupil can solve problems such as 'Two numbers have a sum of 20 and a product that is an even number. What could the numbers be?'	The pupil can solve problems such as 'Two numbers have a sum of 20 and a product that is a multiple of 3. What could the numbers be?'
3) Describe sequences	6.3.1 Generate and describe linear number sequences	N	The pupil can continue a growing sequence of shapes such as T-shapes made with five squares then eight squares then 11 squares, describing how to continue the sequence.	The pupil can continue a growing sequence of shapes such as T-shapes made with five squares then eight squares then 11 squares, describing how to continue the sequence and being able to answer questions such as 'Will there be a T-shape with 100 squares in the sequence?'	The pupil can continue a growing sequence of shapes such as T-shapes made with five squares then eight squares then 11 squares, describing how to continue the sequence and being able to write down a formula for the n th term.

RISING STARS
ASSESSMENT

Progression Frameworks

Credits

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Copyeditor: Denise Moulton

Design and layout: Stephanie Matthews,
Kirsten Alexander and Kirsty Taylor

Publisher: Camilla Erskine

Text, design and layout © Rising Stars UK Ltd 2014

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Developed in Association with

