AQE Common Entrance Assessment (CEA) - Mathematics Support (2022)

This document seeks to provide help and guidance for teachers and parents on the mathematics content of CEA papers in 2022. Examples provided are for illustrative purposes only.

The mathematics content to be covered for the Common Entrance Assessment is informed by CCEA's NI Curriculum specification for the Area of Learning: **Mathematics and Numeracy**.

Questions set will relate to the Key Stage 2 Programme of Study for **Mathematics and Numeracy**. They will not assume a knowledge or understanding beyond this. The level of difficulty of the questions will not exceed that indicated for Level 5.

In the **2022 CEA papers**, questions will address aspects of the content detailed in the strands: Number; Measures; Shape and Space; and Handling Data, as set out in the **Appendix below**. Where material has been omitted or where limitations have been put on specific content for the purposes of the **2022 CEA papers**, these have been indicated in bold text immediately following the particular section to which they relate.

The nature of the Common Entrance Assessment is such that aspects of the Programme of Study that involve certain types of activity, such as discussion or practical activities, will not be included. **The use of the calculator will not be permitted in the tests.**

As the strand, **Processes in Mathematics** pervades the entire Mathematics and Numeracy Area of Learning, aspects of this strand, *Making and Monitoring Decisions*, *Communicating Mathematically*, and *Mathematical Reasoning* will be included in questions, where appropriate.

In 2022, the CEA papers will <u>NOT</u> assess the following topics in mathematics:

NUMBER: *percentages;*
triangular numbers;
the use of a letter to stand for an unknown number;
the interpretation of a calculator display in relation to money;
multiplication <u>beyond</u> a 3-digit number multiplied by a 2-digit number;
division <u>beyond</u> a 3-digit number divided by a single digit.

MEASURES: *negative numbers;*
calculating the area of a <u>non-right-angled</u> triangle;
the continuous nature of measurement & the need for appropriate accuracy;
the use of scale in simple maps and diagrams;
calculations related to timetables involving the 24-hour clock.

SHAPE AND SPACE: *reflecting a shape in a <u>diagonal</u> line;*
tessellations;
name and describe circles, pentagons, hexagons and octagons.

HANDLING DATA: *pie charts;*
mean and range;
probability and likelihood.

Appendix.
In 2022, the CEA papers will assess aspects of the mathematics content below:

NUMBER

Understanding number and number notation

Pupils should have opportunities to:

1 • read, write and order whole numbers, initially to 100 and then for any whole numbers;

• understand that the position of a digit signifies its value;

• understand place value to develop computational methods;

2 • extend understanding of place value to include decimals, initially to one decimal place and then up to two decimal places;

• multiply and divide numbers by 10, 100, and 1000;

3 • estimate calculations, initially with numbers within 100 and then for all whole numbers;

• approximate numbers to the nearest 10 or 100;

• estimate and approximate to gain a feeling for the size of a solution to a problem, for example, understand that 32×9 is approximately 30×10;

4 • understand and use, in context, vulgar fractions and decimal fractions;

• understand the equivalence of simple fractions.

• understand the relationship between fractions and decimals.

Relationships other than those listed below will not be included in the tests:

$$\frac{1}{2} = 0.5 \qquad \frac{1}{4} = 0.25 \qquad \frac{3}{4} = 0.75 \qquad \frac{1}{10} = 0.1 \qquad \frac{1}{3} = 0.333\ldots$$

Patterns, relationships and sequences

Pupils should have opportunities to:

1 • explore and predict patterns and sequences of whole numbers including counting in different sizes of step, doubling and halving numbers and multiplication patterns in the hundred square;

• predict subsequent numbers in a sequence;

• follow simple sets of instructions to generate a sequence;

Questions will not be set on devising rules for determining sequences

2 • understand and use multiples and factors;

• understand and use prime, square and cube numbers;

• appreciate that multiplication and division are inverse operations;

3 • interpret and use simple relationships in numerical, spatial and practical situations;

• understand and use simple function machines;

4 • understand use of a symbol to stand for an unknown number, for example, $6 + \square = 34$.

Questions will only involve the use of whole numbers.

Operations and their applications

Pupils should have opportunities to:

1 ● consolidate knowledge of addition and subtraction facts for whole numbers;

  ● know multiplication facts to 10×10 and use these to solve problems;

2 ● understand the four operations of number and their interrelationships;
  Questions will not be set on appreciation of the use of brackets

  ● solve problems using a range of non-calculator methods of computation to include addition and subtraction with up to two decimal places and multiplication and division of decimals by whole numbers.

Money

Pupils should have opportunities to:

1 ● understand and use the conventional way of recording money;

  ● use the four operations to solve problems;

2 ● estimate and approximate to gain a feeling for the size of a solution to a problem.

MEASURES

Pupils should have opportunities to:

1 ● develop skills in estimation of length, weight, volume, capacity, time, area and temperature, using metric units where appropriate;

2 ● develop the language associated with a wider range of metric units and be confident with the terms metre, gram and litre, and their relevant prefixes of kilo, centi and milli;

3 ● choose and use appropriate metric units and measuring instruments,

  ● interpret numbers on a range of measuring instruments;

4 ● understand the relationship between units, for example, know that kilograms and grams are used to weigh food;

  ● convert from one metric unit to another, for example, know that 175 cm is 1.75 m;

  ● use the four operations to solve problems, working with up to three decimal places, where appropriate;
  Pupils will not be expected to know the Imperial units still in common use

5 ● understand concept of perimeter and calculate the perimeter of simple shapes;

  ● find areas by counting squares and volumes by counting cubes;

  ● calculate the area of simple shapes in 2 dimensions (square, rectangle and right-angled triangle only);

  ● calculate the volume of simple shapes in 3 dimensions (cube and cuboid only);

6 ● know the units of measurement of time and the relationship between them;

7 ● recognise times on the analogue clock, including the hour, half and quarter hours, five-minute intervals and one-minute intervals;

● understand the relationship between the 12-hour and 24-hour clocks, including am and pm;

● read analogue and digital displays and understand the relationship between them;

● perform simple calculations using the 12-hour and 24-hour clocks;

8 ● know the months of the year;

● explore calendar patterns.

SHAPE AND SPACE

Exploration of shape

Pupils should have opportunities to:

1 ● become familiar with a wide range of regular and irregular 2-D shapes;

● classify 2-D shapes through examination of angles and sides;

● recognise line symmetry in simple 2-D shapes;
Questions will not be set on recognition of rotational symmetry

● reflect shapes in horizontal and vertical lines only;

● name and describe common 2-D shapes: scalene, right-angled, equilateral and isosceles triangles, and quadrilaterals including square, rectangle, rhombus, kite, parallelogram and trapezium;
Questions will not be set on the meaning of congruence in 2-D shapes

2 ● investigate the number of faces, edges and vertices of common 3-D shapes including cubes, cuboids, cones, cylinders, spheres, triangular prisms and pyramids;

● name and describe common 3-D shapes including cubes, cuboids, cones, cylinders, spheres, triangular prisms and pyramids;

● recognise the nets of common 3-D shapes;

3 ● recognise geometrical properties and use these to solve problems.
Questions will relate only to the internal angles of triangles and quadrilaterals.

Position, movement and direction

Pupils should have opportunities to:

1 ● use ¼ turns, ½ turns and whole turns to understand the notion of angle in the context of turning;

● find right angles in 2-D and 3-D shapes;

● understand clockwise and anticlockwise;

● know the eight points of the compass;

2 ● develop the language associated with line and angle, including vertical, horizontal, perpendicular, parallel, acute, obtuse and reflex;

3 ● recognise properties of acute, obtuse and reflex angles, for example, know that an acute angle is less than a right angle and that a reflex angle is greater than two right angles;

4 ● investigate angles in triangles, including scalene, right-angled, equilateral and isosceles, and quadrilaterals including square, rectangle, rhombus, kite, parallelogram and trapezium;
Pupils will not be required in the test to measure or to draw angles

5 ● use co-ordinates to plot points and draw shapes in the first quadrant.

HANDLING DATA

Collect, represent and interpret data

Pupils should have opportunities to:

1 ● use data drawn from a range of meaningful situations;

2 ● represent and interpret discrete numerical data, using graphs, tables and diagrams, including Venn, Decision Tree and Carroll diagrams, pictograms, block graphs, bar charts, bar-line graphs and line graphs with the axis starting at zero and with given intervals;

3 ● interpret tables and lists used in everyday life, for example, those found in a catalogue or road safety accident report;

● interpret a wide range of graphs and diagrams;

● create and interpret frequency tables, including those for grouped discrete data;

● use tallying methods, including the 5-bar gate.
Questions will not be set relating to the use of computer packages to produce graphical representations of data.