Year 5 and Year 6 progression of Mathematical skills at Marwood School

	Year 5			Year 6		
	Block	Unit	Objectives	Block	Unit	Objectives
AUTUMN TERM	Place value	PV and +/- in 5-digit and 6-digit numbers	**1. Read, write & locate 5- & 6-digit numbers on a landmarked line; use this to compare/order numbers; recognise the value of each digit.** **3. Count forwards or backwards in steps of powers of 10 for any given number > 1,000,000.** **7. Add/subtract mentally with confidence, where numbers are less than 100 or the calculation relies upon simple addition/subtraction & place value.**	Place value	PV and +/- in 5-digit and 6-digit numbers	**1. Locate numbers up to 10 million on a landmarked line; use this to compare and order numbers.** **5. Consolidate: Add /subtract mentally with confidence, where numbers are < 100 or it relies upon simple addition/subtraction and place value.**
		Numbers on a line; round to powers of 10	**1. Read, write & locate 5- & 6-digit numbers on a landmarked line; use this to compare/order numbers; recognise the value of each digit.** **2. Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000zand 100,000.**		Numbers on a line; round to powers of 10	**1. Locate numbers up to 10 million on a landmarked line; use this to compare and order numbers.** **2. Round to ten, a hundred, a thousand, ten thousand, one hundred thousand or a million, as appropriate.**
	Addition and subtraction	Column addition with whole numbers	8. Confidently add numbers with up to 4 or 5 digits using column addition, including 'piles' of numbers. **10. Use rounding to check answers and determine levels of accuracy.**	Addition and subtraction	Column addition with whole numbers	6.Consolidate: Add several large numbers using written addition, including 'piles of numbers' with different numbers of digits.
		Column addition; decimals and money	31. Add 2-place decimal numbers in the context of money, mentally or using column addition. **10. Use rounding to check answers and determine levels of accuracy.**		Column addition; decimals and money	**30. Add several decimal numbers using mental or written addition.**
		Whole number; decimals and money	**9. Subtract larger numbers using expanded or compact column subtraction, or by counting up.**		Whole number; decimals and money	**7. Consolidate: Subtract large numbers using decomposition or counting up if appropriate.**
	Decimals	PV in 2- and 3- place decimal numbers	**19. Understand the effect of multiplying/dividing by 10, 100, 1,000, including 1- and 2-place decimal answers.** 29. Write decimal numbers as tenths and hundredths. **30. Locate 2-place decimal numbers on a line; round them to the nearest tenth or whole number.**	Decimals	PV in 2- and 3- place decimal numbers	**28. Identify the place value of each digit in a number with up to 3 decimal places; multiply/divide numbers by 10, 100, 1000 giving answers with up to 3-decimal places.**
		Count/add/subtract 0.1, 0.01, 0.001	29. Write decimal numbers as tenths, hundredths, thousandths, e.g. 0.71 as 71/100, 0.327 as 327/1000; relate thousandths to tenths and hundredths. 31. Add 2-place decimal numbers mentally or using column addition. 33. Solve problems involving fractions, using known equivalences to help.		Count/add/subtract 0.1, 0.01, 0.001	**28. Identify the place value of each digit in a number with up to 3 decimal places; multiply/divide numbers by 10, 100, 1000 giving answers with up to 3-decimal places.**
	Multiplication and division	Properties of numbers, including primes	**12. Know and recite all times tables including division facts; identify multiples and factors, including common factors of two numbers.** 13. Identify prime numbers up to 100 and know primes up to 19; understand the vocabulary of prime and composite numbers; identify prime factors.	Multiplication and division	Properties of numbers, including primes	**9. Know all multiplication and division facts up to 12 ×12; identify common factors, common multiples square numbers to 144 and prime numbers up to 20.**
		Short multiplication: whole numbers, money	**16. Multiply 2, 3, 4-digit numbers by numbers ≤26 using long or short multiplication or grid method.** 21. Solve problems involving multiplication and division, using knowledge of factors, multiples.		Short multiplication: whole numbers, money	**11. Multiply 2-digit, 3-digit and 4-digit numbers by numbers up to 12 using short multiplication or another appropriate written method.**
		Mental strategies in division	**15. Perform divisions mentally in range of tables; use remainders, fractions, decimal equivalences.**		Mental strategies in division	10. Multiply/divide whole numbers mentally, using facts to 12 × 12 & place value (e.g. 60 × 70); use facts to work with larger numbers.
	Addition and Subtraction	Money: counting up, change, differences	32. Subtract 1- and 2-place decimal numbers in the context of money by counting up. **7. +/- subtract mentally with confidence, where numbers are <100 or the calculation relies upon simple +/- & place value, e.g. giving change.**	Addition and Subtraction	Money: counting up, change, differences	**5. Consolidate: Add and subtract mentally with confidence, where numbers are < 100 or it relies upon simple +/- & place value.** 8. Solve addition/subtraction multi-step problems in context, deciding which operations to use and why.
		Subtract numbers with 1 or 2 decimal places	32. Subtract 1- and 2-place decimal numbers by counting up: 6.2 – 3.5, 13.1 – 9.45.		Subtract numbers with 1 or 2 decimal places	**31. Subtract decimal numbers using mental strategies or written counting up.** **29. Find the complement to 1, or to next whole number, for a number < 10 with up to 3 decimal places.**
		Strategies for +/-; word problems	**7. +/- mentally with confidence, where numbers are < 100 or the calculation relies upon simple +/- & place value.** **9. Subtract larger numbers using expanded or compact column subtraction, or by counting up.** 11. Solve addition/subtraction multi-step problems; decide which operations/methods to use and why. 22. Solve problems involving addition, subtraction, multiplication, division & a combination, including understanding the meaning of the equals sign.		Strategies for +/-; word problems	**5. Consolidate: Add and subtract mentally with confidence, where numbers are < 100 or it relies upon simple +/- & place value.** 8 Solve addition/subtraction multi-step problems in context, deciding which operations to use and why. 18. Perform mental calculations, including with mixed operations and large numbers; carry out calculations using knowledge of the order of operations and brackets. **20. Solve problems involving all 4 operations.**

	Multiplication and division	Mult/div strategies; rate/scaling problems	14. Use efficient mental methods to multiply two or three numbers. **15. Perform divisions mentally in range of tables.** 17. Scale up/down by a factor of 2, 5 or 10; solve problems involving scaling up/down by simple fractions & problems involving simple rates. 21. Solve problems involving multiplication and division, using knowledge of factors, multiples.	Multiplication and division	Mult/div strategies; rate/scaling problems	10. Multiply/divide whole numbers mentally, using facts to 12 × 12 & place value (e.g. 60 × 70); use facts to work with larger numbers. 13. Scale up or down by a factor of 2, 4, 5 or 10; solve scaling problems and those involving rates. 14. Perform divisions mentally within the range of tables facts; divide multiples of 10 & 100 (4500 ÷ 9) & use mental strategies such as halving (450 ÷20).
		Grid, short, long multiplication problems	18. Divide 2, 3, 4-digit numbers by 1-digit numbers above tables range; choose & use efficient methods; interpret remainders appropriately according to context.		Grid, short, long multiplication problems	**16. Divide numbers with up to 4-digits by a number up to 12 using short division and giving an appropriate answer.** **15. Interpret remainders as whole number remainders, fractions, including decimal fractions where equivalents are known or by rounding up or down.**
	Fractions	Order fractions; fractions of amounts	**23. Identify, name & write equivalent fractions; reduce fractions to simplest form, including tenths to fifths, hundredths to tenths, e.g. 40/100 = 4/10 = 2/5.** **24. Compare and order fractions where the denominators are multiples of the same number.** 33. Solve problems involving fractions, using known equivalences to help.	Fractions	Order fractions; fractions of amounts	21. Use common multiples to generate equivalent fractions, e.g. 4/8 = 1⁄2; reduce fractions to their simplest form using common factors. **22. Use knowledge of equivalence to compare/order fractions.** 24. Associate a fraction with division; calculate decimal fraction equivalents, e.g. 4/5 is 0.8, 1/8 is 0.125
		Decimal/fraction equivalents	25. Recognise mixed numbers and improper fractions and convert from one to the other, writing mathematical statements. 33. Solve problems involving fractions, using known equivalences to help.		Decimal/fraction equivalents	**23. Identify simple fraction/decimal/percentage equivalents: E.g. 1⁄4 = 0.25 = 25%, 1/3 = 0.33 = 33%** 24. Associate a fraction with division; calculate decimal fraction equivalents, e.g. 4/5 is 0.8, 1/8 is 0.125
		Add/subtract fractions, using equivalence	**24. Compare and order fractions where the denominators are multiples of the same number.** 26. Add and subtract fractions where the denominators are multiples of the same number.		Add/subtract fractions, using equivalence	21. Use common multiples to generate equivalent fractions, e.g. 4/8 = 1⁄2; reduce fractions to their simplest form using common factors. **22. Use knowledge of equivalence to compare/order fractions and to add or subtract fractions and mixed numbers.**
	Shape	Quadrilaterals, other polygons and circles	**48. Understand properties of rectangles & triangles; distinguish between regular and irregular polygons based on reasoning about equal sides/angles.**	Shape	Quadrilaterals, other polygons and circles	**51. Compare & classify geometric shapes based on their properties; classify & name types of triangle & angle (acute, obtuse, reflex).** 53. Identify, illustrate & name parts of circles, including diameter, circumference & radius, understanding that the radius is half the diameter.
		Find missing angles and draw 2-D shapes	**1. Find unknown angles in triangles and rectangles; identify angles round a point and on a straight line, finding missing angles.** 2. Know angles are measured in degrees, estimate and compare acute, obtuse and reflex angles, draw and measure given angles.		Find missing angles and draw 2-D shapes	49. Draw 2-D shapes, using given dimensions and angles; understand terms parallel and perpendicular. **52. Find unknown angles in triangles, quadrilaterals & regular polygons; also find missing angles at a point, vertically opposite or on a straight line.**
		Sort 3-D shapes; nets and 3-D shapes	45. Identify 3-D shapes from 2-D representations.		Sort 3-D shapes; nets and 3-D shapes	50. Recognise, describe and build 3-D simple shapes, including making nets.
		Coordinates; polygons & transformations	49. Identify, describe, represent position of a shape following a reflection or translation, use appropriate language; know that the shape is unchanged.		Coordinates; polygons & transformations	54. Identify positions on the full co-ordinate grid; draw and translate simple shapes and reflect them in the x-axis or y-axis. 55. Begin to reason mathematically making simple generalisations, using mathematical language and making connections between mathematical ideas.
SPRING TERM	Place value	Place value	**1. Locate numbers up to 10 million on a landmarked line; use this to compare/order numbers.** **2. Round to ten, a hundred and a thousand, ten thousand, one hundred thousand or a million, as appropriate.** 3. Count forwards or backwards in steps of powers of 10 for any given number greater than 1,000,000. 4. Solve number and practical problems involving place value, rounding and negative numbers. 5. Solve number problems and practical problems involving place value.	Place value	Place value	**1. Locate numbers up to 10 million on a landmarked line; use this to compare/order numbers.** **2. Round to ten, a hundred and a thousand, ten thousand, one hundred thousand or a million, as appropriate.** **4. Solve number and practical problems involving place value, rounding and negative numbers.**
		Negative numbers	**41. Begin to read scales of different types; solve scaling problems involving measures.** **4. Interpret negative numbers in context, counting backwards and forwards through zero.**		Negative numbers	3. Use negative numbers in context, calculate intervals across zero. **4. Solve number and practical problems involving place value, rounding and negative numbers.**
	Calculation	Use of brackets in calculation	**22. Solve problems involving addition, subtraction, multiplication, division and a combination, including understanding the meaning of the equals sign.**	Calculation	Use of brackets in calculation	18. Perform mental calculations, including with mixed operations. Carry out calculations using knowledge of the order of operations and brackets.
		Addition and subtraction	**8. Confidently add numbers with up to 4 or 5 digits using column addition, including adding 'piles' of numbers.** **9. Subtract larger numbers using expanded or compact column subtraction, or by counting up.** **10. Use rounding to check answers and determine levels of accuracy.**		Addition and subtraction	**6. Consolidate: Add several large numbers using written addition, including 'piles of numbers' with different numbers of digits.** **7. Consolidate: Subtract large numbers using decomposition or counting up if appropriate (200,000 – 196,875).**
	Decimals and fractions	Frog for decimals	32. Subtract 1 and 2 place decimal numbers by counting up: 6.2 – 3.5, 13.1 – 9.45.	Decimals and fractions	Frog for decimals	**31. Subtract decimal numbers using mental strategies or written counting up.** **29. Find the complement to 1, or to next whole number, for a number <10 with up to 3 decimal places.**
		Exploring fractions	**23. Identify, name and write equivalent fractions; reduce fractions to simplest form.** **24. Compare and order fractions where the denominators are multiples of the same number.** 33. Solve problems involving fractions.		Exploring fractions	21. Use common multiples to generate equivalent fractions. **22. Use knowledge of equivalence to compare/order fractions.** **23. Identify simple fraction and decimal equivalents.** 24. Associate a fraction with division. Calculate decimal fraction equivalents, e.g. 4/5 is 0.8, 1/8 is 0.125. **33. Calculate simple percentages of whole numbers. Solve problems involving use of percentages for comparisons.**
		Multiply and divide fractions	27. Multiply proper fractions and mixed numbers by whole numbers supported by materials and diagrams.		Multiply and divide fractions	**25. Understand that if 2 numbers less than 1 are multiplied, the answer is smaller than either of them.** 26. Multiply simple pairs of proper fractions, writing the answer in its simplest form. 27. Divide proper fractions by whole numbers, recognising that 3⁄4 ÷ by 2 is equivalent to 3⁄4 × 1⁄2.
	Time and data	Time and timetables	40. Solve problems involving converting between units of time; use 12-hour and 24-hour times, find time intervals and tell the time with confidence. **43. Complete, read and interpret information in tables, including timetables.**	Time and data	Time and timetables	40. Solve problems involving converting between units of time; use 12-hour and 24-hour times, find time intervals and tell the time with confidence. **43. Complete, read and interpret information in tables, including timetables.**
		Line graphs and pie charts	**44. Create and interpret line graphs, solving comparison, sum and difference problems.**		Line graphs and pie charts	**44. Create and interpret line graphs, solving comparison, sum and difference problems.**

	Multiplication	Multiples, factors and mental strategies	**12. Know and recite all times tables including division facts; identify multiples and factors, including common factors of two numbers.** **14. Use efficient mental methods to multiply two or three numbers.**	Multiplication	Multiples, factors and mental strategies	9. Know all multiplication and division facts up to 12 × 12; identify common factors, common multiples, square numbers to 144 and prime numbers up to 20. **10. Multiply/divide whole numbers mentally, using facts to 12 × 12 and place value (e.g. 60 × 70); use facts to work with larger numbers.**
		Multiplication	**16. Multiply 2-, 3-, 4-digit numbers by numbers ≤ 26 using long or short multiplication or the grid method.**		Multiplication	**12. Multiply numbers with up to 4 digits by 2-digit numbers using formal long multiplication.**
	Measures	Units of measurement	**35. Measure and compare capacities, weights and lengths; convert between different SI units.** 36. Understand and use approximate equivalences between common imperial and SI units. **44. Create and interpret line graphs, solving comparison, sum and difference problems.**	Measures	Units of measurement	**40. Use, read and write, and convert between, standard units including miles and kilometres, using decimal numbers with up to three places as appropriate.** 41. Solve problems using standard units and convert between them. **47. Interpret and construct (pie charts and) line graphs and use these to solve problems.**
		Area, perimeter, scaled shapes	37. Measure and calculate perimeters of composite rectilinear shapes using SI units. 38. Understand the concept of area, estimate areas of irregular shapes and count squares to find these; calculate areas of rectangles using standard units.		Area, perimeter, scaled shapes	42. Measure areas and perimeters; understand that area is a measurement of covering and is measured in square units, and perimeter is a length, measured in mm, cm, m or km; recognise that shapes with the same area can have different perimeters and vice versa. 43. Calculate the area of parallelograms and triangles.
		Finding volumes	39. Estimate volumes of cubes and cuboids.		Finding volumes	44. Calculate, estimate and compare volume of cubes and cuboids using standard units, cm^3, m^3, mm^3 and km^3.
	Multiplication and division	Divisiom	18. Divide 2-, 3- and 4-digit numbers by 1-digit numbers above tables range; choose and use efficient methods; interpret remainders appropriately according to context.	Multiplication and division	Divisiom	**16. Divide numbers with up to 4 digits by a number up to 12 using short division and giving an appropriate answer.** **17. Divide numbers with up to 4 digits by 2-digit numbers using a formal written method of long division and giving an appropriate answer.** 19. Use estimation to check answers and determine an appropriate degree of accuracy.
		4-digit multiplication and division	**16. Multiply 2-, 3-, 4-digit numbers by numbers ≤ 26 using long or short multiplication or the grid method.** 18. Divide 2-, 3- and 4-digit numbers by 1-digit numbers above tables range; choose and use efficient methods; interpret remainders appropriately according to context.		4-digit multiplication and division	**12. Multiply numbers with up to 4 digits by 2-digit numbers using formal long multiplication.** **16. Divide numbers with up to 4-digits by a number up to 12 using short division and giving an appropriate answer.** **17. Divide numbers with up to 4 digits by 2-digit numbers using a formal written method of long division and giving an appropriate answer.**
	Algebra and ratio	Algebra	**22. Solve problems involving addition, subtraction, multiplication, division and a combination, including understanding the meaning of the equals sign.**	Algebra and ratio	Algebra	36. Use simple formulae, including formulae expressed in words. **37. Solve missing number problems, including where letters are used to replace constants.** 38. Find pairs of numbers that satisfy an equation with two unknowns and list, in order, the possibilities of combinations of two variables.
		Ratio	**24. Compare and order fractions where the denominators are multiples of the same number.**		Ratio	**23. Identify simple fraction/decimal/percentage equivalents, e.g. 1⁄4 = 0.25 = 25%, 1/3 = 0.33 = 33%.** **33. Calculate simple percentages of whole numbers; solve problems involving use of percentages for comparisons.** **35. Solve problems involving simple ratios, using tables facts and knowledge of fractions and multiples, e.g. 2 eggs for every 250g of flour.**
SUMMER TERM	Review	Numbers and place value		Review	Numbers and place value	
		Addition and subtraction			Addition and subtraction	
		Decimals, multiplication and division			Decimals, multiplication and division	
	Review 2	Fractions, ratio and percentages		Review 2	Fractions, ratio and percentages	
		Charts, graphs and algebra			Charts, graphs and algebra	
		Area, perimeter and angles			Area, perimeter and angles	
	Review 3	Factors, multiples, primes and squares		Review 3	Factors, multiples, primes and squares	
		Multiplication and division			Multiplication and division	
		Equivalence in fractions, decimals and percentages			Equivalence in fractions, decimals and percentages	
		Data: pi charts and mean			Data: pi charts and mean	
		Charts, graphs and algebra			Charts, graphs and algebra	
		Area, perimeter and angles			Area, perimeter and angles	
	Decimals, addition and subtraction	Exploring decimals	29. Write decimal numbers as tenths, hundredths, thousandths, e.g. 0.71 as $^{71}/_{100}$, 0.327 as $^{327}/_{1000}$; relate thousandths to tenths and hundredths. **35. Measure and compare capacities, weights and lengths; convert between different SI units.**	Decimals, addition and subtraction	Exploring decimals	**28. Identify the place value of each digit in a number with up to 3 decimal places; multiply/divide numbers by 10, 100, 1000 giving answers with up to 3 decimal places.** **55. Begin to reason mathematically making simple generalisations, using mathematical language and making connections between mathematical ideas.**
		Smashing subtraction	32. Subtract 1- and 2-place decimal numbers by counting up: 6.2 – 3.5, 13.1 – 9.45. 29. Write decimal numbers as tenths and hundredths.		Smashing subtraction	**31. Subtract decimal numbers using mental strategies or written counting up.**

		Accomplished addition	**8. Confidently add numbers with up to 4 or 5 digits using column addition.** **9. Subtract larger numbers using expanded or compact column subtraction, or by counting up.** 11. Solve addition and subtraction multi-step problems, deciding which operations and methods to use and why. **22. Solve problems involving addition, subtraction, multiplication, division and a combination, including understanding the meaning of the equals sign.**		Accomplished addition	**6. Consolidate: Add several large numbers using written addition, including 'piles of numbers' with different numbers of digits.** **7. Consolidate: Subtract large numbers using decomposition or counting up if appropriate (200,000 – 196,875).** 18. Perform mental calculations, including with mixed operations and large numbers; carry out calculations using knowledge of the order of operations and brackets. **55. Begin to reason mathematically making simple generalisations, using mathematical language and making connections between mathematical ideas.**
	Number properties and multiplication	Number properties	20. Recognise and use square and cube numbers and the matching notation. 17. Scale up or down by a factor of 2, 5 or 10; solve problems involving scaling up/down by simple fractions and problems involving simple rates. **14. Use efficient mental methods to multiply two or three numbers.** 21. Solve problems involving multiplication and division, using knowledge of factors, multiples, square and cube numbers.	Number properties and multiplication	Number properties	9. Identify prime numbers up to 20. 13. Solve scaling problems and those involving rates. 53. Identify, illustrate and name parts of circles, including diameter, circumference and radius, understanding that the radius is half the diameter. **55. Begin to reason mathematically making simple generalisations, using mathematical language, making connections between mathematical ideas.** **47. Interpret and construct pie charts and line graphs and use these to solve problems.**
		Exploring multiplications	**16. Multiply 2, 3, 4-digit numbers by numbers ≤26 using long or short multiplication or the grid method; multiply 2-digit by 2-digit numbers using the grid method.** 21. Solve problems involving multiplication and division.		Exploring multiplications	**11. Multiply 2-, 3- and 4-digit numbers by numbers up to 12 using short multiplication or another appropriate written method.** **12. Multiply numbers with up to 4 di** **gits by 2-digit numbers using formal long multiplication.** **55. Begin to reason mathematically making simple generalisations, using mathematical language and making connections between mathematical ideas.**
	Division, fractions and percentages	Division done	18. Divide 2-, 3-, 4-digit numbers by 1-digit numbers above tables range; choose and use efficient methods; interpret remainders appropriately according to context.	Division, fractions and percentages	Division done	**16. Divide numbers with up to four digits by a number up to 12 using short division and giving an appropriate answer.** **17. Divide numbers with up to four digits by 2-digit numbers using a formal written method of long division and giving an appropriate answer.**
		Calculating with fractions	**24. Compare and order fractions where the denominators are multiples of the same number** **25. Recognise mixed numbers and improper fractions and convert from one to the other, writing mathematical statements.** 26. Add and subtract fractions where the denominators are multiples of the same number. 27. Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.		Calculating with fractions	**22. Use knowledge of equivalence to compare and order fractions and to add and subtract fractions and mixed numbers.** **25. Understand that if two numbers less than 1 are multiplied, the answer is smaller than either of them.** 26. Multiply simple pairs of proper fractions, writing the answer in its simplest form.
		Mastering percentages	**28. Identify simple fraction and percentage equivalents: $^1/_2$ ≡ 50%, 25% ≡ $^1/_4$ and 75% ≡ $^3/_4$, 40% ≡ $^4/_{10}$ etc.** 33. Solve problems involving fractions, decimals and percentages, using known equivalences to help.		Mastering percentages	**23. Identify simple fraction/decimal/percentage equivalents: ½ ≡ 0.5 ≡ 50%, ¼ ≡ 0.25 ≡ 25%, ¾ ≡ 0.75 ≡ 75%, $^1/_3$ ≡ 0.33 ≡ 33%.** 24. Associate a fraction with division; calculate decimal fraction equivalents. **33. Calculate simple percentages of whole numbers and solve problems involving use of percentages for comparisons.**
	Measures, shape, data	It's time!	40. Solve problems involving converting between units of time; use 12- and 24-hour times, find time intervals and tell the time with confidence. **43. Complete, read and interpret information in tables, including timetables.**	Measures, shape, data	It's time!	**16. Divide numbers with up to four digits by a number up to 12 using short division and giving an appropriate answer.** **17. Divide numbers with up to four digits by 2-digit numbers using a formal written method of long division and giving an appropriate answer.**
		Line graphs	**44. Create and interpret line graphs, solving comparison, sum and difference problems.**		Line graphs	**22. Use knowledge of equivalence to compare and order fractions and to add and subtract fractions and mixed numbers.** **25. Understand that if two numbers less than 1 are multiplied, the answer is smaller than either of them.** 26. Multiply simple pairs of proper fractions, writing the answer in its simplest form.
		Understanding angles	**47. Know angles are measured in degrees, estimate and compare acute, obtuse and reflex angles, draw and measure given angles.** 46. Find unknown angles in triangles and rectangles; identify angles round a point and on a straight line, finding missing angles.		Understanding angles	**23. Identify simple fraction/decimal/percentage equivalents: ½ ≡ 0.5 ≡ 50%, ¼ ≡ 0.25 ≡ 25%, ¾ ≡ 0.75 ≡ 75%, $^1/_3$ ≡ 0.33 ≡ 33%.** 24. Associate a fraction with division; calculate decimal fraction equivalents. **33. Calculate simple percentages of whole numbers and solve problems involving use of percentages for comparisons.**

Outcomes Lists – Hamilton Assessment Tracker

Year 5 with Key Outcomes in bold

1. **Read, write and locate 5 and 6 digit numbers on a landmarked line; use this to compare/order numbers; recognise the value of each digit.** N
2. **Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000.** N
3. **Count forwards or backwards in steps of powers of 10 for any given number < 1 000 000.** N
4. **Interpret negative numbers in context, counting backwards and forwards through zero.** N
5. Solve number problems and practical problems involving place value. N
6. Read Roman numerals and recognise years written in Roman numerals. N
7. **Add/subtract mentally with confidence, where numbers are less than 100 or the calculation relies upon simple addition/subtraction and place value.** AS
8. **Confidently add numbers with up to 4 or 5 digits using column addition, including adding 'piles' of numbers.** AS

9. **Subtract larger numbers using expanded or compact column subtraction, or by counting up.**
10. **Use rounding to check answers and determine levels of accuracy.** AS
11. Solve addition and subtraction multi-step problems, deciding which operations and methods to use and why. AS
12. **Know and recite all times tables including division facts; identify multiples and factors, including common factors of two numbers**. MD
13. Identify prime numbers up to 100 and know primes up to 19; understand the vocabulary of prime and composite numbers; identify prime factors. MD
14. **Use efficient mental methods to multiply two or three numbers.** MD
15. **Perform divisions mentally within the range of tables using remainders, fractions and decimal equivalences, e.g. 68 ÷ 8 = 8 r4 or 8½ or 8.5.** MD
16. **Multiply 2, 3, 4-digit numbers by numbers ≤26 using long or short multiplication or grid method; multiply 2-digit by 2-digit numbers using grid method.** MD
17. Scale up or down by a factor of 2, 5 or 10; solve problems involving scaling up/down by simple fractions and problems involving simple rates. MD
18. Divide 2, 3, 4-digit nos by 1-digit nos above tables range; choose/use efficient methods; interpret remainders appropriately acc. to context. MD
19. **Understand the effect of multiplying/dividing by 10, 100, 1000, including 1- & 2-place decimal answers.** MD
20. Recognise and use square and cube numbers and the matching notation. MD
21. Solve problems involving multiplication and division, using knowledge of factors, multiples, squares and cubes. MD
22. **Solve problems involving addition, subtraction, multiplication, division and a combination, including understanding the meaning of the equals sign.** MD
23. **Identify, name, write equivalent fractions; reduce fractions to simplest form, including tenths to fifths, hundredths to tenths, e.g. 40/100 = 4/10 = 2/5.** FD
24. **Compare and order fractions where the denominators are multiples of the same number.** FD
25. **Recognise mixed numbers and improper fractions and convert from one to the other, writing mathematical statements.** FD
26. Add and subtract fractions where the denominators are multiples of the same number. FD
27. Multiply proper fractions and mixed numbers by whole numbers supported by materials and diagrams. FD
28. **Identify simple fraction and decimal equivalents: ½ ≡ 0.5, 0.25 ≡ ¼ and 0.75 ≡ ¾, 1/5 = 0.2, 2/5 = 4/10 = 0.4, 4/5 = 8/10 = 0.8 etc.** FD
29. Write decimal numbers as tenths, hundredths, thousandths, e.g. 0.71 as 71/100, 0.327 as 327/1000; relate thousandths to tenths & hundredths. FD
30. **Locate 2-place decimal numbers on a line and round them to the nearest tenth or whole number.** FD
31. Add 2-place decimal numbers mentally or using column addition. FD
32. Subtract 1- and 2-place decimal numbers by counting up: 6.2 – 3.5, 13.1 – 9.45. FD
33. Solve problems involving fractions, decimals and percentages using known equivalences to help. FD
34. **Recognise % symbol, understand that percentages are the number of parts out of 100; write percentages as hundredths in decimal & fractional form.** FD
35. **Measure and compare capacities, weights and lengths; convert between different SI units.** MS
36. Understand and use approximate equivalences between common imperial and SI units. MS
37. Measure and calculate perimeters of composite rectilinear shapes using SI units. MS
38. Understand the concept of area, estimate areas of irregular shapes and count squares to find these; calculate areas of rectangles using standard units. MS
39. Estimate volumes of cubes and cuboids. MS
40. Solve problems involving converting between units of time; use 12- and 24-hour times, find time intervals and tell the time with confidence. MS
41. B**egin to read scales of different types; solve scaling problems involving measures.** MS
42. Use all four operations to solve problems involving measures using decimal notations, including scaling. MS
43. **Complete, read and interpret information in tables, including timetables.** MS
44. **Create and interpret line graphs, solving comparison, sum and difference problems.** MS
45. Identify 3-D shapes from 2-D representations. G
46. Find unknown angles in triangles and rectangles; identify angles round a point and on a straight line, finding missing angles. G
47. **Know angles are measured in degrees, estimate and compare acute, obtuse and reflex angles, draw and measure given angles.** G
48. **Understand properties of rectangles & triangles; distinguish regular and irregular polygons, based on reasoning about equal sides/angles.** G
49. Identify, describe, represent position of a shape following a reflection or translation, use approp language, know that shape is unchanged. G

The letters in orange indicate the strand on Hamilton Assessment Tracker to which each Outcome belongs.

Year 6 with Key Outcomes in bold

1. **Locate numbers up to 10 million on a landmarked line; use this to compare/order numbers.** N
2. **Round to ten, a hundred and a thousand, ten thousand, one hundred thousand or a million, as appropriate.** N

3. Use negative numbers in context, calculate intervals across zero. N
4. **Solve number and practical problems involving place value, rounding and negative numbers.** N
5. Consolidate: **Add & subtract mentally with confidence, where nos are < 100 or it relies upon simple addition/subtraction and place value.** AS
6. Consolidate: **Add several large numbers using written addition, including 'piles of numbers' with different numbers of digits.** AS
7. Consolidate: **Subtract large numbers using decomposition or counting up if appropriate (200,000 – 196,875).** AS
8. Solve addition and subtraction multi-step problems in context, deciding which operations to use and why. AS
9. Know all multiplication and division facts up to 12 x 12; identify common factors, common multiples, square numbers to 144 and prime numbers up to 20. MD
10. **Multiply/divide whole numbers mentally, using facts to 12 × 12 & place value (e.g. 60 × 70); use facts to work with larger numbers.** MD
11. **Multiply 2-, 3- and 4-digit numbers by numbers up to 12 using short multiplication or another appropriate written method.** MD
12. **Multiply numbers with up to 4 digits by 2-digit numbers using formal long multiplication**. MD
13. Scale up or down by a factor of 2, 4, 5 or 10; solve scaling problems and those involving rates. MD
14. **Perform divisions mentally within the range of tables facts; divide multiples of 10 and 100 (4500 ÷9) and use mental strategies such as halving (450 ÷20).** MD
15. **Interpret remainders as whole number remainders, fractions, including decimal fractions where equivalents are known or by rounding up or down.** MD
16. **Divide numbers with up to 4-digits by a number up to 12 using short division and giving an appropriate answer.** MD
17. **Divide numbers with up to 4 digits by 2-digit numbers using a formal written method of long division and giving an appropriate answer.** MD
18. Perform mental calculations, including with mixed operations & large numbers; carry out calculations using knowledge of the order of operations & brackets. MD
19. Use estimation to check answers and determine an appropriate degree of accuracy; round answers to multiplications and divisions to a specified degree of accuracy. MD
20. **Solve problems involving all four operations.** MD
21. Use common multiples to generate equivalent fractions, e.g. 4/8 = ½ reduce fractions to their simplest form using common factors. FD
22. **Use knowledge of equivalence to compare and order fractions and to add and subtract fractions and mixed numbers.** FD
23. **Identify simple fraction/decimal/percentage equivalents: ½ = 0.5 = 50%, ¼ = 0.25 = 25%, ¾ = 0.75 = 75%, 1/3 = 0.33 = 33%.** FD
24. Associate a fraction with division; calculate decimal fraction equivalents, e.g. 4/5 is 0.8 and 1/8 is 0.125. FD
25. **Understand that if two numbers less than 1 are multiplied, the answer is smaller than either of them.** FD
26. Multiply simple pairs of proper fractions, writing the answer in its simplest form. FD
27. Divide proper fractions by whole numbers, recognising that ¾ ÷ by 2 is equivalent to ¾ x ½. FD
28. **Identify the place value of each digit in a number with up to 3 decimal places; multiply/divide nos by 10, 100, 1000 giving answers with up to 3-decimal places.** FD
29. **Find the complement to 1, or to the next whole number, for a number <10 with up to 3 decimal places (0.007 + ? = 1)** FD
30. **Add several decimal numbers using mental or written addition.** FD
31. **Subtract decimal numbers using mental strategies or written counting up.** FD
32. Multiply numbers such as 4.7 and 0.06 by whole numbers. FD
33. **Calculate simple percentages of whole numbers and solve problems involving use of percentages for comparisons.** FD
34. Solve problems involving similar shapes where the scale factor is known or can be found. FD
35. **Solve problems involving simple ratios, using tables facts and knowledge of fractions and multiples, e.g. 2 eggs for every 250g of flour.** FD
36. Use simple formulae, including formulae expressed in words. A
37. **Solve missing number problems, including where letters are used to replace constants.** A or N
38. Find pairs of numbers that satisfy an equation with two unknowns and list, in order, the possibilities of combinations of two variables A or N
39. Generate, describe and continue linear sequences. A or N
40. **Use, read and write, and convert between, standard units including miles and kilometres, using decimal numbers with up to three places as appropriate.** MS
41. Solve problems using standard units and converting between them. MS
42. Measure areas and perimeters; understand that area is a measurement of covering and is measured in square units, and perimeter is a length, measured in mm, cm, m or km; recognise that shapes with the same area can have different perimeters and vice versa. MS
43. Calculate the area of parallelograms and triangles. MS
44. Calculate, estimate and compare volume of cubes & cuboids using standard units, incl. cubic centimetres and cubic metres; extend to other units [e.g. mm3 and km3]. MS
45. **Use 12 and 24-hour clocks including analogue with Roman numerals; calculate time intervals; use timetables.** MS
46. Read scales with accuracy and confidence. MS
47. **Interpret and construct pie charts and line graphs and use these to solve problems.**
48. **Find and interpret the mean (average) of several quantities.** MS
49. Draw 2-D shapes, using given dimensions and angles; understand terms parallel and perpendicular. G

50. Recognise, describe and build 3-D simple shapes, including making nets. G
51. **Compare and classify geometric shapes based on their properties; classify and name types of triangle and angle (acute, obtuse, reflex)** G
52. **Find unknown angles in triangles, quadrilaterals and regular polygons; also find missing angles at a point, vertically opposite or on a straight line.** G
53. Identify, illustrate and name parts of circles, including diameter, circumference and radius, understanding that the radius is half the diameter. G
54. **Identify positions on the full co-ordinate grid; draw and translate simple shapes and reflect them in the x-axis or y-axis.** G
55. **Begin to reason mathematically making simple generalisations, using mathematical language and making connections between mathematical ideas** G

The letters in orange indicate the strand on Hamilton Assessment Tracker to which each Outcome belongs.