# Year 6:

# National Expectations For Learning

## Mathematics

Arithmetic
Problem Solving & Reasoning

**Number and Place Value:**

Pupils should be taught to

- read, write, order and compare numbers up to 10 000 000 and determine the value of each digit
- round any whole number to a required degree of accuracy
- use negative numbers in context, and calculate intervals across zero
- solve number and practical problems that involve all of the above.

Use the digit cards and statements to work out my number.

| 0 | 3 | 3 | 5 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|

- The ten thousands and hundreds have the same digit.
- The hundred thousand digit is double the tens digit.
- It is a six-digit number.
- It is less than six hundred and fifty-five thousand.

## Addition, subtraction, multiplication and division

Pupils should be taught to:

- multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication
- divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context
- divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context
- perform mental calculations, including with mixed operations and large numbers
- identify common factors, common multiples and prime numbers
- use their knowledge of the order of operations to carry out calculations involving the four operations
- solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
- solve problems involving addition, subtraction, multiplication and division
- use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.

Calculate.

| | | | | | |
|---|---|---|---|---|---|
| | 3 | 4 | 6 | 2 | 1 |
| + | 2 | 5 | 7 | 3 | 4 |
| | | | | | |

67,832 + 5,258

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 4 | 7 | 6 | 1 | 3 | 2 | 5 |
| − | | 9 | 3 | 8 | 0 | 5 | 2 |
| | | | | | | | |

834,501 − 193,642

| | | | | |
|---|---|---|---|---|
| | 4 | 2 | 6 | 7 |
| × | | | 3 | 4 |
| | | | | |

| | | | | |
|---|---|---|---|---|
| | 3 | 0 | 4 | 6 |
| × | | | 7 | 3 |
| | | | | |

5,734 × 26

| | | | | |
|---|---|---|---|---|
| | | 3 | 6 | |
| 12 | 4 | 3 | 2 | |
| − | 3 | 6 | 0 | (×10) |
| | | 7 | 2 | |
| − | | 7 | 2 | (×6) |
| | | | 0 | |

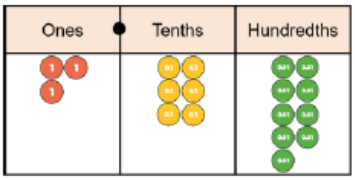
## Fractions, decimals and percentages

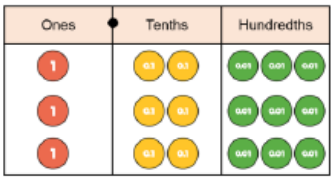
Pupils should be taught to:

- use common factors to simplify fractions; use common multiples to express fractions in the same denomination
- compare and order fractions, including fractions > 1
- add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions
- multiply simple pairs of proper fractions, writing the answer in its simplest form
- divide proper fractions by whole numbers [for example, 3
- associate a fraction with division and calculate decimal fraction equivalents for a simple fraction
- identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places
- multiply one-digit numbers with up to two decimal places by whole numbers
- use written division methods in cases where the answer has up to two decimal places
- solve problems which require answers to be rounded to specified degrees of accuracy
- recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.

Divide 3.69 by 3

Use the diagrams to show the difference between grouping and by sharing?




Use these methods to complete the sentences.

3 ones divided by 3 is _____ ones.

6 tenths divided by 3 is _____ tenths.

9 hundredths divided by 3 is _____ hundredths.

Therefore, 3.69 divided by 3 is _____

Complete the table.

| Decimal | Fraction in tenths or hundredths | Simplified fraction |
|---|---|---|
| 0.6 | $\frac{6}{10}$ | $\frac{3}{5}$ |
|  | | |
|  | | |
|  | | |
| 0.95 | | |

Complete the table.

| Decimal | Fraction | Percentage |
|---|---|---|
| 0.35 | $\frac{35}{100}$ | 35% |
| 0.27 | | |
| 0.6 | | |
| 0.06 | | |

## Ratio and proportion

- solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts
- solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison
- solve problems involving similar shapes where the scale factor is known or can be found
- solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.

## Algebra

Pupils should be taught to:

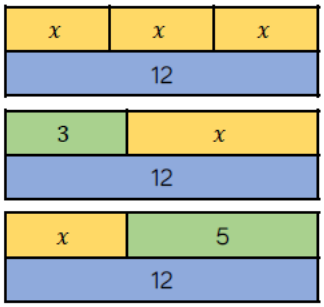
- use simple formulae
- generate and describe linear number sequences
- express missing number problems algebraically
- find pairs of numbers that satisfy an equation with two unknowns
- enumerate possibilities of combinations of two variables.

Match each equation to the correct bar model and then solve to find the value of x.

$x + 5 = 12$

$3x = 12$

$12 = 3 + x$




Substitute the following to work out the values of the expressions.

$w = 3 \quad x = 5 \quad y = 2.5$

- $w + 10$
- $w + x$
- $y - w$

## Measurement

Pupils should be taught to:

- solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate
- use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places
- convert between miles and kilometres
- recognise that shapes with the same areas can have different perimeters and vice versa

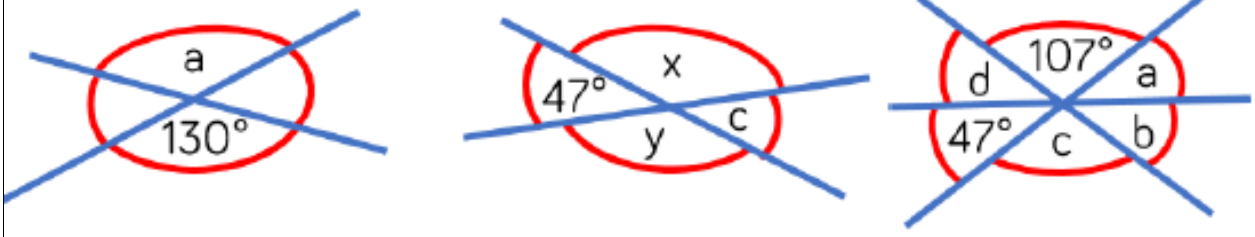
- recognise when it is possible to use formulae for area and volume of shapes
- calculate the area of parallelograms and triangles
- calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres ($cm^3$) and cubic metres ($m^3$), and extending to other units [for example, $mm^3$ and $km^3$].

**Shape:**

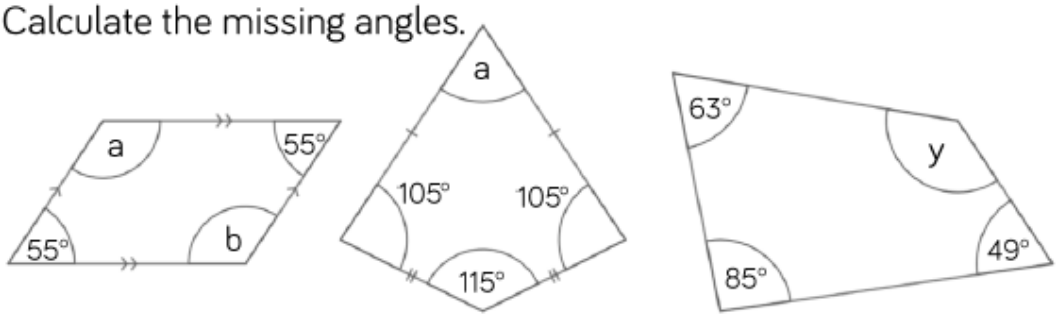
Pupils should be taught to:

- draw 2-D shapes using given dimensions and angles
- recognise, describe and build simple 3-D shapes, including making nets
- compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons
- illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius
- recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.

Find the size of the missing angles.




Calculate the missing angles.



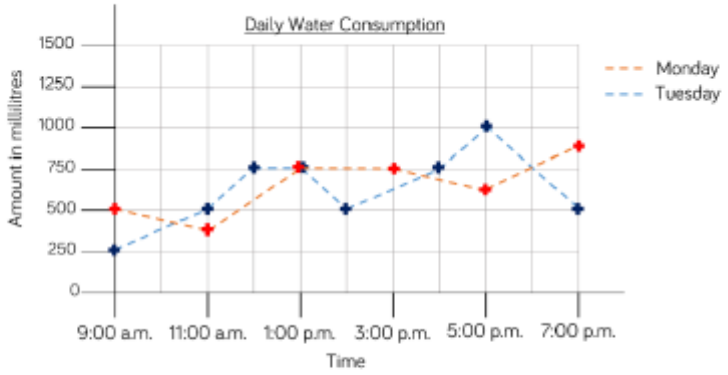

**Data and Statistics:**

Pupils should be taught to:

- interpret and construct pie charts and line graphs and use these to solve problems
- calculate and interpret the mean as an average.
-

Time Time

Here is a graph showing daily water consumption over two days.



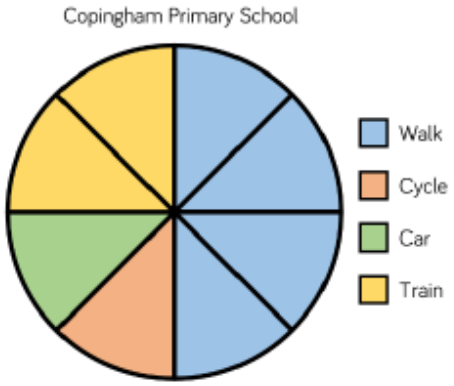

At what times of the day was the same amount of water consumed on Monday and Tuesday?

Was more water consumed at 2 p.m. on Monday or Tuesday morning? How much more?

There are 600 pupils at Copingham Primary school.

Work out how many pupils travel to school by:

a) Train
b) Car
c) Cycling
d) Walking




**Position and direction**

Pupils should be taught to:

- describe positions on the full coordinate grid (all four quadrants)
- raw and translate simple shapes on the coordinate plane, and reflect them in the axes.

**The following reading and writing expectations are taught throughout Year 5 and 6.**

X2 Reading Papers:
Length & variation of texts

# Reading

By the end of Year 6 children should be reading at least 150 words per minute.

By the end of Year 6 children should be reading at least cerise/black book band

Pupils should be taught to:

- continue to read and discuss an increasingly wide range of fiction, poetry, plays, non-fiction and reference books
- read books that are structured in different ways
- increase their familiarity with a wide range of books, including myths, legends and traditional stories, modern fiction, fiction from our literary heritage.
- recommend books that they have read to their peers, giving reasons for their choices
- learning a wider range of poetry by heart
- preparing poems and plays to read aloud and to perform, showing understanding through intonation, tone and volume so that the meaning is clear to an audience
- understand what they read by: checking that the book makes sense to them, discussing their understanding and exploring the meaning of words in context , asking questions to improve their understanding
- drawing inferences such as inferring characters' feelings, thoughts and motives from their actions, and justifying inferences with evidence
- predicting what might happen from details stated and implied
- summarising the main ideas drawn from more than one paragraph, identifying key details that support the main ideas
- identifying how language, structure and presentation contribute to meaning
- discuss and evaluate how authors use language, including figurative language, considering the impact on the reader
- distinguish between statements of fact and opinion
- retrieve, record and present information from non-fiction

# Writing

Ongoing teacher assessment
Spelling, Punctuation & Grammar Test (SPAG)

Pupils should be taught to:

- spell some words with 'silent' letters [for example, knight, psalm, solemn]
- use dictionaries to check the spelling and meaning of words
- use the first three or four letters of a word to check spelling, meaning or both of these in a dictionary
- use a thesaurus.

Pupils should be taught to:

- recognising vocabulary and structures that are appropriate for formal speech and writing, including subjunctive forms
- using passive verbs to affect the presentation of information in a sentence
- using the perfect form of verbs to mark relationships of time and cause
- using expanded noun phrases to convey complicated information concisely
- using modal verbs or adverbs to indicate degrees of possibility
- using relative clauses beginning with who, which, where, when, whose, that or with an implied (i.e. omitted) relative pronoun
- using commas to clarify meaning or avoid ambiguity in writing
- using hyphens to avoid ambiguity
- using brackets, dashes or commas to indicate parenthesis
- using semi-colons, colons or dashes to mark boundaries between independent clauses
- using a colon to introduce a list
- punctuating bullet points consistently

Pupils should be taught to plan their writing by:

- identifying the audience for and purpose of the writing, selecting the appropriate form and using other similar writing as models for their own
- noting and developing initial ideas, drawing on reading and research where necessary
- in writing narratives, considering how authors have developed characters and settings in what pupils have read, listened to or seen performed

draft and write by:

- selecting appropriate grammar and vocabulary, understanding how such choices can change and enhance meaning
- in narratives, describing settings, characters and atmosphere and integrating dialogue to convey character and advance the action
- using further organisational and presentational devices to structure text and to guide the reader [for example, headings, bullet points, underlining]

evaluate and edit by:

- assessing the effectiveness of their own and others' writing
- proposing changes to vocabulary, grammar and punctuation to enhance effects and clarify meaning
- ensuring the consistent and correct use of tense throughout a piece of writing
- ensuring correct subject and verb agreement when using singular and plural, distinguishing between the language of speech and writing and choosing the appropriate register
- proof-read for spelling and punctuation errors

**Reading and Spelling**

The follow list is of words over Year 5 and 6children need to be able to read and spell.

accommodate
accompany
according
achieve
aggressive
amateur
ancient
apparent
appreciate
attached
available
average
awkward
bargain
bruise
category
cemetery
committee
communicate
community
competition
conscience*
conscious*
controversy
convenience
correspond
criticise (critic + ise)
curiosity
definite
desperate
determined
develop
dictionary
disastrous
embarrass
environment
equip (–ped, –ment)
especially
exaggerate
excellent
existence
explanation
familiar
foreign
forty
frequently
government
guarantee
harass
hindrance
identity
immediate(ly)
individual
interfere
interrupt
language
leisure
lightning
marvellous
mischievous
muscle
necessary
neighbour
nuisance
occupy
occur
opportunity
parliament
persuade
physical
prejudice
privilege
profession
programme
pronunciation
queue
recognise
recommend
relevant
restaurant
rhyme
rhythm
sacrifice
secretary
shoulder
signature
sincere(ly)
soldier
stomach
sufficient
suggest
symbol
system
temperature
thorough
twelfth
variety
vegetable
vehicle
yacht