**Cambois Primary School** **Long Term Plan Year 3/4**



**Place Value**

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| Link to WRMH small steps | * <https://wrm-13b48.kxcdn.com/wp-content/uploads/2019/SoLs/Primary/MixedAge/Year-3-and-4-Mixed-Age-Autumn-Block-1-Place-Value.pdf>
 |
| Key NC outcomes | * recognise the place value of each digit in a three-digit number (hundreds, tens, ones)
* read and write numbers up to 1000 in numerals and in words
* identify, represent and estimate numbers using different representations
* solve number problems and practical problems involving these ideas
* compare and order numbers up to 1000
* count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number
* solve number problems and practical problems involving these ideas

y4* Work with numbers less than 10 000
* Understand and use Roman numerals
* Explore the history of our number system
* Explore ways of representing numbers
* Develop skills of estimation

DFE guidance<https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/897801/Maths_guidance_year_3.pdf><https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/897803/Maths_guidance_year_4.pdf> |
| Mathematical language | Place valueDigitHundredsTensOnesEstimateNumber linepositiveScale | ThousandsZeroRoman Numeral |  |
| Useful resources - reasoning  | NRICH: [Which scripts?](http://nrich.maths.org/774)NRICH: [Which is quicker?](http://nrich.maths.org/1817)NRICH: [The Deca Tree](http://nrich.maths.org/2006)NCETM: [Ordering numbers](https://www.ncetm.org.uk/resources/42469): Activity ANCETM: [The value of place](https://www.ncetm.org.uk/resources/42469): Activity E | NCETM: [Place Value Reasoning](https://www.ncetm.org.uk/public/files/18416215/1_Progression_Map_Place_Value_Reasoning.pdf) (blue questions)NRICH: [Nice or Nasty Games](http://nrich.maths.org/6605)NCETM: [Roman Numerals](https://www.ncetm.org.uk/resources/42476): Activity JNRICH: [The Thousands Game](http://nrich.maths.org/2646)NRICH: [Clapping Times](http://nrich.maths.org/5482)NRICH: [Music to My Ears](http://nrich.maths.org/5483/index)NRICH: [Sea Level](http://nrich.maths.org/5929) | [NCETM mastery y3](https://www.ncetm.org.uk/public/files/23305581/Mastery_Assessment_Y3_Low_Res.pdf)[NCETM mastery y4](file:///C%3A%5CUsers%5CUSER%5CAppData%5CRoaming%5CMicrosoft%5CWord%5Cncetm.org.uk%5Cpublic%5Cfiles%5C23305622%5CMastery_Assessment_Y4_Low_Res.pdf)I can see reasoning (in shared area) |
| Possible misconceptions  | * Some pupils may write three-digit numbers literally, for example, four hundred and six as ‘4006’
* Some pupils may ignore place value and simply write the digits mentioned in a number, for example, four hundred and six as ‘46’
* Some pupils may write three-digit numbers literally, for example, four hundred and six as ‘4006’
* Some pupils may ignore place value and simply write the digits mentioned in a number, for example, four hundred and six as ‘46’
* Some pupils may think that zero is positive as it does not have a negative symbol
* Some pupils may use ‘base 10 thinking’ to write Roman numerals, for example 49 as ‘IL’ as it is ‘one less than fifty’
* Some pupils may write four digits numbers literally, for example, four thousand and twenty six as ‘400026’
* Some pupils may ignore place value and simply write the digits mentioned in a number, for example, four thousand and twenty six as ‘426’
* Some pupils may think the negative number line is:

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 -1 -2 -3 -4 -5 -6 -7 -8 -9 -10* Some pupils think that 1.32 > 1.4 because it has more decimal places
* Some pupils may think that multiples stop at the ‘end of the times tables’, e.g. 84 is the highest multiple of 7.
 |
| Assessment | <https://wrm-13b48.kxcdn.com/wp-content/uploads/2018/08/Year-3-Place-Value_End-of-Block-Assessment.pdf><https://wrm-13b48.kxcdn.com/wp-content/uploads/2018/08/Year-4-Place-Value_End-of-Block-Assessment.pdf> |

**Addition and subtraction**

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| Link to WRMH small steps | * <https://wrm-13b48.kxcdn.com/wp-content/uploads/2019/SoLs/Primary/MixedAge/Year-3-and-4-Mixed-Age-Autumn-Block-2-Addition-and-Subtraction.pdf>
 |
| Key NC outcomes | * add and subtract numbers mentally, including: a three-digit number and ones; a three-digit number and tens; a three-digit number and hundreds
* add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction
* estimate the answer to a calculation and use inverse operations to check answers
* solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction
 |
| Mathematical language | CalculationCalculateAdditionSubtractionSum, TotalDifference, Minus, LessColumn addition | Column subtractionExchangeOperationEstimateInverseOperation |  |
| Useful resources - reasoning  | NRICH: [Reach 100](http://nrich.maths.org/1130)**,** [Twenty Divided Into Six](http://nrich.maths.org/1047)**,** [Consecutive Numbers](http://nrich.maths.org/31)NCETM: [Triangular cards](https://www.ncetm.org.uk/resources/42536): Activity ENCETM: [Interactive Base 10 Blocks](https://www.ncetm.org.uk/resources/42536): Activity F, G and HNCETM: [Estimating differences](https://www.ncetm.org.uk/resources/42543): Activity F | NRICH: [Dicey operations](http://nrich.maths.org/6606): Game 2NCETM: [Interactive Base 10 Blocks](https://www.ncetm.org.uk/resources/42543): Activity ANCETM: [Images of addition and subtraction](https://www.ncetm.org.uk/resources/42543): Activity C | [NCETM mastery y3](https://www.ncetm.org.uk/public/files/23305581/Mastery_Assessment_Y3_Low_Res.pdf)[NCETM mastery y4](file:///C%3A%5CUsers%5CUSER%5CAppData%5CRoaming%5CMicrosoft%5CWord%5Cncetm.org.uk%5Cpublic%5Cfiles%5C23305622%5CMastery_Assessment_Y4_Low_Res.pdf)I can see reasoning (in shared area)NCETM: [Addition and Subtraction Reasoning](https://www.ncetm.org.uk/public/files/18416326/2_Progression_Map_Addition_and_Subtraction_Reasoning.pdf) (blue questions) |
| Possible misconceptions  | * Some pupils may carry the wrong carry digit (i.e. the ones digit rather than the tens digit)
* Some pupils incorrectly assume and use commutativity within column subtraction; for example:

|  |  |  |  |
| --- | --- | --- | --- |
|  | 9 | 2 | 6 |
| – | 7 | 3 | 4 |
|  | 2 | 1 | 2 |

* Some pupils may not use place value settings correctly (especially when the numbers have a different number of digits)
* Some pupils incorrectly assume and use commutativity within column subtraction; for example:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 4 | 1 | 2 | 6 |
| – | 3 | 7 | 3 | 4 |
|  | 1 | 6 | 1 | 2 |

* Some pupils may not use place value settings correctly (especially when the numbers have a different number of digits)
 |
| Assessment | <https://wrm-13b48.kxcdn.com/wp-content/uploads/2018/10/Year-4-Addition-and-Subtraction_v2.pdf><https://wrm-13b48.kxcdn.com/wp-content/uploads/2018/09/Year-3-Addition-and-Subtraction.pdf> |

**Multiplication and division**

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| Link to WRMH small steps | * <https://wrm-13b48.kxcdn.com/wp-content/uploads/2019/SoLs/Primary/MixedAge/Year-3-and-4-Mixed-Age-Autumn-Block-3-Multiplication-and-Division.pdf>
 |
| Key NC outcomes | * recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables
* write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods
* solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects

Y4* recall multiplication and division facts for multiplication tables up to 12 × 12
* recognise and use factor pairs and commutativity in mental calculations
* use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers
* multiply two-digit and three-digit numbers by a one-digit number using formal written layout

solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects |
| Mathematical language | CalculationCalculateMental arithmeticMultiplication table, Times tableMultiply, MultiplicationTimesProductCommutativeDivide, DivisionInverseOperationEstimate | CommutativeDivide, DivisionTenth, HundredthFactor, Factor pairsShort multiplication |  |
| Useful resources - reasoning  | NRICH: [Andy’s Marbles](http://nrich.maths.org/2421/index)NCETM: [Always, Sometimes, Never](https://www.ncetm.org.uk/resources/42591): Activity ANCETM: [Pendulum Counting](https://www.ncetm.org.uk/resources/42591): Activity BNCETM: [Multiplying Numbers](https://www.ncetm.org.uk/resources/42591): Activity D | NRICH: [Multiplication Square Jigsaw](http://nrich.maths.org/5573) ,[Mystery matrix](http://nrich.maths.org/public/viewer.php?obj_id=1070), [Abundant Numbers](http://nrich.maths.org/1011)NCETM: [Models and Images (Number Trios)](https://www.ncetm.org.uk/resources/42543): Activity DNCETM: [12 x 12 Activities](https://www.ncetm.org.uk/resources/42598): Activity ANCETM: [Multiplying and Dividing with Straws](https://www.ncetm.org.uk/resources/42598): Activity BNCETM: [sdMultilink Multiplication](https://www.ncetm.org.uk/resources/42598): Activity D | [NCETM mastery y3](https://www.ncetm.org.uk/public/files/23305581/Mastery_Assessment_Y3_Low_Res.pdf)[NCETM mastery y4](file:///C%3A%5CUsers%5CUSER%5CAppData%5CRoaming%5CMicrosoft%5CWord%5Cncetm.org.uk%5Cpublic%5Cfiles%5C23305622%5CMastery_Assessment_Y4_Low_Res.pdf)NCETM: [Multiplication and Division Reasoning](https://www.ncetm.org.uk/public/files/18438909/3_Progression_Map_Multiplication_and_Division_Reasoningv2.pdf)I can see reasoning (in shared area) |
| Possible misconceptions  | * Some pupils ‘see’ the times tables as a list of 12 unconnected facts
* Some pupils do not understand multiplication is commutative.
* Some pupils may write statements such as 2 ÷ 8 = 4
* Some pupils think because 3 × 5 = 5 × 3 then 15 ÷ 3 = 3 ÷ 15
* Some pupils may write statements such as 2 ÷ 8 = 4
* Some pupils may carry the wrong digit when using short multiplication; for example:

|  |  |  |  |
| --- | --- | --- | --- |
|  | 3 | 4 | 5 |
| × |  |  | 3 |
|  |  |  | 1 |
|  |  | 5 |  |

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| Assessment | <https://wrm-13b48.kxcdn.com/wp-content/uploads/2018/11/Year-4-Multiplication-and-Division.pdf><https://wrm-13b48.kxcdn.com/wp-content/uploads/2018/10/Mini-Assessment-Block-3_Year-3-Multiplication-and-Division.pdf> |

**Measurement: area, length and perimeter**

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| Link to WRMH small steps | * <https://wrm-13b48.kxcdn.com/wp-content/uploads/2019/10/Year-3-and-4-Mixed-Age-Spring-Block-2-Length-Perimeter-and-Area.pdf>
 |
| Key NC outcomes | * measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)
* measure the perimeter of simple 2-D shapes

y4* measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres
* find the area of rectilinear shapes by counting squares
 |
| Mathematical language | Length, distanceMassVolumeCapacityMetre, centimetre, millimetreKilogram, gramLitre, millilitrePerimeter2-D | PerimeterAreaDimensionsSquareRectangleRectilinearPolygonMillimetre, Centimetre, Metre, Kilometre |  |
| Useful resources - reasoning  | NRICH: [Olympic Starters](http://nrich.maths.org/8170) NRICH: [Car Journey](https://nrich.maths.org/10350)NCETM: [Activity B - Perimeter](https://www.ncetm.org.uk/resources/42725)NCETM: [Activity A - Measures](https://www.ncetm.org.uk/resources/42725) | NRICH: [Torn Shapes](http://nrich.maths.org/public/viewer.php?obj_id=4963)NCETM: [Activity B](https://www.ncetm.org.uk/resources/42733) | [NCETM mastery y3](https://www.ncetm.org.uk/public/files/23305581/Mastery_Assessment_Y3_Low_Res.pdf)[NCETM mastery y4](file:///C%3A%5CUsers%5CUSER%5CAppData%5CRoaming%5CMicrosoft%5CWord%5Cncetm.org.uk%5Cpublic%5Cfiles%5C23305622%5CMastery_Assessment_Y4_Low_Res.pdf)NCETM: [Measurement Reasoning](https://www.ncetm.org.uk/public/files/18436766/7_Progression_Map_Measurement_Reasoning.pdf)I can see reasoning (in shared area) |
| Possible misconceptions  |

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* Some pupils may think that you put the end of the ruler (rather than the ‘0’) at the start of a line to measure it.
* Some pupils may think that the conversion factor between all measures is multiply or divide by 10.
* Some pupils may think that milli- refers to ‘million’
* Some pupils may find perimeters by counting the squares that are around the outside of the shape, rather than the associated lengths. This will result in an answer four less than the correct answer if working with rectangles.
* Some pupils may confuse the concepts of area and perimeter
* Some pupils may think that perimeter is always given by 2(a + b) or 2a + 2b, but this is only the case for certain 2D shapes
* Some pupils may think that you multiply the numbers to find the perimeter of a shape.
* Some pupils may think that you cannot find the perimeter of a shape unless all the dimensions are given.
* Some pupils may just add the given dimensions, rather than consider any unlabelled dimensions
 |
| Assessment | <https://wrm-13b48.kxcdn.com/wp-content/uploads/2019/02/Primary_Spring_Mini_Assessments/Spring-Block-4-Mini-Assessment-Year-3-Length-and-Perimeter.pdf><https://wrm-13b48.kxcdn.com/wp-content/uploads/2019/01/Primary_Spring_Mini_Assessments/Spring-Block-2-Year-4-Area.pdf> |

**Fractions**

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| Link to WRMH small steps | * <https://wrm-13b48.kxcdn.com/wp-content/uploads/2019/10/Year-3-and-4-Mixed-Age-Spring-Block-3-Fractions.pdf>
 |
| Key NC outcomes | * recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators
* recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators
* recognise and show, using diagrams, equivalent fractions with small denominators
* compare and order unit fractions, and fractions with the same denominators
* count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10
* add and subtract fractions with the same denominator within one whole [for example, 5/7 + 1/7 = 6/7]

y4* add and subtract fractions with the same denominator
* solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number
* recognise and show, using diagrams, families of common equivalent fractions
 |
| Mathematical language | FractionUnit- fractionNon- unit fraction | Numerator, denominatorAdd/ subtractEquivalent  | CompareGreater than/less than |
| Useful resources - reasoning  | NRICH: [Fair Feast](http://nrich.maths.org/2361)NRICH: [Fractional Triangles](http://nrich.maths.org/2124)NCETM: [Activity D – adding and subtracting fractions](https://www.ncetm.org.uk/resources/42648)NCETM: [Activity C – fractions to calculate quantities](https://www.ncetm.org.uk/resources/42648) | NRICH: [Fraction Match](http://nrich.maths.org/6938)NRICH: [Matching Fractions](http://nrich.maths.org/8283)NCETM: [Activity F - Comparing Fractions](https://www.ncetm.org.uk/resources/42641) | NCETM: [Fractions Reasoning](https://www.ncetm.org.uk/public/files/18416412/4_Progression_Map_Fractions_Reasoning_.pdf) (blue questions)I can see reasoning resources (in shared area) |
| Possible misconceptions  | * some pupils might not appreciate that a non-unit fraction is a multiple of a unit fraction
* Some pupils may think that you simply add/subtract the numerators and add/subtract the denominators when adding fractions.
* Some pupils may think that you find the non-unit fraction of an amount by dividing by the denominator (as with unit fractions) and then dividing by the numerator. They do not make the connection that ¾ = 3 x ¼.
* Some pupils may think that diagrams to show fractions must always be circular.
* Some pupils may not acknowledge that the parts in a fraction must be equal; e.g. they talk about the ‘bigger half’
* Some pupils may think that the first place value heading after the decimal point is ‘one-ths’ or ‘unit-ths’
* Some pupils may think that you simply add the numerators and add the denominators when adding fractions.
* Some pupils may think that you simply subtract the numerators and subtract the denominators when subtracting fractions.
 |
| Assessment | <https://wrm-13b48.kxcdn.com/wp-content/uploads/2019/03/Primary_Mini_Assessments/Spring-Block-5-Mini-Assessment-Year-3-Fractions.pdf> <https://wrm-13b48.kxcdn.com/wp-content/uploads/2019/01/Primary_Spring_Mini_Assessments/Spring-Block-3-Year-4-Fractions_Assessment.pdf> |

**Measurement – mass and capacity**

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| Link to WRMH small steps | * <https://wrm-13b48.kxcdn.com/wp-content/uploads/2019/10/Year-3-and-4-Mixed-Age-Spring-Block-4-Mass-Capacity-and-Decimals.pdf>
 |
| Key NC outcomes | * measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)

Y4* convert between different units of measure [for example, kilometre to metre; hour to minute]
 |
| Mathematical language | MassVolumeCapacityMetre, centimetre, millimetreKilogram, gramLitre, millilitre |  |  |
| Useful resources - reasoning  | NRICH: [Olympic Starters](http://nrich.maths.org/8170) NRICH: [Car Journey](https://nrich.maths.org/10350)NCETM: [Activity A - Measures](https://www.ncetm.org.uk/resources/42725) | ICH: [Discuss and Choose](http://nrich.maths.org/7449)NCETM: [Activity Set A](https://www.ncetm.org.uk/resources/42733)NCETM: [Activity Set C](https://www.ncetm.org.uk/resources/42733)NCETM: [Activity Set D](https://www.ncetm.org.uk/resources/42733) | [NCETM mastery y3](https://www.ncetm.org.uk/public/files/23305581/Mastery_Assessment_Y3_Low_Res.pdf)[NCETM mastery y4](file:///C%3A%5CUsers%5CUSER%5CAppData%5CRoaming%5CMicrosoft%5CWord%5Cncetm.org.uk%5Cpublic%5Cfiles%5C23305622%5CMastery_Assessment_Y4_Low_Res.pdf)NCETM: [Measurement Reasoning](https://www.ncetm.org.uk/public/files/18436766/7_Progression_Map_Measurement_Reasoning.pdf)I can see reasoning (in shared area) |
| Possible misconceptions  |

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* Some pupils may think that the conversion factor between all measures is multiply or divide by 10.
* Some pupils may think that milli- refers to ‘million’
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| Assessment | <https://wrm-13b48.kxcdn.com/wp-content/uploads/2019/06/Year-3-Measurement.pdf>No y4 assessment  |

**Decimals inc money**

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| Link to WRMH small steps | * <https://wrm-13b48.kxcdn.com/wp-content/uploads/2020/03/2020/03/Year-3-and-4-Mixed-Age-Guidance-Summer-Block-1-Decimals-including-money.pdf>
 |
| Key NC outcomes | * add and subtract amounts of money to give change, using both £ and p in practical contexts
* count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10
* Write tenths as a fraction and as a decimal

Y4* estimate, compare and calculate different measures, including money in pounds and pence
 |
| Mathematical language | MoneyCoinChangeNote**Notation**Pounds (£)Pence (p) |  |  |
| Useful resources - reasoning  | NRICH: [Five Coins](http://nrich.maths.org/142)NRICH: [Money Bags](http://nrich.maths.org/1116)NRICH: [The Puzzling Sweet Shop](http://nrich.maths.org/223) | NRICH: [Money Measure](http://nrich.maths.org/2417) | [NCETM mastery y3](https://www.ncetm.org.uk/public/files/23305581/Mastery_Assessment_Y3_Low_Res.pdf)[NCETM mastery y4](file:///C%3A%5CUsers%5CUSER%5CAppData%5CRoaming%5CMicrosoft%5CWord%5Cncetm.org.uk%5Cpublic%5Cfiles%5C23305622%5CMastery_Assessment_Y4_Low_Res.pdf)NCETM: [Measurement Reasoning](https://www.ncetm.org.uk/public/files/18436766/7_Progression_Map_Measurement_Reasoning.pdf)I can see reasoning (in shared area) |
| Possible misconceptions  |

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* Some pupils may think that the larger the size of the coin, the greater the value of the coin, for example, a 2p coin is greater in value than a 5p coin.
* Some pupils may ignore the units in the first instance and simply add the numerical value of the coins, for example, 10p coin + £1 coin = 11p or £11
* Some pupils may try and use the £ and p notation together, such as £3p rather than £3 or 300p.
* Some pupils may move from 2.9 to 2.10 when counting in tenths
* Some pupils may read the number 2.10 as ‘two point ten’
* Some pupils may write ‘one pound and eight pence’ as ‘£1.8’
* Some pupils may use both ‘£’ and ‘p’ symbols, for example ‘£4.56p’
* Some pupils may write ‘four pounds and fifty six pence’ as ‘4.56p’ or ‘£456’
 |
| Assessment | <https://wrm-13b48.kxcdn.com/wp-content/uploads/2019/02/Primary_Spring_Mini_Assessments/Spring-Block-4-Mini-Assessment-Year-4-Decimals.pdf><https://wrm-13b48.kxcdn.com/wp-content/uploads/2019/04/2019/04/2019/04/Year-4-Decimals.pdf><https://wrm-13b48.kxcdn.com/wp-content/uploads/2019/01/Primary_Spring_Mini_Assessments/Spring-Block-2-Year-3-Money.pdf> (money only y3 but y4 could do this assessment to check progress) |

**Measurement – time**

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| Link to WRMH small steps | * <https://wrm-13b48.kxcdn.com/wp-content/uploads/2020/03/2020/03/Year-3-and-4-Mixed-Age-Guidance-Summer-Block-2-Time.pdf>
 |
| Key NC outcomes | * tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks
* estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o’clock, a.m./p.m., morning, afternoon, noon and midnight
* know the number of seconds in a minute and the number of days in each month, year and leap year
* compare durations of events [for example to calculate the time taken by particular events or tasks]

Y4* read, write and convert time between analogue and digital 12- and 24-hour clocks
* solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days
* estimate, compare and calculate different measures, including money in pounds and pence
 |
| Mathematical language | Analogue12-hour24-houro’clockMorningAfternoon | Noon, MidnightSecond, Minute, HourDay, Week, MonthYearLeap yearRoman Numeral |  |
| Useful resources - reasoning  | NRICH: [Two Clocks](http://nrich.maths.org/4806)NCETM: [Virtual Clock](http://time.virneth.co.uk/e-clock/interactive-clock.php): Activity D | NRICH: [Wonky Watches](http://nrich.maths.org/public/viewer.php?obj_id=1002)NRICH: [Five Coins](http://nrich.maths.org/142)NRICH: [Pouring the Punch Drink](http://nrich.maths.org/965)NCETM: [Worms](https://www.ncetm.org.uk/resources/42725): Activity A | [NCETM mastery y3](https://www.ncetm.org.uk/public/files/23305581/Mastery_Assessment_Y3_Low_Res.pdf)[NCETM mastery y4](file:///C%3A%5CUsers%5CUSER%5CAppData%5CRoaming%5CMicrosoft%5CWord%5Cncetm.org.uk%5Cpublic%5Cfiles%5C23305622%5CMastery_Assessment_Y4_Low_Res.pdf)NCETM: [Measurement Reasoning](https://www.ncetm.org.uk/public/files/18436766/7_Progression_Map_Measurement_Reasoning.pdf)I can see reasoning (in shared area) |
| Possible misconceptions  |

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | 5 |  |

* The use of IIII on a clock face suggests that a Roman numeral can be repeated four times, but this is a special case. In general, three is the maximum number of repeats and the subtractive method should be used instead (i.e. IV)
* Some pupils may think that all months have the same number of days.
* Some pupils do not have a realistic sense of the length of one minute (usually they count one, two, three … etc. far too quickly!)
* Some pupils do not write 24-hour times as four digits, for example 1:50 rather than 01:50 for 1.50 a.m.
 |
| Assessment | <https://wrm-13b48.kxcdn.com/wp-content/uploads/2019/04/Year-3-Time.pdf><https://wrm-13b48.kxcdn.com/wp-content/uploads/2019/05/Year-4-Time.pdf> |

**Statistics**

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| Link to WRMH small steps | * <https://wrm-13b48.kxcdn.com/wp-content/uploads/2020/03/2020/03/Year-3-and-4-Mixed-Age-Guidance-Summer-Block-3-Statistics.pdf>
 |
| Key NC outcomes | * interpret and present data using bar charts, pictograms and tables
* solve one-step and two-step questions [for example, ‘How many more?’ and ‘How many fewer?’] using information presented in scaled bar charts and pictograms and tables

Y4* interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs
* solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs
 |
| Mathematical language | DataPictogramSymbolKeyTallyBar chartTableTotalCompareAxis | Time graphScaleAxisGraphFrequency |  |
| Useful resources - reasoning  | NRICH: [Class 5’s Names](http://nrich.maths.org/7522)NRICH: [Our Sports](http://nrich.maths.org/7779)NRICH: [The Olympic Flame: Are You in the 95%?](http://nrich.maths.org/7822)NCETM: [Activity A](https://www.ncetm.org.uk/resources/42956)NCETM: [Activity B](https://www.ncetm.org.uk/resources/42956) | NRICH: [You tell the story](http://nrich.maths.org/4802)NRICH: [You tell the story](http://nrich.maths.org/4802)NCETM: [Activity A](https://www.ncetm.org.uk/resources/42962)NCETM: [Activity B](https://www.ncetm.org.uk/resources/42962) | [NCETM mastery y3](https://www.ncetm.org.uk/public/files/23305581/Mastery_Assessment_Y3_Low_Res.pdf)[NCETM mastery y4](file:///C%3A%5CUsers%5CUSER%5CAppData%5CRoaming%5CMicrosoft%5CWord%5Cncetm.org.uk%5Cpublic%5Cfiles%5C23305622%5CMastery_Assessment_Y4_Low_Res.pdf)NCETM: [Statistics Reasoning](https://www.ncetm.org.uk/public/files/18437062/10_Progression_Map_Statistics_Reasoning.pdf)I can see reasoning (in shared area) |
| Possible misconceptions  | * Some pupils may not leave gaps between the bars in a bar chart
* Some pupils may think that one centimetre on the frequency axis of a bar chart always represents one unit in a bar chart.
* Some pupils may think that a symbol always represents one unit in a pictogram.
* Some pupils may think that the bars of a bar chart must be vertical.
* Some pupils may interpret bar charts as one unit of frequency for each one square on the paper used.
* Some pupils may not leave gaps between the bars in a bar chart
 |
| Assessment | <https://wrm-13b48.kxcdn.com/wp-content/uploads/2019/06/Year-4-Statistics.pdf><https://wrm-13b48.kxcdn.com/wp-content/uploads/2019/01/Primary_Spring_Mini_Assessments/Spring-Block-3-Year-3-Statistics_Assessment.pdf> |

**Geometry** (note in single year plans this is separate units so may wish to assess and block)

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| --- | --- |
| Link to WRMH small steps | * <https://wrm-13b48.kxcdn.com/wp-content/uploads/2020/03/2020/03/Year-3-and-4-Mixed-Age-Guidance-Summer-Block-4-Properties-of-Shape.pdf>
 |
| Key NC outcomes | * recognise angles as a property of shape or a description of a turn

identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle* identify horizontal and vertical lines and pairs of perpendicular and parallel lines

draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe themY4* describe positions on a 2-D grid as coordinates in the first quadrant
* plot specified points and draw sides to complete a given polygon
* describe movements between positions as translations of a given unit to the left/right and up/down
* identify acute and obtuse angles and compare and order angles up to two right angles by size
 |
| Mathematical language | HalfQuarterThree quartersAngleTurnRight angleGreater than, less than | HorizontalVerticalPerpendicularParallelFace, Edge, Vertex (Vertices)Cube, Cuboid, Prism, Cylinder, Pyramid, Cone, SphereQuadrilateralSquare, Rectangle, Parallelogram, (Isosceles) Trapezium, Kite, RhombusTriangle, CirclePolygon, Hexagon, Pentagon, Octagon, Decagon |  |
| Useful resources - reasoning  | NRICH: [Square It](http://nrich.maths.org/public/viewer.php?obj_id=2526)NCETM: [Activity Set B](https://www.ncetm.org.uk/resources/42835)NCETM: [Activity Set C](https://www.ncetm.org.uk/resources/42835)NRICH: [Triangles All Around](http://nrich.maths.org/2850) | NCETM: [The Art of Mathematics](https://www.ncetm.org.uk/resources/42835): Activity DNCETM: [Making shapes and solids](https://www.ncetm.org.uk/resources/42835): Activity ANRICH: [Coordinate Challenge](http://nrich.maths.org/5038)NRICH: [A Cartesian Puzzle](http://nrich.maths.org/5038)NCETM: [Activity C: Translation or Destination 1](https://www.ncetm.org.uk/resources/42938)  | [NCETM mastery y3](https://www.ncetm.org.uk/public/files/23305581/Mastery_Assessment_Y3_Low_Res.pdf)[NCETM mastery y4](file:///C%3A%5CUsers%5CUSER%5CAppData%5CRoaming%5CMicrosoft%5CWord%5Cncetm.org.uk%5Cpublic%5Cfiles%5C23305622%5CMastery_Assessment_Y4_Low_Res.pdf)NCETM: [Geometry - Properties of Shapes Reasoning](https://www.ncetm.org.uk/public/files/18438967/8_Progression_Map_Geometry_properties_of_shapes_Reasoningv2.pdf)I can see reasoning (in shared area)NCETM: [Geometry: Position Direction and Movement Reasoning](https://www.ncetm.org.uk/public/files/18436990/9_Progression_Map_Geometry_position_direction_and_movement_Reasoning.pdf) |
| Possible misconceptions  | * Some pupils may think that right angles have to look like this:

 * Some pupils may think that right angles have to be created from a horizontal and vertical line
* Some pupils may think that all turns have to be in a clockwise direction
* Some pupils think that a quarter turn is an acute angle; some may think it’s an obtuse angle.
* Some pupils may think that a drawn angle must use two lines of equal length
* Pupils may believe, incorrectly, that:
* perpendicular lines have to be horizontal / vertical
* only straight lines can be parallel
* Some pupils may think that a square and rectangle are two different shapes.
* Pupils may believe, incorrectly, that all 3-D shapes are prisms
* When describing or carrying out a translation, some pupils may count the squares between the two shapes rather than the squares that describe the movement between the two shapes.
* Some pupils may muddle left and right
* Some pupils will confuse the order of x-coordinates and y-coordinates
* When constructing axes, some pupils may not realise the importance of equal divisions on the axes
 |
| Assessment | <https://wrm-13b48.kxcdn.com/wp-content/uploads/2019/06/Year-4-Block-5_Properties-of-shapes.pdf><https://wrm-13b48.kxcdn.com/wp-content/uploads/2019/06/Year-4-Block-6_Position-and-direction.pdf><https://wrm-13b48.kxcdn.com/wp-content/uploads/2019/05/Year-3-Properties-of-Shape.pdf> |