Year 7 Scheme of Learning

MODULE 1

GCSE EXAMS

Year 11

- Bespoke revision
- Perimeter, area & volume
- Bounce back: Constructions & Loci
- Quadratic equations
- Compound measures
- Percentages, including interest
- Indices & standard form
- Bounce back: Quadratic equations
- Constructions & Loci
- Probability & diagrams

Year 10

- Perimeter, area & volume
- Averages
- Angles & Transformations
- Straight line & other graphs
- Expressions & equations
- Graphs
- Sequences
- Pythagoras & Trigonometry
- Ratio & proportion
- Pythagoras & Trigonometry
- Fractions & percentages
- Data handling
- Algebra: including substitution & brackets
- Number; including index laws

Year 9

- Handling data & measures of location
- Angles in parallel lines, lines & polygons
- Fractions & percentages
- Sequences & Indices
- Area of trapezia & circles; Line symmetry & reflections
- Standard form & number sense
- Working in Cartesian plane
- Brackets, equations & inequalities
- Multiplicative reasoning
- Representing data, tables & probability

Year 8

- Sets & probability
- Proof
- Ratio & proportion
- Fraction arithmetic
- Geometric reasoning
- Prime numbers
- Ratio & scale
- Multiplying & dividing fractions

Year 7

- Operations with equations & directed numbers
- Fraction & % of amounts
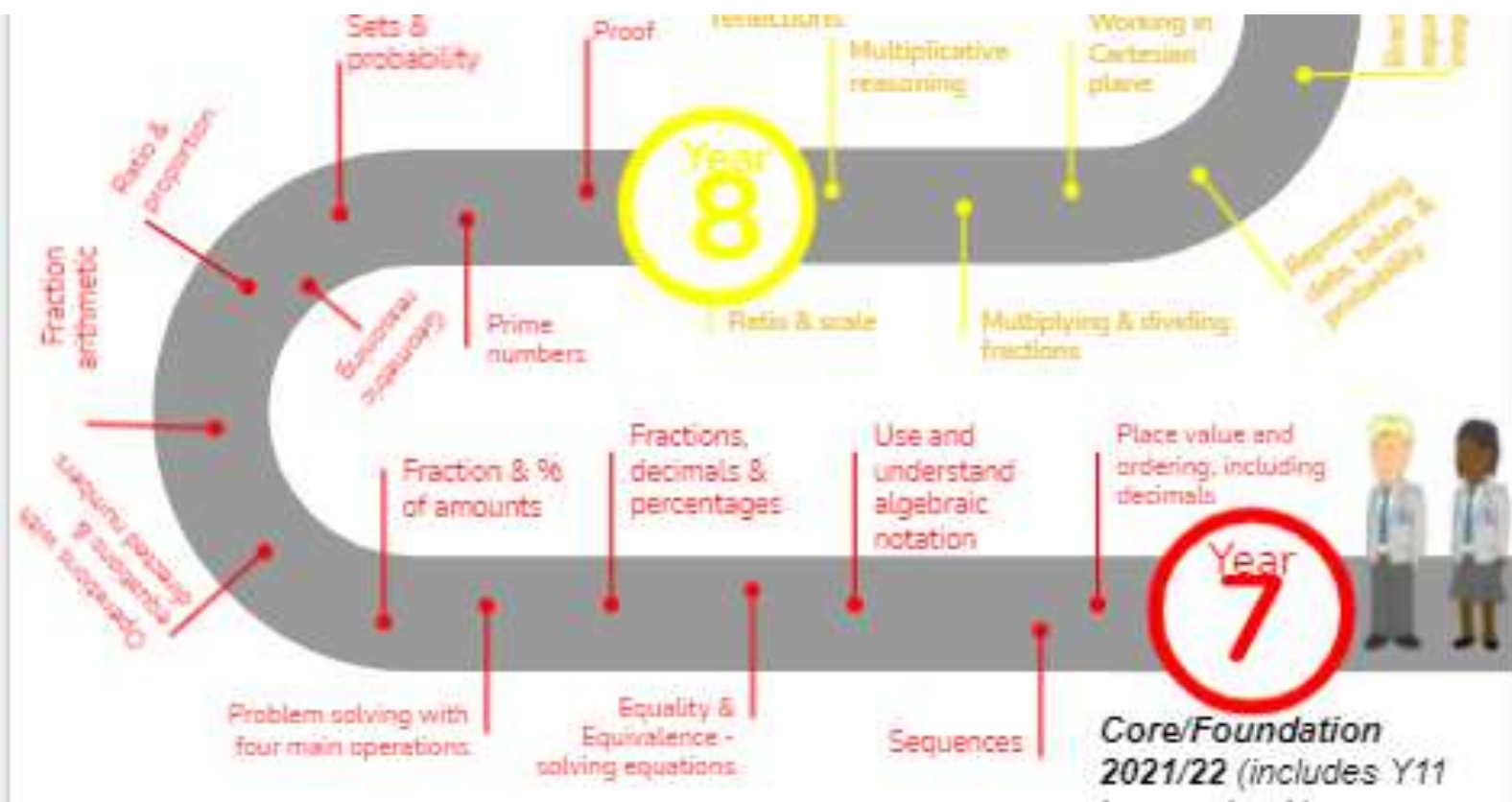- Fractions, decimals & percentages
- Use and understand algebraic notation
- Place value and ordering, including decimals
- Problem solving with four main operations
- Equality & Equivalence - solving equations
- Sequences

Core/Foundation 2021/22 (includes Y11 bounce back)

This is what your child will be taught in Year 7 in MATHS

Year 8

- Sets & probability
- Proof
- Multiplicative reasoning
- Working in Cartesian plane
- Ratio & proportion
- Fraction arithmetic
- Prime numbers
- Ratio & scale
- Multiplying & dividing fractions

Year 7

- Fraction & % of amounts
- Fractions, decimals & percentages
- Use and understand algebraic notation
- Place value and ordering, including decimals
- Problem solving with four main operations
- Equality & Equivalence - solving equations
- Sequences
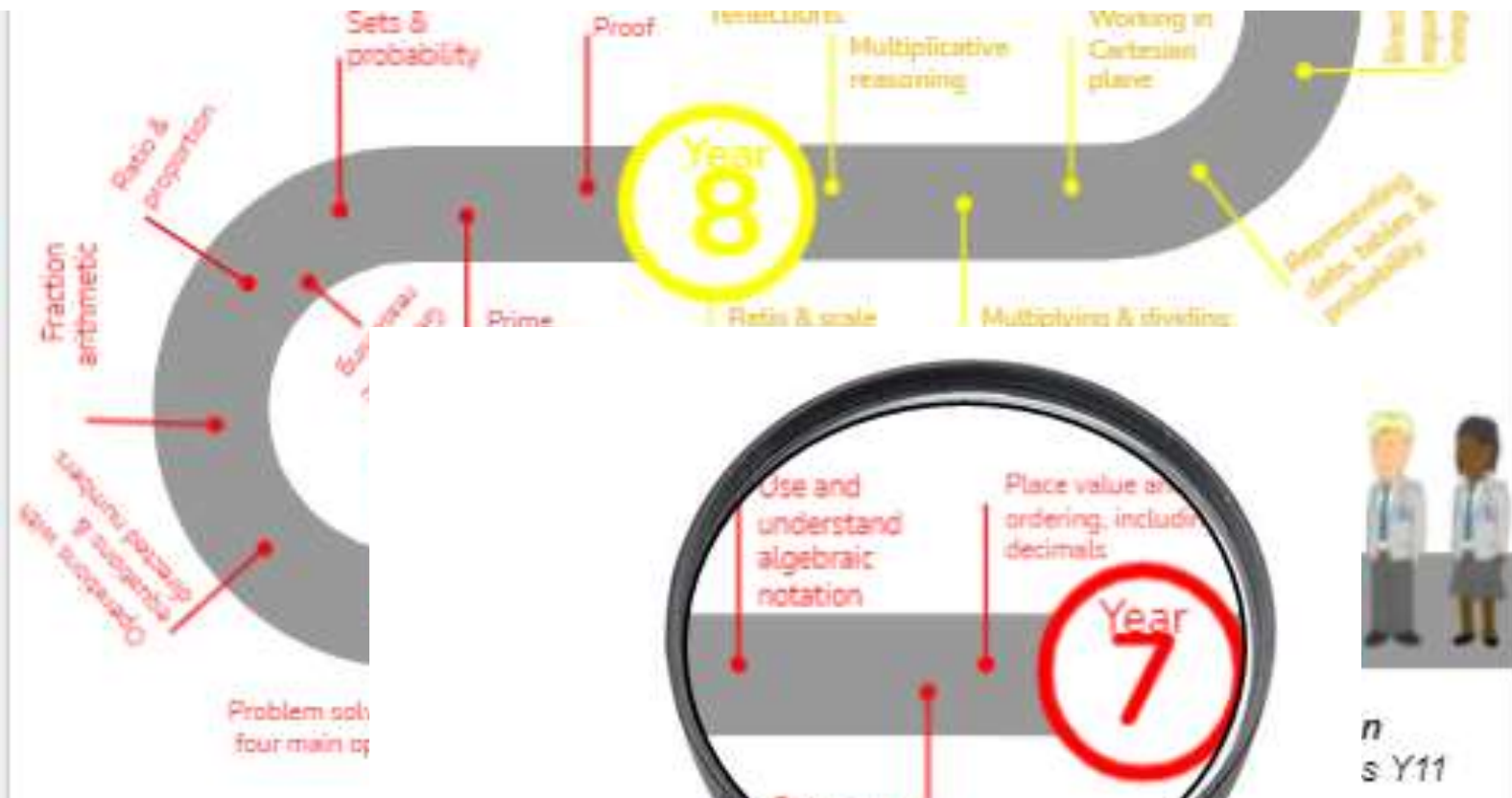- Core/Foundation 2021/22 (includes Y11

Cross Curricular Lessons

English Maths Science Coding

They will have specific lessons linked to other subjects and a diet of retrieval built into their lessons

Caritas Christi Urget Nos

The first 3 topics of Year 7 are:
- Place value and ordering
- Sequences
- Using and understanding algebraic notation

We use the White Rose Maths scheme of learning in Year 7 as our feeder primary schools follow this scheme. It also helps with the transition to Year 7 as pupils are familiar with the resources.

Unit 1: Place Value and ordering

Round integers to powers of ten

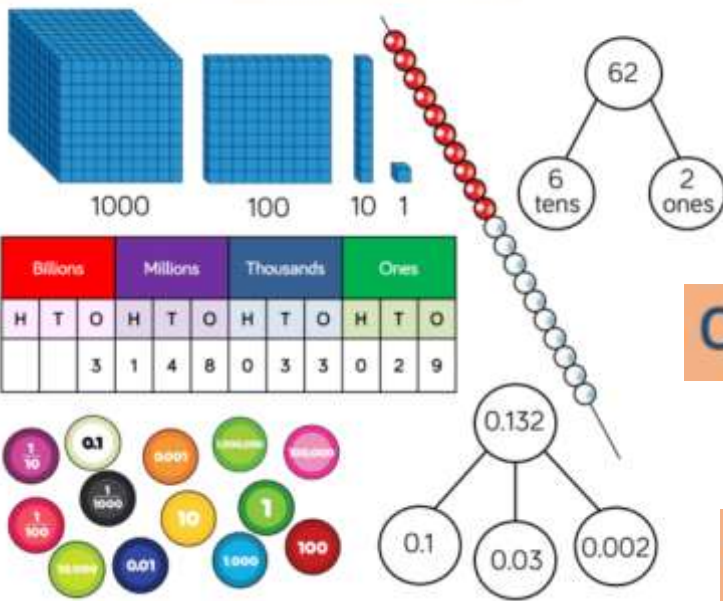### Key vocabulary

Round	Approximate	Nearest
Convention	Halfway	

Round to 1 significant figure

To one significant figure, the population of Scotland is given as five million. What is the greatest possible population of Scotland? What is the least possible population?

Key Representations

Billions			Millions			Thousands			Ones		
H	T	O	H	T	O	H	T	O	H	T	O
		3	1	4	8	0	3	3	0	2	9

Compare and order any numbers .

+ve integers in the form $A \times 10^n$

Compare integers using $=, \neq, <, >$

Exemplar Questions

Complete the following using $=$ or $\neq$.

Two and a half million ⃝ 2 500 000

300 000 000 ⃝ Three billion

Six thousand and eighty ⃝ 68 000

- -

$86 < 101$ and $101 > 86$ are both **true**.
Decide which statements below are true and which are false.
Rewrite the false statements, using the same numbers, making them true. Can you do this in more than one way?

$902 < 93$	$8106 > 8099$	$3751 < 3699$
$203\,000 < 199\,987$	$32\,150 = 31\,205$	$809 > 820$
$601 \times 1000 > 10\,000 \times 59$		$903\,000 \div 100 > 88\,000$

Decimals in the form $A \times 10^n$

Key vocabulary

Power	Index	Standard Form
Scientific notation	Negative	

Key questions

What's different about writing large numbers and small numbers in standard index form?

Where might you see and use standard index form?

Key Representations

Input → ×2 → +5 → Output

$$2x + 5$$

5

x | x | 5

Sequences in a table & graphically

How are these representations the same and how are they different?
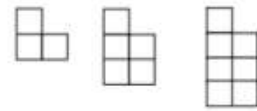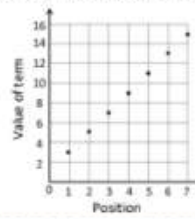
Position	1	2	3	4
Term	3	5	7	9

Which of these sequences is the odd one out?

Sequence	1st term	2nd term	3rd term	4th term	5th term
A	5	8	11	14	17
B	30	26	22	18	14
C	1	4	9	16	25

Sequences
Small Steps

- Describe and continue a sequence given diagrammatically
- Predict and check the next term(s) of a sequence
- Represent sequences in tabular and graphical forms
- Recognise the difference between linear and non-linear sequences
- Continue numerical linear sequences
- Continue numerical non-linear sequences
- Explain the term-to-term rule of numerical sequences in words
- Find missing numbers within sequences

Caritas Christi Urget Nos

Unit 2: Sequences

Explain the term-to-term rule

Exemplar Questions

Describe in words how these sequences change from one term to the next:

- 1, 5, 9, 13, ___, ___
- 64 000, 32 000, 16 000, ___, ___
- 8, 24, 72, ___, ___
- 100, 150, 225, ___, ___, ___
- 1, 1, 2, 3, 5, 8, ___, ___

- -

The term-to-term rule of a sequence is:

> The next term is found by tripling the previous term.

Why can't we write out this sequence?

Key vocabulary

Linear	Non-linear	Difference
Second difference	Ascending	Descending
Geometric	Fibonacci	

Understanding and using notation

Small Steps

- Given a numerical input, find the output of a single function machine
- Use inverse operations to find the input given the output
- Use diagrams and letters to generalise number operations
- Use diagrams and letters with single function machines
- Find the function machine given a simple expression
- Substitute values into single operation expressions
- Find numerical inputs and outputs for a series of two function machines
- Use diagrams and letters with a series of two function machines
- Find the function machines given a two-step expression
- Substitute values into two-step expressions
- Generate sequences given an algebraic rule
- Represent one- and two-step functions graphically

Caritas Christi Urget Nos

Generate sequences from a rule

Exemplar Questions

Substitute $n = 1$, $n = 2$, $n = 3$, $n = 4$ and $n = 5$ into the expression $3n + 5$

- What do you notice about your answers?

Repeat for $3n + 6$ and then $2n + 5$

- What stays the same? What changes?

- -

Use your calculator to find the first ten terms of the sequences given by these rules.

n^2	2^n	$n^2 - 4$	$(n - 4)^2$

What are the similarities and differences?

Substitute into single expressions

Exemplar Questions

Substitute $a = 5$ into each of these expressions.

$7a$	$\frac{7}{a}$	$19.8 - a$	a^2
$2a$		$a - 3.6$	$a + 3.6$

- -

Which of these expressions will be equal when $x = 2$?

$2x$	$\frac{x}{2}$	$\frac{2}{x}$	$x + 2$
$2 + x$	$x - 2$	$2 - x$	x^2

Put the expressions in order from smallest to largest for different values of x (Try $x = 1$, $x = 0.4$, $x = 100$, $x = 0$ ...)
Which expressions will always be equal, whatever the value of x?

Unit 3: Understand and use algebraic notation

Key vocabulary & notation

Bar model	Variable	Coefficient
$3a$ for $a \times 3$	$\frac{a}{3}$ for $a \div 3$	a^2 for $a \times a$
ab for $a \times b$	Commutative	Expression

The final two topics are:
- Equality & equivalence
- Fractions, decimals and percentages equivalence

Sets & probability

Proof

Multiplicative reasoning

Working in Cartesian plane

Ratio & proportion

Year 8

Fraction arithmetic

Prime numbers

Ratio & scale

Multiplying & dividing fractions

Fractions, decimals & percentages

Equality & Equivalence – equations

Place value and ordering, including decimals

Year 7

Core/Foundation 2021/22 (includes Y11
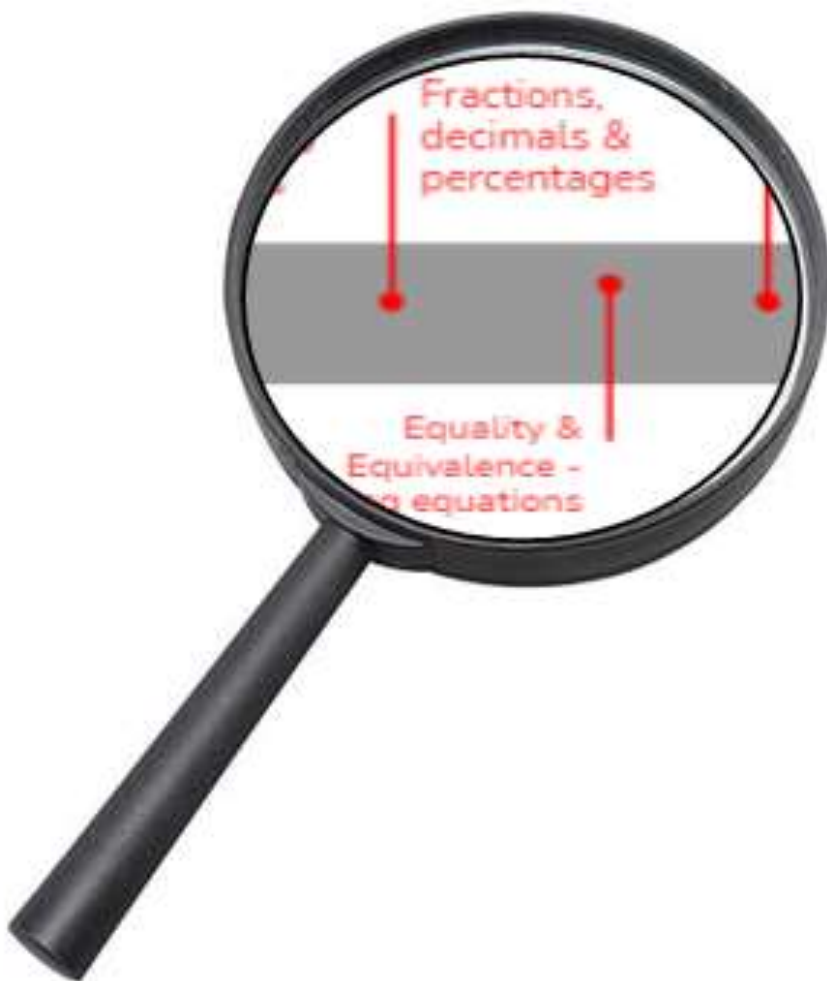
Unit 4: Equality & Equivalence

Understand and use fact families

Exemplar Questions

This bar model shows::

$7 + 3 = 10$
$7 = 10 - 3$

What other facts does it show?

- -

Write the fact families for these bar models.

Collect like terms using ≡ symbol

Exemplar Questions

Which of the following are true and which are false?

$6x + 2x \equiv 8x$ $6x - 2x \equiv 4x$ $2x \equiv 8x \div 4$

$3x + 2 \equiv 5x$ $3x + 2y \equiv 5xy$ $x + 2 \equiv 2 + x$

$5x - 5 \equiv x$ $10x \equiv 5x \times 2$

- -

Simplify these expressions so they have only one term.

$7a + 2a$ $3a + 4a + 5a$ $10b - 3b + 5b$

$6x^2 + 5x^2$ $2ab + 6ab - 3ab$ $10 + 6 - 3$

- -

Correct the mistakes in the simplifications below.

$5x + 3x \equiv 8x^2$ $10y - 3y \equiv 13y$ $9p + 4p = 94p$

Simplify the expressions below by collecting like terms

$3a + 4 + 5a$ $6b + 2c - 2b + 6c$ $5d + 3e + 2d - 3e$

- -

Find expressions that simplify to $8x + 10y$

Understanding equality

Key vocabulary

Equality	Equation	Equals
Is equal to		

Key questions

What difference does it make when you swap the right hand side and the left hand side of an equation?

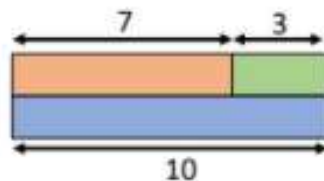If you change the order of the terms on one side of an equation, will it still be true?
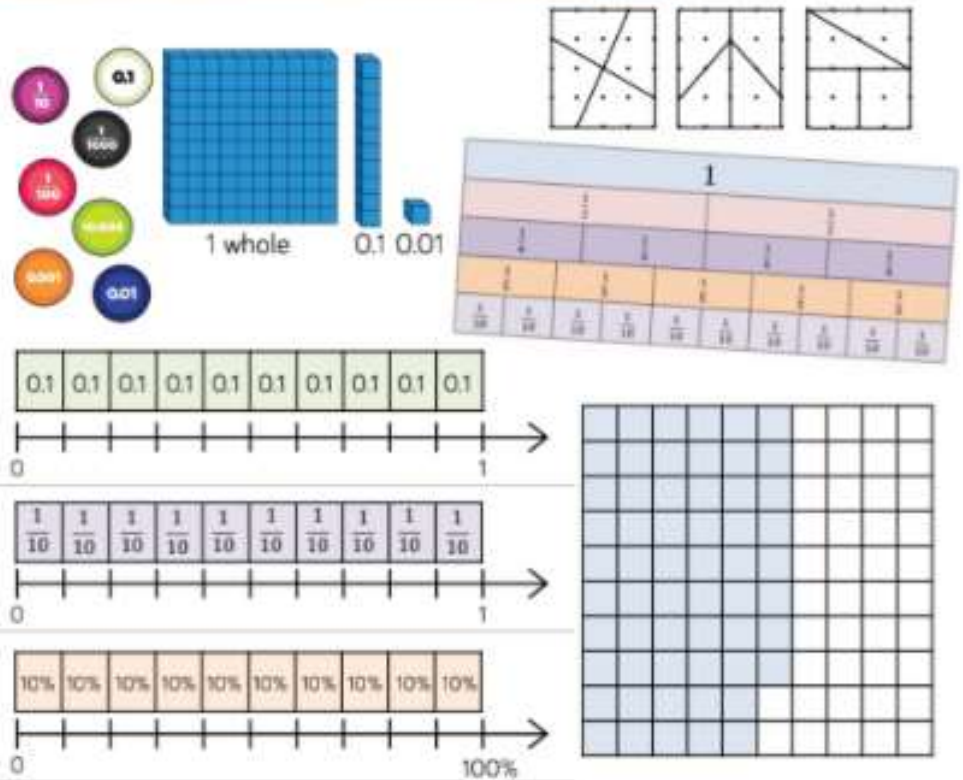
Understand like and unlike terms

Key vocabulary

Term	Like	Unlike
Coefficient	Index	

Key questions

Why are $3x$ and $3x^2$ unlike terms?

What is the coefficient of d in the term $-7d$?

Caritas Christi Urget Nos

Key Representations

1 whole   0.1 0.01

1

0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1

0   1

$\frac{1}{10}$ $\frac{1}{10}$ $\frac{1}{10}$ $\frac{1}{10}$ $\frac{1}{10}$ $\frac{1}{10}$ $\frac{1}{10}$ $\frac{1}{10}$ $\frac{1}{10}$ $\frac{1}{10}$

0   1

10% 10% 10% 10% 10% 10% 10% 10% 10% 10%

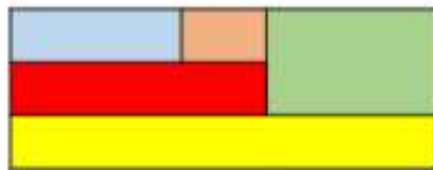0   100%

Represent any fraction as a diagram

Why can't we say what fraction of the shape is shaded red without further measuring?

What reasonable assumptions could you make?

Key vocabulary

| Fraction | Denominator | Numerator |
| Part | Whole | |

Unit 5: Fraction, percentage and decimal equivalence

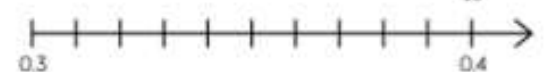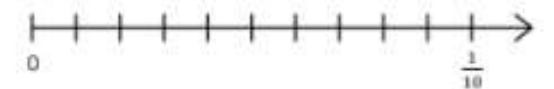## Fractional & decimal number lines

Exemplar Questions

What's the same? What's different?

0   0.4   1

0        $\frac{4}{10}$ 1

Complete the number lines.

0                              $\frac{1}{10}$

0.3   0.4

Convert simple FDP

Key vocabulary

| Convert | Equivalent | Half |
| Three-quarters | Tenth | |

Caritas Christi Urget Nos

We recommend pupils have a Casio scientific calculator.
The Casio calculator featured is the one we use when demonstrating in lessons.

On our school website there is a calculation policy showing the methods we use for common operations. It can be found at: Our School > Policies

St Joseph's Catholic Academy

Calculation Policy