Progression in mathematical language: multiplication and division

Y1	National Curriculum vocabulary expectations	National Curriculum content domain
		Number - multiplication and division
	NCETM additional language support (sentence stems)	NCETM general statements / additional phrases
2.1	**There are __ one penny coins; the total value is __ pence.** **This is a __-pence coin. It has a value of __ p.** **There are __coins. Each coin has a value of __ p. This is __ p.** **The _____ costs __ p. Each coin has a value of __ p. So I need __ coins.**	**I say two pence, but I think two one-pennies.** **I say five pence, but I think five one-pennies.** **I say ten pence, but I think ten one-pennies.** [dual counting] **One group of two, two groups of two, three groups of two…** **Two, four, six ….**

Progression in mathematical language: multiplication and division

Y2	National Curriculum vocabulary expectations	National Curriculum content domain
		Number - multiplication and division
	NCETM additional language support (sentence stems)	NCETM general statements / additional phrases
2.2	[before grouping] **There are some _____.** [after grouping] **The _____ have been grouped.** **The groups are <u>equal</u> because there are the same number of _____ in each group.** **The groups are <u>unequal</u> because there are a different number of _____ in each group.** [equal groups] **There are __ equal groups of __ .** **There are __ __ in each group.** **There are __ groups of __ .** [repeated addition] **There are __ and __ and __ and ….** **We can write this as __ plus __ plus __ plus ….** [multiplication expression] **There are __ groups of __ . (which is linked to the multiplication expression) __ x __** **We can write this as __ times __ .** **There are __ groups of __ .** **There are __ __ 's.**	
2.3	**__ times __ is equal to __ .**	**Factor times factor is equal to the product.** **The product is equal to factor times factor.** **Number of groups x group size = product.** **Group size x number of groups = product.**

Progression in mathematical language: multiplication and division

Y2	National Curriculum vocabulary expectations	National Curriculum content domain
		Number - multiplication and division
	NCETM additional language support (sentence stems)	NCETM general statements / additional phrases
2.4	**__ is a factor. __ is a factor. The product of __ and __ is __ .** **__ is the product of __ and __.** **__ group of __ is equal to __ . __ groups of __ are equal to __ .** **__ times __ is equal to __ .** **__ , __ time is equal to __ . __ , __ times is equal to __ .** **__ times __ is equal to __ .** **The product of __ and zero is zero.** **The product of __ and one is __ . The product of one and __ is __ .**	**For every one group of ten, there are two groups of five.** **Products in the ten times table are also in the five times table.** **When zero is a factor, the product is zero.** **When one is a factor, the product is equal to the other factor.**
2.5	(one equation, two interpretations) **__ times __ can represent __ groups of __ .** **It can also represent __ groups of __ (or __ , __ times).** **If there are __ equal groups, we can use the __ times table.** **There are two groups of __. There are __ , two times. This is the same as double __.** **__ , two times is the same as double __ .** **I know double __ is __ , so two groups of __ is __ .** **There are __ altogether; half of __ is equal to __ .** **Half of __ is equal to __ . Double __ is equal to __ .** **I know that double __ is __ ; so half of __ is __ .**	**If there are two equal groups, we can use the two times table.** **If there are five equal groups, we can use the five times table.** **If there are ten equal groups, we can use the ten times table.** **If we need to double / find twice the amount, we can use the facts from the two times table.** **Doubling a whole number always gives an even number.** **If there are two equal groups, we can use doubling facts.** **When one of the factors is two, the product is double the other factor and the other factor is half the product.**

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Y2	National Curriculum vocabulary expectations	National Curriculum content domain
		Number - multiplication and division
	NCETM additional language support (sentence stems)	NCETM general statements / additional phrases
2.6	**__ is divided into groups of __ . There are __ groups.** **__ is divided into __ groups of __ .** **__ is divided into __ groups of __ with a remainder of __ .** **__ divided into groups of __ .** **The __ represents the total number of __ .** **The __ represents the number of __ in each group.** **__ is the dividend.** **__ is the divisor.** **__ is the quotient.** **We can represent this as __ divided between __ .** **__ divided between __ is equal to __ each.** **__ tens are equal to __ , so __ divided into groups of ten is equal to __ .**	**We can skip count using the divisor to find the quotient.** **If the divisor is ten, we can use the ten times table to find the quotient.** **If the divisor is five, we can use the five times table to find the quotient.** **If the divisor is two, we can use the two times table to find the quotient.** **If the divisor is two, the quotient is half of the dividend.** **A number is divisible by two if the ones digit is even.** **A number is divisible by ten if the ones digit is zero.** **A number is divisible by five if the ones digit is five or zero.** **When the dividend is zero, the quotient is zero.** **When the dividend is equal to the divisor, the quotient is one.** **When the divisor is equal to one, the quotient is equal to the dividend.**

Progression in mathematical language: multiplication and division

Y3	National Curriculum vocabulary expectations	National Curriculum content domain
		Number - multiplication and division
	NCETM additional language support (sentence stems)	NCETM general statements / additional phrases
2.7	[revising from Year 2] **__ group of __ is equal to __ .** **__ groups of __ are equal to __ .** **__ times __ is equal to __ .** [before shortening to…] **One __ is ___ , two __ s are __, three __ s are __ , ….** **Four is double two, so __ fours is double __ twos.** **Two is half of four, so __ twos is half of __ fours.** **Eight is double four, so __ eights is double __ fours.** **Four is half of eight, so __ fours is half of __ eights.**	**For every one group of four, there are two groups of two.** **Products in the four times table are also in the two times table.** **The product of an even number and two is a product in the four times table.** **Products in the eight times table are also in the four times table.** **The product of an even number and four is a product in the eight times table.** **Products in the eight times table are also in the two times table.** **If a number is divisible by four, halving it gives an even number.** **If a number is divisible by eight, halving it twice gives an even number.** **For numbers with more than two digits: if the final two digits are divisible by four then the number is divisible by four.**

Progression in mathematical language: multiplication and division

Y3	National Curriculum vocabulary expectations	National Curriculum content domain
		Number - multiplication and division
	NCETM additional language support (sentence stems)	NCETM general statements / additional phrases
2.8	**Six is double three, so __ sixes are double __ threes.** **Three is half of six, so __ threes are half of __ sixes.** **Nine is triple three, so __ nines is triple __ threes.**	**Products in the six times table are also in the three times table.** **The product of an even number and three is a product in the six times table.** **For every one group of nine, there are three groups of three.** **For a number to be divisible by three, the sum of the digits of the number must be divisible by three.** **For every one group of six, there are two groups of three.** **For a number to be divisible by six, the number must be divisible by both two and three.** **For a number to be divisible by nine, the sum of the digits of the number must be divisible by nine.**

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Y3	National Curriculum vocabulary expectations	National Curriculum content domain
		Number - multiplication and division
	NCETM additional language support (sentence stems)	NCETM general statements / additional phrases
2.9		**Odd factor x odd factor = odd product.** **If both factors are odd, the product is odd.** **Odd times odd is odd.** **Even factor x odd factor = even product.** **Even times odd is even.** **and** **Odd factor x even factor = even product.** **Odd times even is even.** **If one factor are odd and the other factor is even, the product is even.** **If one of the factors is even, the product is even.** **Even factor x even factor = even product.** **Even times even is even.** **When both factors have the same value, the product is called a square number. Square numbers can be represented by square arrays.**

Progression in mathematical language: multiplication and division

Y4	National Curriculum vocabulary expectations	National Curriculum content domain
		Number - multiplication and division
	NCETM additional language support (sentence stems)	NCETM general statements / additional phrases
2.10	**The product of ___ and ___ is equal to the product of ___ and ___ .** **[simplified to…]** **___ times ___ is equal to ___ times ___ .** **___ is equal to ___ plus ___ , so ___ times ___ is equal to ___ times ___ plus ___ times ___ .** **___ is equal to ___ minus ___ , so ___ times ___ is equal to ___ times ___ minus ___ times ___ .**	**The product in the multiplication equation has the same value as the dividend in the matching division equation.** **The factors in the multiplication equation have the same values aa the divisor and the quotient in the matching division equation.** **factor x ? = product** **? X factor = product** **dividend ÷ divisor = quotient** **When zero is a factor, the product is zero.** **We should never write a calculation where the divisor is zero.** **When the dividend is zero, the quotient is zero.**
2.11		**For every some group of twelve, there are two groups of six.** **A two-digit number is divisible by eleven if the digits are the same.** **For a number to be divisible by twelve, the number must be divisible by <u>both</u> three <u>and</u> four.**

Progression in mathematical language: multiplication and division

Y4	National Curriculum vocabulary expectations	National Curriculum content domain
		Number - multiplication and division
	NCETM additional language support (sentence stems)	NCETM general statements / additional phrases
2.12	**__ is divided into groups of __. There are __ groups and a remainder of __ .** **__ is divided into groups of __ , with a remainder of __ .** **__ is divided between __ is equal to __ each, with a remainder of __ .** **The largest multiple of __ that is less than or equal to __ is __ .** **__ is a multiple of __ , so when it is divided into groups of __ there are none left over; there is no remainder.** **__ is a not multiple of __ , so when it is divided into groups of __ there are some left over; there is a remainder.**	**The remainder is always less than the divisor.** **If the dividend is a multiple of the divisor, there is no remainder.** **If the dividend is not a multiple of the divisor, there is a remainder.**
2.13	**Think of __ and make it ten times the size.** **Think of __ and multiply by ten.** **__ multiplied by ten is equal to __ .** **__ is ten times the size of __ .** **__ divided by ten is equal to __ .** **__ multiplied by one hundred is equal to __ .** **__ is one hundred times the size of __ .**	**To find ten times as many, multiply by ten.** **All multiples of ten have a ones digit of zero.** **When a number is multiplied by ten, the product is a multiple of ten.** **To multiply a whole number by ten, place a zero after the final digit of that number.** **To find the inverse of ten times as many, divide by ten.** **To divide a multiple of ten by ten, remove the zero from the ones place.**

Progression in mathematical language: multiplication and division

Y4	National Curriculum vocabulary expectations	National Curriculum content domain
		Number - multiplication and division
	NCETM additional language support (sentence stems)	NCETM general statements / additional phrases
2.13 ctd		**To find one hundred times as many, multiply by one hundred.** **All multiples of one hundred have both a tens and a ones digit of zero.** **When a number is multiplied by one hundred, the product is a multiple of one hundred.** **To multiply a whole number by one hundred, place two zeros after the final digit of that number.** **To find the inverse of one hundred times as many, divide by one hundred.** **To divide a multiple of one hundred by one hundred, remove the two zeros (from the tens and ones places).** **Multiplying by one hundred is equivalent to multiplying by ten, and then multiplying by ten again.** **Dividing by one hundred is equivalent to dividing by ten, and then dividing by ten again.** **If one factor is made ten times the size, the product will be ten times the size.** **If the dividend is made ten times the size, the quotient will be ten times the size.** **If one factor is made one hundred times the size, the product will be one hundred times the size.** **If the dividend is made one hundred times the size, the**

Progression in mathematical language: multiplication and division

Y4	National Curriculum vocabulary expectations	National Curriculum content domain
		Number - multiplication and division
	NCETM additional language support (sentence stems)	NCETM general statements / additional phrases
2.14		**If there are ten or more ones, we must regroup the ones into tens and ones.** **If there are ten or more tens, we must regroup the tens into hundreds and tens.** **If there are ten or more hundreds, we must regroup the hundreds into thousands and hundreds.**
2.15		**If dividing the tens gives a remainder of one or more tens, we must exchange the remaining tens for ones.** **If dividing the hundreds gives a remainder of one or more hundreds, we must exchange the remaining hundreds for tens.**

Progression in mathematical language: multiplication and division

Y4	National Curriculum vocabulary expectations	National Curriculum content domain
		Number - multiplication and division
	NCETM additional language support (sentence stems)	NCETM general statements / additional phrases
2.16	**The distance around the edge of the _____ is its perimeter.** **The perimeter of the _____ is __ cm .** **This shape has an area of __ square units.** **The __ represents the __ .** **To find the area of a rectangle, multiply the length by the width.**	**Perimeter is measured in units of length.** **You can use addition to find the perimeter of a shape.** **The perimeter of a rectangle is equal to two times the length of the long side plus two times the length of the short side.** **The perimeter of a square is equal to four times the length of one of the sides.** **The perimeter of an equilateral triangle is equal to three times the length of one of the sides.** **To find the perimeter of a regular polygon, you multiply the length of one of the sides by the number of sides.** **If you know the perimeter of a regular polygon, you divide it by the number of sides to find the length of one of its sides.** **We measure area in square centimetres. We write this as "cm².** **Area ÷ known side = unknown side (for a rectangle).**
2.17	**The __ is __ times the length / mass / volume of the __ .**	**If two objects are the same length / mass / volume, one object is one times the length / mass / volume of the other.**

Progression in mathematical language: multiplication and division

Y5	National Curriculum vocabulary expectations	National Curriculum content domain
		Number - multiplication and division
	NCETM additional language support (sentence stems)	NCETM general statements / additional phrases
2.18	**If I multiply __ by two, I must divide __ by two for the product to stay the same.** **If I multiply one factor by __ , I must divide the other factor by __ for the product to stay the same.** **If I multiply the dividend by __ , I must multiply the divisor by __ for the quotient to stay the same.** **If I divide the dividend by __ , I must divide the divisor by __ for the quotient to stay the same.**	**If I double one factor, I must halve the other factor for the product to stay the same.**
2.19	**__ times __ ones is equal to __ ones, so __ times __ tenths is equal to __ tenths.** **__ times __ ones is equal to __ ones, so __ times __ hundredths is equal to __ hundredths.** **One-tenth of __ metre (s) is __ metre (s).** **__ is one-tenth the size of __ , so __ times __ is one-tenth the size of __ times __ .** **__ is one-hundredth the size of __ , so __ times __ is one-hundredth the size of __ times __ .** **I move the digits of the number being multiplied __ places to the left until I get a whole number; then I multiply; then I move the digits of the product __ places to the right.** **If one factor is made __ times the size, the product will be __ times the size.**	**When a number is divided by ten, the digits move one place to the right.** **When a number is divided by one hundred, the digits move two places to the right.** **When a number is multiplied by zero-point-one / one tenth, the digits move one place to the right.** **When a number is multiplied by zero-point-zero-one / one hundredth, the digits move two places to the right.** **If one factor is made one-tenth times the size, the product will be one-tenth times the size.** **If one factor is made one-hundredth times the size, the product will be one-hundredth times the size.** **In short multiplication, if there is a decimal point in the number being multiplied, put a decimal point in the product; line it up with the decimal point in the number being**

Progression in mathematical language: multiplication and division

Y5	National Curriculum vocabulary expectations	National Curriculum content domain
		Number - multiplication and division
	NCETM additional language support (sentence stems)	NCETM general statements / additional phrases
2.19 ctd.	**__ is one-tenth the size of __ , so __ divided by __ is one-tenth the size of __ divided by __ .** **__ is one-hundredth the size of __ , so __ divided by __ is one-hundredth the size of __ divided by __ .** **I move the digits of the dividend __ places to the left until I get a whole number; then I divide; then I move the digits of the quotient __ places to the right.**	**When a number is multiplied by a value greater than one, the product is greater than the original number.** **When a number is multiplied by a value less than one, the product is less than the original number.** **If the dividend is made one-tenth times the size, the quotient will be one-tenth times the size.** **If the dividend is made one-hundredth times the size, the quotient will be one-hundredth times the size.** **In short division, if there is a decimal point in the dividend, put a decimal point in the quotient; line it up with the decimal point in the dividend.**
2.20	**The amount of space the _____ takes up is its volume.** **The _____ has a larger / smaller volume than the _____ because it occupies more / less space.** **This shape has a volume of __ cm^3.** **This layer has __ rows of cubes.** **There are __ cm^3 cubes in this layer.** **This layer has a volume of __ cm^3.** **There are __ layers of __ cm^3.** **The volume if the cuboid is __ cm^3.**	**You can measure volume in cubic centimetres. You write this as cm^3.** **You can measure volume in cubic metres. You write this as m^3.** **The volume of a cuboid can be found by multiplying the length by the width by the height.** **If you change the order of the factors, the product remains the same.** **When you multiply three numbers, the product will be the same whichever pair we multiply first.**

Progression in mathematical language: multiplication and division

Y5	National Curriculum vocabulary expectations	National Curriculum content domain
		Number - multiplication and division
	NCETM additional language support (sentence stems)	NCETM general statements / additional phrases
2.21	**There are __ tiles. There are __ rows and __columns. So __ and __ are factors of __ .** **__ is a factor of __ because __ is in the __ times table.** **__ is a factor of __ because __ x __ = __** **__ is a multiple of __ because __ x __ = __** **__ is a factor of __ because __ ÷ __ = __** **__ is a multiple of __ because __ ÷ __ = __**	**"1" is a factor of all positive integers.** **Every positive integer is a factor of itself.** **The smallest factor of a positive integer is always "1".** **The largest factor of a positive integer is always itself.** **Numbers that have more than two factors are composite numbers.** **Numbers that have exactly two factors are called prime numbers.**
2.22		**When there are no brackets, multiplication is completed before addition and subtraction.**

Progression in mathematical language: multiplication and division

Y6	National Curriculum vocabulary expectations	National Curriculum content domain
		Number - multiplication and division
	NCETM additional language support (sentence stems)	NCETM general statements / additional phrases
2.23		**To multiply multiples of ten, one hundred or one thousand, remove the zeros, find the product of the single-digit numbers and then replace the zeros.** **To multiply by a multiple of ten, use short multiplication by a single-digit number and then multiply by ten.** **To multiply by a multiple of one hundred, use short multiplication by a single-digit number and then multiply by one hundred.** **To multiply by a multiple of one thousand, use short multiplication by a single-digit number and then multiply by one thousand.** **To multiply two two-digit numbers, first multiply by the ones, then multiply by the tens, and then add them together.** **To multiply a three-digit number by a two-digit number, first multiply by the ones, then multiply by the tens, and then add them together.** **When multiplying, you can write a composite number as factor x factor and use the associative law to make the calculation more efficient.**

Progression in mathematical language: multiplication and division

Y6	National Curriculum vocabulary expectations	National Curriculum content domain
		Number - multiplication and division
	NCETM additional language support (sentence stems)	NCETM general statements / additional phrases
2.24		
2.25	**If I multiply one factor by __ , I must multiply the product by __ .** **If I divide one factor by __ , I must divide the product by __ .** **If I multiply the dividend by __ and keep the divisor the same, I must multiply the quotient by __ .** **If I divide the dividend by __ and keep the divisor the same, I must divide the quotient by __ .**	**If I double one factor, I must double the product.** **If I multiply one factor by two, I must multiply the product by two.** **If I halve one factor, I must halve the product.** **If I divide one factor by two, I must divide the product by two.** **If a factor increases multiplicatively, the change to the product is the same.** **If a factor decreases multiplicatively, the change to the product is the same.** **If I double one factor, I must double the product.** **If I halve one factor, I must halve the product.** **If I double the dividend and keep the divisor the same, I must double the quotient.** **If I multiply the dividend by two and keep the divisor the same, I must multiply the quotient by two.** **If I halve the dividend and keep the divisor the same, I must halve the quotient.** **If I divide the dividend by two and keep the divisor the same, I must divide the quotient by two.**

Progression in mathematical language: multiplication and division

Y6	National Curriculum vocabulary expectations	National Curriculum content domain
		Number - multiplication and division
	NCETM additional language support (sentence stems)	NCETM general statements / additional phrases
2.25 ctd.	**If I multiply the divisor by __ and keep the dividend the same, I must divide the quotient by __ .** **If I divide the divisor by __ and keep the dividend the same, I must multiply the quotient by __ .**	**If I double the divisor and keep the dividend the same, I must halve the quotient.** **If I multiply the divisor by two and keep the dividend the same, I must divide the quotient by two.** **If I halve the divisor and keep the dividend the same, I must double the quotient.** **If I divide the divisor by two and keep the dividend the same, I must multiply the quotient by two.**
2.26	**The __ represents the __ .** **The dividend is __.** **The divisor is __ because _____ .** **The mean is __ ÷ __ = __ .**	**The mean is the size of each part when a quantity is shared equally.** **The mean is the total of the numbers divided by how many numbers there are.** **If the number of values in the set stays the same and the total increases, the mean also increases.** **If the number of values in the set stays the same and the total decreases, the mean also decreases.**

Progression in mathematical language: multiplication and division

Y6	National Curriculum vocabulary expectations	National Curriculum content domain
		Number - multiplication and division
	NCETM additional language support (sentence stems)	NCETM general statements / additional phrases
2.27	**For every __ _____ , there are __ _____ .** **The length of one of the sides of the square is __ times the length of one of square __ .** **The side-length of a square __ is __ times the side-length of square __ .** **To change shape __ into shape __ , scale the side-lengths by a scale factor of __ .** **The ratio of the dimensions of shape __ to the dimensions of shape __ is equal to __ -to- __ .** **To change shape __ into shape __ , scale the dimensions by a scale factor of __ .**	**If the scale factor is greater than one, the shape is made larger. We can say the shape is enlarged.** **If the scale factor is one, the shape is the same size.** **If the scale factor is less than one, the shape is made smaller. We can say the shape is reduced.**
2.28		**When there are no brackets, division is completed before addition and subtraction.** **When two dividends are divided by the same divisor, we can add the dividends first and then divide.** **When two dividends are divided by the same divisor, we can subtract the dividends first and then divide.**

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Y6	National Curriculum vocabulary expectations	National Curriculum content domain
		Number - multiplication and division
	NCETM additional language support (sentence stems)	NCETM general statements / additional phrases
2.29		**When a number is multiplied by one thousand, the digits move three places to the left.** **When a number is divided by one thousand, the digits move three places to the right.** **Dividing by one thousand is equivalent to multiplying by one thousandth.** **When a number is multiplied by 0.001/one thousandth, the digits move three places to the right.**
2.30	**A _____ is a parallelogram because _____ .** **The base is __ .** **The perpendicular height is __ .** **The area is __ .** **The area is __ square units.**	**A parallelogram is a quadrilateral with opposite sides that are parallel and equal in length.** **A parallelogram can be made into a rectangle that has the same area.** **To find the area of a parallelogram multiply the base by the perpendicular height.** **A triangle is a 2D shape with three sides and three angles. It can be classified by the length of its sides and the sizes of its angles.** **We can count squares to find the area of a triangle.** **Two right-angled triangles that are the same can be joined to make a rectangle.**

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Y6	National Curriculum vocabulary expectations	National Curriculum content domain
		Number - multiplication and division
	NCETM additional language support (sentence stems)	NCETM general statements / additional phrases
2.30 ctd.	**The distance around the edge of the _____ is its perimeter.**	**Two triangles that are the same can be joined to make a parallelogram.** **A parallelogram can be divided into two triangles.** **To find the area of a triangle multiply the base by the perpendicular height and then divide by two.** **Shapes can have the same perimeter but different areas.** **Shapes can have the same areas but different perimeters.** **When a shape has been transformed by a scale factor, the perimeter is also transformed by the same scale factor.**