Schola Europaea

Office of the Secretary-General

Pedagogical Development Unit

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Mathematics syllabus – primary (P1-P5)[1]

APPROVED BY THE JOINT TEACHING COMMITTEE AT ITS MEETING OF 13 AND 14 OCTOBER 2016 IN BRUSSELS

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1. General Objectives of the European Schools

The European Schools have two objectives of providing formal education and of encouraging pupils' personal development in a wider social and cultural context. Formal education involves the acquisition of competences – knowledge, skills, and attitudes across a range of areas. Personal development takes place in a variety of spiritual, moral, social and cultural contexts. It involves an awareness of appropriate behaviour, an understanding of the environment in which pupils live, and a development of their individual identity.

These two objectives are nurtured in the context of an enhanced awareness of the richness of European culture. Awareness and experience of a shared European life should lead pupils towards a greater respect for the traditions of each individual country and region in Europe, while developing and preserving their own national identities.

The pupils of the European Schools are future citizens of Europe and the world. As such, they need a range of competences if they are to meet the challenges of a rapidly changing world. In 2006 the European Council and European Parliament adopted a European Framework for Key Competences for Lifelong Learning. It identifies eight key competences which all individuals need for personal fulfilment and development, for active citizenship, for social inclusion and for employment:

1. communication in the mother tongue
2. communication in foreign languages
3. mathematical competence and basic competences in science and technology
4. digital competence
5. learning to learn
6. social and civic competences
7. sense of initiative and entrepreneurship
8. cultural awareness and expression

Mathematical understanding influences decision making in all areas of life – private, social and civil. The Mathematics syllabus provides a framework to enable pupils to develop mathematical knowledge and skills, and an understanding of how to use them appropriately in real life situations. The overarching concepts of thinking skills and problem solving should underpin teaching and learning in five main topics:

- numbers and the number system
- calculation
- measures
- shape and space
- data handling

Within each topic, pupils should be enabled to:

- understand and learn facts, procedures, and concepts
- interpret results and communicate information using mathematical language
- make connections between mathematical concepts and procedures
- use these skills in practical and meaningful problem solving situations

2. Didactic Principles

General Pedagogical Principles of Teaching and Learning

The pedagogical principles of the European schools are detailed in various policy documents:

- *Programming in the ES – Recommendation for Harmonised Preparation of Teaching*, 2001-D-54
- *Quality Assurance and Development in the European Schools*, 2000-D-264
- *Common Framework for Whole School Inspections in Nursery, Primary and Secondary Cycles*, 2010-D-139-3
- *Guidelines for Nursery/Primary/Secondary Transition*, 2007-D-4210
- *Guidelines for Primary Education*, 2006-D-105

High quality education is achieved when the following criteria are met. They represent the framework for teaching and for inspectors to evaluate the quality of education. Furthermore these criteria should be used as a tool for self-evaluation.

Curriculum and Planning
- Teachers provide long term and short term planning, based on the syllabus
- Individual needs of pupils are taken into account in planning

Teaching and Learning
- Teachers deliver the syllabus
- Teachers employ a variety of teaching and learning methods appropriate for the content taught
- Teachers motivate the pupils to be active learners
- Differentiation is integrated into lessons
- Teachers show effective class room management

Assessment and Achievement
- Teachers continually evaluate pupils' progress (formative, diagnostic and summative)
- A range of different assessment strategies is used to provide a broad picture of pupils' capabilities, including attainment, skills, values and attitudes
- Assessment methods are transparent
- Records of pupils' progress are maintained
- Pupils' results are analysed and used for planning
- Pupils' self-assessment skills are developed by using a range of different strategies

Pedagogical Principles of Teaching Mathematics

Teachers should use a wide variety of teaching methods and learning approaches to ensure successful learning for all pupils. Teachers should take into account that pupils learn in different ways and at different rates. They should create a pedagogical environment in which pupils have access to a rich variety of mathematical experiences. Pupils require a foundation of mathematical facts, patterns and processes built up through repetition, practice and recall. Creativity should be encouraged and extended through play, investigation, discovery and constructional activities. Particular emphasis should be placed on the development of logical thinking and problem solving. Mathematical situations offered by the environment, technology and culture should help pupils to realise the usefulness of mathematics.

Teachers should:
- encourage a multi-sensory approach; visual, auditory and kinaesthetic
- plan for progression building upon the mathematical knowledge of the pupils
- differentiate teaching to cater for all abilities
- use and teach mathematical language
- emphasise mental calculation strategies
- use a wide range of resources including ICT
- demonstrate links between areas of mathematics

- develop discussion skills including active listening, positive response to the opinion of others, turn-taking, confidence in putting forward an opinion, ability to explain clearly their point of view
- encourage pupils to see misconceptions and errors as part of the learning process

Problem Solving
It is essential that teachers explicitly model how pupils use and apply higher order thinking skills in mathematics and give them many opportunities to apply these skills relating to each topic. Problem solving should be an integral part of the mathematics lesson and be based on a variety of useful and meaningful experiences. Teachers need to select and explain examples carefully and ensure the level of challenge is appropriate. Teachers should consider approaching the use and teaching of problem solving in different ways for example introducing a problem as the starting point for new concepts or set of skills or vice versa. Pupils of all abilities should engage in problem solving from a young age. Discussion and acceptance of the points of view of others are central to the development of problem solving process.

The key elements of the problem solving process are
- **Understanding and Analysing**:
  Understand and select the important information, decide on the knowledge needed in order to solve the problem, consider various strategies and select one to use.
- **Enquiring**:
  Pupils need routine practice in posing key questions, generating ideas, making informed decisions and following a line of enquiry. This thinking should be recorded.
- **Reasoning**:
  Pupils need to be taught how to describe, interpret and explain and use this to inform their thinking and reasoning. Pupils need to perform the necessary calculations to produce a result.
- **Communication**:
  Pupils need to learn how to express their own thinking, to communicate and keep track of the direction they are taking. Opportunities need to be provided for pupils to present their thinking to others.
- **Review**:
  Pupils need to check their results. It is important for pupils to discuss their findings and reason with others. Pupils should be prepared to reconsider their chosen strategy.

Technology
Technology has the potential to enhance pupils' mathematical learning. It should be used as a tool for learning as well as teaching. Opportunities for using technology should be carefully planned. Calculators are also an important tool in modern mathematics and daily life. Pupils should be taught how and when to use calculators and to become confident with them. Calculators should be used to develop mathematical skills and understanding and not as a substitute for mental and written calculations. Computers can be used to perform routine processes, explore and modify mathematical ideas and represent information. Teachers should use a variety of programmes and applications.

3. Learning Objectives

1 Numbers and the Number System

1.1 Understanding Whole Numbers

The pupils should be enabled to:

Year 1	Year 2	Year 3
• count to 20, forwards and backwards, starting at any point • count within 100 in intervals of 1, 2, 5, 10 • count a given number of objects • match quantities to numbers • represent numbers through illustrations	• count to 100, forwards and backwards, starting at any point • count within 1000 in intervals of 1, 2, 5,10, 100 • count a large number of objects using a variety of strategies	• count within 1000, forwards and backwards, starting at any point and using a variety of intervals
• represent numbers e.g. on a number line, base10 material, abacus	• represent numbers e.g. on a number line, hundred square, base 10 material, abacus	• represent numbers e.g. on a number line, hundred square, base 10 material, abacus
• have an awareness of the meaning of numbers in real life contexts: naming, quantity, location e.g. house numbers	• understand the meaning of numbers in real life contexts: naming, quantity, location e.g. house numbers	• relate large numbers to real life contexts
• estimate the number of objects before counting	• estimate the number of objects before counting	• develop and use estimation strategies e.g. comparing, grouping
• read and write whole numbers from 0 to 20 and up to 100 in multiples of 10	• read and write whole numbers from 0 to 100 and up to 1000 in multiples of 10 and 100	• read and write whole numbers from 0 to 10 000 and up to 100 000 in multiples of 100, 1 000 and 10 000
• discover the concept of zero, odd and even numbers	• understand the concept of zero, odd and even numbers	
• recall all pairs of numbers with a total of 10	• recall all pairs of multiples of 10 to a total of 100	
• partition and combine numbers up to 20	• partition and combine numbers up to 100 e.g. 4 x 25 = 100, 40 + 60 =100	• partition and combine numbers up to 1 000 e.g. 4 x 250 = 1000, 750 + 250 =1000

Year 4	Year 5	*Secondary Year 1*
• use large numbers in real life contexts	• use large numbers in real life contexts	• *work with large numbers*
• use and apply appropriate estimation strategies e.g. grouping, rounding	• use and apply appropriate estimation strategies e.g. grouping, rounding	
• read and write whole numbers up to 1 000 000	• consolidate the reading and writing of large numbers	
	• discover the concept of negative numbers through real life examples e.g. thermometer scales, height below sea level	
• represent large numbers e.g. on a number line	• have an awareness of other number systems e.g. Roman	
• partition and combine numbers up to 1 000 000 e.g. 25 000 x 4 = 100 000, 30 000 + 70 000 = 100 000		• *work with multiples, factors, primes, HCF*
		• *use index notation*

1 Numbers and the Number System

1.2 Comparing and Ordering

The pupils should be enabled to:

Year 1	Year 2	Year 3
• understand and use the vocabulary/symbols of ordering and comparing numbers e.g. smaller, bigger, less than, more than, the same, equal, **=** • order numbers (increasing and decreasing) e.g. using number lines, number tracks • locate and place a number on a number line • use the language of ordinal numbers, from first to tenth	• understand and use the vocabulary/symbols of ordering and comparing numbers e.g. **<, >, ≠** • order numbers (increasing and decreasing) e.g. using number lines, number tracks • locate and place a number on a number line and in a hundred square • use and write ordinal numbers e.g. 1^{st}, 2^{nd}	• order numbers (increasing and decreasing) e.g. using number lines, number tracks • locate and place a number on a number line and in a hundred square • identify the multiples of 10 and 100 that lie either side of a number
Year 4	**Year 5**	***Secondary Year 1***
• order numbers (increasing and decreasing) • locate and place a number on a number line and in a hundred square • identify the multiples of 10, 100 and 1000 that lie either side of a number	• order numbers (increasing and decreasing) • locate and place a number on a number line • identify the significant multiples of 10 that lie either side of a number e.g. 26 347 lies between 20 000 and 30 000 • identify the whole numbers that lie either side of a decimal number (up to 2 decimal places)	• *order a set of natural numbers and place them on a number line* • *use the transitivity property of > and <* • *place integers on the number line* • *compare two integers*

1 Numbers and the Number System

1.3 Place Value

The pupils should be enabled to:

Year 1	Year 2	Year 3
• explore place value using base 10 materials • read and write numbers on a place value chart: T (tens) and U (units) • partition numbers up to 20 into multiples of 10 and 1	• explore and identify place value using base 10 materials • understand the place value of each digit in a 3 digit number • partition two digit numbers into multiples of 10 and 1 • round two digit numbers to the nearest 10	• explore and identify place value using base 10 materials • understand the place value of each digit in a 4 digit number • partition numbers into multiples of 1000, 100, 10 and 1 • round three digit numbers to the nearest 10 or 100
Year 4	**Year 5**	***Secondary Year 1***
• understand the place value of each digit in a 6 digit number • partition numbers into multiples of 10 000, 1000, 100, 10 and 1 • round numbers to the nearest 10, 100, 1000, 10 000 • identify place value in decimal numbers to two decimal places	• understand the place value of each digit in large numbers and decimal numbers up to two decimal places • partition numbers into multiples of 10 000, 1000, 100, 10, 1, 1/10 and 1/100 • round whole numbers and decimal numbers to the nearest whole number, 10, 100, 1000, 10 000, 100 000 and 1 000 000	• *read and write large numbers and understand the significance of the position of a digit in a number* • *estimate the order of magnitude of an answer*

1 Numbers and the Number System

1.4 Fractions and Decimal Numbers

The pupils should be enabled to:

Year 1	Year 2	Year 3
• use the vocabulary of double, half and quarter in real life contexts • find half of shapes and sets of objects • have an awareness of the relationship between halving and doubling	• understand and use the vocabulary of fractions e.g. half, quarter, double • find half, quarter, three-quarters of shapes and sets of objects • have an awareness of the relationship between half and quarter • recognise the fractional notation of ½, ¼	• understand and use the vocabulary of fractions e.g. denominator, numerator • have an awareness of decimal numbers in real life contexts e.g. money, measures • read and write proper fractions, using denominators up to 10 • identify and represent fractions of shapes e.g. ½, ¾ • locate and place mixed numbers on a number line e.g. 2 ½, 5 ¼ • use diagrams and concrete materials to compare simple fractions and establish equivalence

Year 4	Year 5	*Secondary Year 1*
• understand and use the vocabulary of fractions and decimal numbers e.g. denominator, numerator, proper fraction, improper fraction, mixed number • read, write and order proper fractions, improper fractions, mixed numbers and decimal numbers (up to two decimal places) • identify and represent proper fractions, improper fractions and mixed numbers in shapes and diagrams • locate and place fractions, mixed numbers and decimal numbers on a number line • find equivalent fractions • simplify fractions to the lowest term • recognise and understand decimal numbers in real life contexts • understand the equivalence between the decimal and fraction forms of half, quarter, three quarters, tenths and hundredths	• understand and use the vocabulary of fractions and decimal numbers e.g. proper fraction, improper fraction, mixed number, percentage • read, write and order proper fractions, improper fractions, mixed numbers and decimal numbers (up to two decimal places) • convert improper fractions to mixed numbers and vice-versa • locate and place fractions, mixed numbers and decimal numbers on a number line • find equivalent fractions • simplify fractions to the lowest term • understand the relationships between fractions, decimal numbers and percentages (limit percentages to 100%, 50%, 25% and 10%)	• *read and write decimal numbers* • *express rational numbers as decimal numbers and fractions* • *put a set of decimal numbers in order of size and represent them on a number line* • *round numbers (e.g. to one decimal place)* • *understand fractional notation* • *sort fractions into order of size and place them on the number line* • *change a fraction into a decimal and vice-versa* • *find equivalent fractions* • *percentages (only the simplest e.g. 50%, 25%, 20% and 10%)*

1 Numbers and the Number System

1.5 Patterns and Sequences

The pupils should be enabled to:

Year 1	Year 2	Year 3
• count up to100 in intervals of 2, 5 and 10 • explore, recognise and record patterns and sequences using numbers up to 20 using a variety of intervals	• explore, recognise and record patterns and sequences using numbers up to 100, including odd and even numbers • look for patterns within the multiplication tables up to 10 and find links between them	• explore, recognise, record and create patterns and sequences with a variety of intervals (e.g. 20, 25, 50, 100) up to 1000 • look for patterns within the multiplication tables up to 10 and find links between them • recognise multiples of 2, 5 and 10 up to 1000
Year 4	**Year 5**	***Secondary Year 1***
• explore, recognise, record and create patterns and sequences with a variety of intervals (including fractions and decimal numbers), and more than one operation (e.g. multiply by two, then add three to find the new term) • look for patterns within the multiplication tables up to 10 and find links between them • recognise multiples of 2, 5 and 10 up to 10 000	• explore, recognise, record and create patterns and sequences with a variety of intervals (including fractions and decimal numbers), and more than one operation (e.g. multiply by two, then add 0.5 to find the new term) • explore triangular and square numbers	

2 Calculation

2.1 Addition and Subtraction

The pupils should be enabled to:

Year 1	Year 2	Year 3
• explore the concepts of addition and subtraction through play and practical tasks and by using concrete materials	• explore the concepts of addition and subtraction through play and practical tasks and by using concrete materials	
• understand and use the vocabulary and symbols of calculations e.g. add, subtract, plus, minus, equals + - =	• understand and use the vocabulary and symbols of addition and subtraction	
• add and subtract numbers with answers up to 20, with and without the use of visual support	• add and subtract 2-digit numbers with answers up to 100, with and without the use of visual support	• add and subtract 3-digit numbers with and without the use of visual support • combine addition and subtraction calculations
• write addition and subtraction calculations with answers up to 20, using formal notation	• write addition and subtraction calculations with answers up to 100 using formal notation	• write addition and subtraction calculations using informal and standard written methods including those bridging multiples of tens and hundreds
	• solve calculations including those bridging multiples of ten	
• understand that addition and subtraction are inverse operations	• understand that addition and subtraction are inverse operations	
	• apply the principle of the commutative law of addition	• apply appropriate strategies to support mental calculations e.g. bridging tens and hundreds, halving and doubling, partitioning
• use pairs of numbers with a total of 10 and work out the corresponding subtraction facts	• explore and recall pairs of numbers that total 100 and work out the corresponding subtraction facts	
• use the knowledge of pairs of 10 to learn the pairs up to 20	• use the knowledge of pairs of 10 to learn the pairs up to 100, including doubling and halving	
• recall the doubles and corresponding halves of all numbers up to to 20		
• recognise the principle of the commutative law of addition	• learn and apply appropriate strategies to support mental calculations e.g. 25+7=25 +5+2, 29+13=30+12, 82-6=82-2-4, 67-19=67-20+1, 15+17=15+15+2, 42+35=40+30+2+5	
		• estimate before calculating and check the answer • use a calculator to check and correct answers
		• add and subtract fractions with the same denominator using concrete materials e.g. ½ + ½ = 1

Year 4	Year 5	*Secondary Year 1*
• understand and use the vocabulary and symbols of operations e.g. sum, difference		
• add and subtract whole numbers and numbers up to one decimal place	• add and subtract whole numbers and numbers up to 2 decimal places	• *add and subtract integers*
• combine addition and subtraction calculations		
• write addition and subtraction calculations using informal and standard written methods	• write addition and subtraction calculations using informal and standard written methods	• *practise written calculations and use mental arithmetic*
• apply appropriate strategies to support mental calculations	• apply appropriate strategies to support mental calculations	
• estimate before calculating and check the answer, including using a calculator	• estimate before calculating and check the answer, including using a calculator	
• use calculators to perform calculations with large numbers	• use a calculator to carry out one-step and two-step calculations involving all four operations	
• have an awareness of simple algebraic equations	• use and develop simple algebraic equations e.g. n + 21 = 56	
	• use brackets and the rules of the order of operations to calculate	
• add and subtract fractions with the same denominator	• add and subtract fractions and mixed numbers	

2 Calculation

2.2 Multiplication and Division

The pupils should be enabled to:

Year 1	Year 2	Year 3
• explore the concepts of multiplication and division by grouping and sharing through play and practical tasks	• explore the concepts of multiplication and division by grouping and sharing through play and practical tasks • understand and use the vocabulary and symbols of operations e.g. multiply, divide, times, share equally, x, ÷ • understand that multiplication and division are inverse operations • understand that multiplication is repeated addition • understand that division is repeated subtraction • learn multiplication tables up to 10 by rote • explore the relationship between multiplication tables e.g. doubling, halving • recognise the principle of the commutative law of multiplication • halve and double a given number	• apply the understanding that multiplication and division are inverse operations • apply the understanding that multiplication is repeated addition • apply the understanding that division is repeated subtraction • recall multiplication tables up to 10 and associated division facts at speed and in any order • find the factors of numbers within the multiplication tables • explore the relationships between the multiplication tables • develop mental strategies for multiplication and division e.g. transposing the knowledge of simple multiplication and division facts to multiples of 10 and 100, partitioning, … • multiply a 2-digit number by 10 or 100 and understand the impact on place value • divide a 3-digit multiple of 10 by 10 e.g. 270 ÷ 10 • apply the principle of the commutative law of multiplication • write multiplication calculations using informal and standard written methods (2-digit or 3-digit by a 1-digit number) • write simple division calculations using informal methods (2 and 3-digit numbers by a 1-digit number) • understand the concept and meaning of a remainder when dividing • estimate before calculating and check the answer • use a calculator to check and correct answers • find the half and the double of a given number up to 100 and of significant multiples up to 1 000 • calculate and record a simple fraction of a given quantity using concrete materials e.g. ¼ of 20 is 5 • develop an understanding of the relationship between fractions and division

2 Calculation

2.2 Multiplication and Division

The pupils should be enabled to:

Year 4	Year 5	*Secondary Year 1*
• understand and use the vocabulary and symbols of operations e.g. product		
• identify all the factors of numbers within the multiplication tables	• identify factors of larger numbers • know the prime numbers up to 100	
• use mental strategies including multiplying and dividing by 10 and 100	• use mental strategies including multiplying and dividing whole numbers and decimal numbers by 10 and 100 and 1000	
• write multiplication calculations using informal and standard written methods (2-digit/ 3-digit by a 1-digit/ 2-digit number)	• write multiplication and division calculations using informal and standard written methods	
• write simple division calculations using informal methods with and without remainders (2 and 3-digit numbers by a 1-digit number)	• understand and use simple ratios, proportions and scales	
• understand the concept of a remainder when dividing		
• estimate before calculating and check the answer	• estimate before calculating and check the answer	• *divide by 2,4,5,25,10,100,3 and 9 (multiples, factors and prime numbers, Highest Common Factors and Lowest Common Denominators)*
• use calculators to perform calculations with large numbers	• use a calculator to carry out one-step and two-step calculations involving all four operations	• *determine the prime numbers less than 100 - write a number as a product of prime numbers*
• have an awareness of simple algebraic equations	• use and develop simple algebraic equations e.g. n + 21 = 56 • use the order of operations rules and brackets to calculate	• *practise written calculations and use mental arithmetic*
• calculate a fraction of a given quantity e.g. ⅛ of 72, ¾ of 24	• calculate a fraction of a given quantity e.g. ¾ of 120, ⅝ of 80 • calculate simple percentages of a given quantity e.g. 10%, 25%, 50% • multiply a fraction by a 1-digit number e.g. $5 \times {}^{4}/_{5}$ • divide a simple fraction by a 1-digit number using diagrams e.g. ${}^{1}/_{6} \div 3$	• *calculate using decimal numbers*

3 Measurement

3.1 Length and Perimeter

The pupils should be enabled to:

Year 1	Year 2	Year 3
• understand and use the vocabulary of length e.g. wide, high, longer, shorter, taller, equal	• consolidate and extend the vocabulary of length e.g. wide, high, longer, shorter, equal	• understand and use the vocabulary of length e.g. width, height, perimeter, near and far, scale, is equal to, distance
• estimate, measure, compare and record length using non-standard units	• estimate, measure, compare and record length using standard units (metre, centimetre)	• estimate, measure, compare and record lengths of a wide variety of objects using appropriate instruments and metric units (m, cm, mm)
• select non-standard measuring units and objects and use appropriately • use a ruler to draw lines	• select and use appropriate measuring units • use a ruler to measure and draw lines of multiples of 1cm • use a metre stick to measure lines that are a multiples of 10 cm and 1 m	• measure the perimeter of polygons • use a ruler to measure and draw lines to the nearest millimetre
• have an awareness of standard units in their environment (metre, centimetre)	• have an awareness of millimetres	• have an awareness of kilometres • understand the relationships between km-m, m-cm, cm-mm; • convert between cm-mm and cm-m • interpret scale drawings

Year 4	Year 5	*Secondary Year 1*
• understand and use the vocabulary of length e.g. convert, metric system	• consolidate the vocabulary of length	
• estimate, measure, compare and record lengths of a wide variety of objects, using appropriate instruments and metric units	• estimate, measure, compare and record lengths of a wide variety of objects, using appropriate instruments and metric units (including fractions and decimal numbers)	
• measure the perimeter of polygons	• estimate and measure the perimeter of regular and irregular polygons and circles	• *calculate perimeters and areas of squares and rectangles and compound shapes constructed from them* • *evaluate and measure length (and sizes of angles)*
• understand the relationship between mm, cm, dm, m, dam, hm and km • convert between mm, cm, m and km • interpret scale drawings	• convert between mm, cm, dm, m, hm and km • interpret scale drawings	

3 Measurement

3.2 Area

The pupils should be enabled to:

Year 1	Year 2	Year 3
• explore area through play and use of concrete materials	• explore area through play and use of concrete materials • estimate and measure area using non-standard units	• estimate and measure in squares the area of regular and irregular shapes • draw shapes of a given area using squares or part squares
Year 4	**Year 5**	***Secondary Year 1***
• discover that the area of a rectangle is length by width • calculate the area of rectangles and compound shapes using cm^2 and m^2 • draw shapes of a given area • understand the relationships between units of area e.g. km^2, ha, a, m^2, dm^2, cm^2, mm^2	• calculate the area of compound shapes consisting of rectangles and right-angled triangles using m^2 and cm^2 • understand the relationships between units of area e.g. km^2, ha, a, m^2, dm^2, cm^2, mm^2	• *find areas by counting unit squares enclosed* • *calculate perimeters and areas of squares and rectangles and compound shapes constructed from them*

3 Measurement

3.3 Capacity and Volume

The pupils should be enabled to:

Year 1	Year 2	Year 3
• understand and use the vocabulary of capacity e.g. fill, pour, full, empty • estimate, measure, compare and record capacity using non-standard units • select non-standard measuring units and objects and use appropriately • have an awareness of standard units in their environment (litre)	• consolidate and extend the vocabulary of capacity e.g. litre, measuring jug • estimate, measure, compare and record capacity using standard units (litre) and non-standard units • have an awareness of smaller units of capacity in their environment e.g. decilitres, centilitres and millilitres	• consolidate and extend the vocabulary of capacity e.g. decilitre, centilitre, millilitre • estimate, measure, compare and record the capacity of a wide variety of receptacles and metric units (l, dl, cl, ml) • understand the relationships between l-dl, l-cl, l-ml • convert between l-dl, l-cl, l-ml
Year 4	**Year 5**	***Secondary Year 1***
• consolidate and extend the vocabulary of capacity e.g. decilitre, centilitre, millilitre • estimate, measure, compare and record the capacity of a wide variety of receptacles and metric units (l, dl, cl, ml) • understand the relationships between l-dl, l-cl, l-ml, dl-cl, cl-ml • convert between l-dl, l-cl, l-ml, dl-cl, cl-ml, dl-ml	• consolidate and extend the vocabulary of capacity e.g. hectolitre, cubic centimetre, cubic decimetre, cubic metre • estimate, measure, compare and record the capacity of a wide variety of receptacles and metric units (l, dl, cl, ml) • understand the relationship between volume and capacity (dm^3-l) • calculate the volume of cubes and cuboids using m^3, dm^3, cm^3 • convert between hl-l, l-dl, l-cl, l-ml, dl-cl, cl-ml, dl-ml	• *calculate volumes of cubes and cuboids* • *perform conversions between different units of measurement*

3 Measurement

3.4 Weight

The pupils should be enabled to:

Year 1	Year 2	Year 3
• understand and use the vocabulary of weight e.g. heavier, lighter, balance, scales, weigh, equal • have an awareness of standard units in their environment (kilogram and gram) • estimate, measure, compare and record weight using non-standard units • select and use non-standard measuring units	• consolidate and extend the vocabulary of weight e.g. kilogram, gram • have an awareness of different weighing instruments • estimate, measure, compare and record weight using standard units (kg, g) • select and use the appropriate standard units of measurement • have an awareness that objects or substances that weigh 1kg may vary in size	• consolidate and extend the vocabulary of weight e.g. tonne • estimate, measure, compare and record the weight of a variety of objects using appropriate instruments and metric units (t, kg, g) • understand the relationships between t-kg, kg-g • convert between kg-g and t-kg

Year 4	Year 5	*Secondary Year 1*
• consolidate the vocabulary of weight • estimate, measure, compare and record the weight of a wide variety of objects using appropriate instruments and metric units (t, kg, g) • have an awareness of milligrams • convert between kg-g and t-kg	• estimate, measure, compare and record the weight of a wide variety of objects using appropriate instruments and metric units (t, kg, g) • convert between kg-g, t-kg, g-mg	

3 Measurement

3.5 Time

The pupils should be enabled to:

Year 1	Year 2	Year 3
• understand and use the vocabulary of time (hour, day, month, year)	• understand and use units and vocabulary of time (second, minute, hour, day, week, month and year)	• understand and use units of time and know the relationships between them (second, minute, hour, day, week, month, year and century) • convert common units of time (seconds into minutes, minutes into hours and days into months and vice versa)
• know the days of the week, months and the seasons of the year • order familiar events in the cycle of a day and a week	• know and order the months and seasons of the year	
• read the time to the hour and half hour on analogue clocks	• read and record the time to the hour, half hour and quarter hour on analogue clocks • have an awareness of digital time notation	• read and record the time to the exact minute on analogue and digital clocks • read and record time using the 24-hour clock
• explore the calendar as a tool to read the date, e.g. calculate how many nights/days remaining until a certain event	• explore different types of calendars e.g. a diary, a birthday calendar, a year calendar • write the date (including the short form) and relate months to ordinal numbers • estimate the duration of an event using appropriate units e.g. bus journey, brushing teeth etc	• read a calendar, know what a leap year is and know the number of days in each month • read a simple timetable e.g. school timetable • calculate duration, start time and finish time

Year 4	Year 5	*Secondary Year 1*
• understand and use units of measurement of time (second, minute, hour, day, week, month, year and century) • convert and calculate with units of time	• convert and calculate with units of time	
• read and record the time to the exact minute on analogue, digital and 24-hour clocks • read and understand timetables	• read and record the time to the exact minute on analogue, digital and 24 hour clocks • explore international time zones	
• calculate duration, start time and finish time including using data from timetables • calculate the relationship between time, distance and speed	• calculate duration, start time and finish time including using data from timetables. • investigate and calculate the relationship between time, distance and speed	

3 Measurement

3.6 Money

The pupils should be enabled to:

Year 1	Year 2	Year 3
• manipulate and count euros in play using replica coins and notes (5, 10) • recognise all the coins and have an awareness of their value • order coins by value • combine coins and notes to make different amounts up to 20	• manipulate and count euros in play using replica coins and notes • recognise all the coins and notes (5, 10, 20, 50) and understand the relationships between them • combine coins and notes to make different amounts up to 100 • exchange coins/notes for others of equal value • record money amounts using euro and cent symbols	• convert euros into cents and vice versa • combine coins and notes to make exact amounts • exchange coins and notes up to 100 € for an equivalent value in smaller coins and notes • record amounts of money using symbols and decimal notation • give change in multiples of 10 cents
Year 4	**Year 5**	***Secondary Year 1***
• combine coins and notes to make exact amounts • exchange coins and notes for an equivalent value in smaller coins and notes • record amounts of money using symbols and decimal notation • calculate change • have an awareness of different monetary systems in the world	• calculate change • convert between the euro and other currencies	

4 Shape and Space

4.1 Spatial Awareness, Direction and Location

The pupils should be enabled to:

Year 1	Year 2	Year 3
• understand and use the vocabulary of spatial awareness, position and directions e.g. left, right, over, under, beside, between, etc. • explore their own spatial environment e.g. classroom, gym, playground • develop their own sense of spatial awareness • follow and give simple directions to move in space • locate places or objects on a simple map	• consolidate and extend the vocabulary of spatial awareness, position and directions e. g. on top of, forwards, backwards, sideways, around etc. • explore and make representations of their own spatial environment e.g. classroom, gym, playground • develop their own sense of spatial awareness • follow and give simple directions to move in space or on a map • locate places or objects on a simple map or grid	• follow and give instructions involving position, direction and movement • locate a position on a plan or map including using simple grid references • use the four points of the compass to describe movement or position

Year 4	Year 5	*Secondary Year 1*
• read, follow and give instructions involving position, direction and movement • visualise, locate and plot a position using grid references and co-ordinates in the first quadrant, naming the x and y axes • use the eight points of the compass to describe movement or position	• read, follow and give instructions and directions using coordinates • visualise, locate and plot a position using co-ordinates in the first quadrant as well as other grid reference systems e.g. longitude and latitude	

4 Shape and Space

4.2 2-D and 3-D Shapes

The pupils should be enabled to:

Year 1	Year 2	Year 3
• understand and use the vocabulary of shapes (circle, square, triangle, rectangle, side)	• consolidate and extend the vocabulary of shapes (semi-circle, oval, curved, straight, sides, corners, round, flat, faces)	• consolidate and extend the vocabulary of shapes (parallel, angle, right angle, vertices, edges, faces, regular, irregular)
• sort, name and describe 2-D shapes	• sort, name and describe the properties of 2-D shapes	• sort, name and describe the properties of 2-D shapes including irregular shapes (parallelogram, rhombus, trapezium, right angled triangle, quadrilateral)
• identify the basic properties of 3-D shapes	• sort, name and describe the properties of 3-D shapes (cube, cuboid, cylinder, sphere, cone and pyramids)	• sort, name and describe the properties of 3-D shapes (cube, cuboid, cylinder, sphere, cone and pyramids)
• identify 2-D and 3D shapes in real life contexts	• identify 2-D and 3-D shapes in real life contexts and discuss their use	
• draw, colour and create 2-D shapes	• construct and draw 2-D shapes (including halves and quarters of shapes)	
• construct 3-D models e.g. using blocks or lego	• construct 3-D models from plans e.g. using blocks or lego	• construct 3-D shapes and explore their relationship with 2-D shapes
• use 2-D and 3-D shapes to create other shapes e.g. using geoboards, tangrams, cubes	• use 2-D and 3-D shapes to create other shapes e.g. using geoboards, tangrams, cubes	• use geoboards and grid paper to create and draw polygons

Year 4	Year 5	*Secondary Year 1*
• consolidate and extend the vocabulary of 2-D and 3-D shapes (perpendicular, acute, obtuse, diagonal)	• consolidate and extend the vocabulary of 2-D and 3-D shapes (hollow, solid)	
• sort, name, describe and classify regular and irregular 2-D and 3-D shapes to include prism, pentagon, hexagon, heptagon, octagon	• sort, name, describe and classify regular and irregular 2-D and 3-D shapes, including equilateral, scalene, isosceles triangles, and identify their properties	
• explore the relationships between 2-D and 3-D shapes e.g. lines of symmetry and angles	• explore the relationships between 2-D and 3-D shapes e.g. lines and planes of symmetry and angles	
• identify and make nets of common 3-D shapes	• visualise, identify and make nets of common 3-D shapes • identify the properties of a circle and construct a circle of a given radius/diameter	
• use a set square and compasses to create geometrical drawings	• use a set square and compasses to create geometrical drawings	• *recognise, classify and name different shapes (quadrilaterals, triangles and circles, polygons of 5, 6, 8, 10 or 12 sides)* *- parallelism* *- perpendicularity* *- equality* • *recognise and name these solids – the cube, cuboid, cylinder, sphere, square based pyramid, cone. Classify these solids according various criteria* *- faces, edges, vertices* *- parallel and perpendicular faces and edges* *- curved or flat faces* • *recognise the properties of cubes and cuboids and study their nets* • *draw these solids in perspective*

4 Shape and Space

4.3 Patterns and Tessellation

The pupils should be enabled to:

Year 1	Year 2	Year 3
• recognise, describe, copy and extend patterns in colour, shape and quantity • manipulate shapes and objects to investigate patterns, symmetry and tessellation	• recognise, describe, extend and create patterns • manipulate shapes and objects to investigate patterns, symmetry and tessellation	• recognise, describe, extend and create tessellated patterns
Year 4	**Year 5**	***Secondary Year 1***
• recognise, describe, extend and create tessellated patterns, combining regular and irregular polygons	• recognise, describe, extend and create tessellated patterns and other designs which combine regular and irregular 2-D shapes • investigate the geometric properties of tessellations	

4 Shape and Space

4.4 Lines and Angles

The pupils should be enabled to:

Year 1	Year 2	Year 3
Not Applicable	• recognise vertical and horizontal lines • recognise right angles and relate them to shape and the environment	• identify and describe vertical, horizontal, parallel, perpendicular and intersecting lines • classify angles as greater than, less than or equal to a right angle and relate them to shape and the environment • recognise acute, right and obtuse angles and relate them to shape and the environment

Year 4	Year 5	*Secondary Year 1*
• identify, describe and use a ruler/squared paper to draw vertical, horizontal, parallel, perpendicular and intersecting lines • know that angles are measured in degrees and that: one whole turn is 360°; a straight line is 180°; a right angle is 90° • recognise and draw acute, right and obtuse angles and relate them to shape and the environment • estimate, measure and construct angles to the nearest 5°, using a protractor and a ruler	• identify, describe and use instruments to draw parallel, perpendicular and intersecting lines • name and classify all kinds of angles and relate them to shape and the environment • estimate, measure and construct angles to the nearest degree, using a protractor and a ruler	• *construct using protractor and set-squares: parallel lines, perpendicular lines, perpendicular bisectors of lines, angles of given size* • *evaluate and measure lengths and sizes of angles*

4 Shape and Space

4.5 Symmetry and Transformations

The pupils should be enabled to:

Year 1	Year 2	Year 3
• recognise examples of symmetry in their environment	• recognise examples of symmetry in their environment and in drawings and objects	• identify reflective symmetry in 2D shapes and in the environment
• identify reflective symmetry in simple 2-D shapes and letters • explore and make symmetrical shapes through practical activities e.g. by folding, cutting and manipulating objects	• explore and recognise reflective symmetry in shapes through practical activities e.g. by folding, cutting and manipulating objects and mirrors	
• draw a line of symmetry in simple 2-D shapes	• draw a line of symmetry in 2-D shapes	• draw all lines of symmetry in simple polygons
	• complete the missing half of a shape, picture or pattern, using either a vertical or a horizontal line of symmetry	• complete the missing half of a shape, picture or pattern, using vertical and horizontal lines of symmetry • rotate a simple shape around one of its vertices • translate a simple shape horizontally or vertically on a grid

Year 4	Year 5	*Secondary Year 1*
• investigate symmetry in art, architecture and nature	• investigate symmetry in art, architecture and nature	
• draw all lines of symmetry in polygons	• draw all lines of symmetry in polygons	
• complete the missing half of a shape, picture or pattern, using vertical, horizontal and diagonal lines of symmetry	• draw the position of a shape after reflection using vertical, horizontal, diagonal and multiple lines of symmetry	• *construct parallel lines, perpendicular lines, perpendicular bisectors of lines and angles of given size, using a protractor and set-squares*
• draw the position of a shape after rotation around one of its vertices	• draw the position of a shape after rotation using different centres of rotation	
• translate a shape horizontally and vertically on a grid • enlarge or reduce a shape using a grid	• draw the position of a shape after translation • enlarge or reduce a shape by measurement	

5 Data-handling

5.1 Collecting, Interpreting and Representing Data

The pupils should be enabled to:

Year 1	Year 2	Year 3
• describe real life situations and pictures from a child's environment in order to collect data	• describe real life situations and pictures in order to collect data, using appropriate language	• read and interpret data shown on pictograms, block graphs and bar charts, where scales have intervals of differing step size
• sort and classify objects by one or two criteria	• sort and classify objects using up to four criteria	
• collect and record data in a systematic way	• collect, organise, read and interpret data	• collect, organise and represent data using pictograms, block graphs and bar charts, where scales have intervals of differing step size
• represent and read data using block graphs and pictograms	• use tally charts, frequency tables, pictograms and bar charts to represent results • use diagrams to sort data and objects using more than one criteria (e.g. Venn/Carroll diagrams) • begin to use ICT to read and represent data on a simple bar chart	• use ICT to organise and present data

Year 4	Year 5	*Secondary Year 1*
• read and interpret data shown on pictograms, bar charts, pie charts and line charts where scales have intervals of differing step size	• read and interpret data shown on pictograms, bar charts, pie charts and line charts where scales have intervals of differing step size	
• collect, organise and represent data using pictograms, bar charts, pie charts and line graphs where scales have intervals of differing step sizes	• collect, organise and represent data using the most appropriate form of graphical representation of data, including appropriate scales • calculate and compare the average (mean) of simple data	
• calculate and compare the average (mean) of simple data • use ICT to collect, organise and present data	• use ICT (e.g. spreadsheets) to collect data, build charts and make predictions	• *collect and display data in* - *tables* - *bar charts* - *histograms* • *interpret diagrams* • *calculate means*

5 Data-handling

5.2 Probability and Chance

The pupils should be enabled to:

Year 1	Year 2	Year 3
Not Applicable	Not Applicable	• use vocabulary of likelihood and chance: possible, impossible, might, certain, not sure • order events in terms of likelihood of occurrence • identify and record outcomes of simple random processes
Year 4	**Year 5**	***Secondary Year 1***
• use vocabulary of likelihood and chance: probable, chance, likely, unlikely, never, definitely • order events in terms of likelihood of occurrence • identify and record outcomes of random processes	• identify and list all possible outcomes of simple random processes • describe and predict outcomes from data using the vocabulary of likelihood and chance: probable, chance, likely, even chance, unlikely, never, definitely	

6 Problem Solving

6.1 Problem Solving

The pupils should be enabled to:

Year 1	Year 2	Year 3
• understand that mathematical problems arise in play and real life situations	• select the relevant information and interpret it to solve oral and written problems	• select the relevant information and interpret it to solve oral and written problems
• create mathematical representations from real-life and play situations e.g. a number sentence		
• solve simple one-step problems using a variety of approaches e.g. concrete materials, pictures and discussion	• solve one-step and simple two-step problems using knowledge of operations	• solve one-step and two-step problems choosing appropriate operations and strategies
• realise that there is more than one way to solve a problem	• understand that there is more than one way to solve a problem and determine the best strategy	• record and explain the calculations used to solve a problem
• create a mathematical story from a given number sentence	• check that the answer makes sense in the context of the problem	• create one-step word problems
	• create a mathematical story from a given number sentence	• use ICT to support problem solving
	• pose a simple question from given mathematical data	• pose questions from given mathematical data
		• use inverse operations and other strategies to check solutions to problems
		• check that the answer makes sense in the context of the problem
	• identify simple relationships, patterns and structures to interpret mathematical data	• identify and follow a line of enquiry, begin to justify choices and explain reasoning
		• investigate relationships, patterns and structures to interpret mathematical statements
• discuss and explain methods, reasoning, ideas and solutions using mathematical vocabulary	• discuss and explain methods, reasoning, ideas and solutions using mathematical vocabulary	• discuss, explain and present methods, reasoning, ideas and solutions both orally and in writing
• listen critically to and respect other children's mathematical descriptions and explanations including when working in a group	• listen critically to and respect other children's mathematical descriptions and explanations including when working in a group	

Year 4	Year 5	*Secondary Year 1*
• select the relevant information and interpret it to solve oral and written problems	• select the relevant information and interpret it to solve oral and written problems	
• solve one-step and two-step problems choosing appropriate operations and strategies	• solve multi-step problems in a variety of contexts choosing appropriate operations and strategies	
• use a systematic approach to organise their work	• develop systematic ways to organise their work	
	• realise the importance of recording all attempts to solve multi-step problems	
• create own word problems and investigations	• create multi-step word problems and investigations	
• use a calculator and ICT to support problem solving	• use a calculator and ICT to support problem solving	
• identify, select and follow a line of enquiry, justify choices, explain reasoning and check answers	• identify, select and follow a line of enquiry, justify choices, explain reasoning and check answers	
• make predictions about the outcome of an investigation	• make predictions about the outcome of an investigation and pose further questions	
• identify a rule, verify it, make conclusions and apply the rule	• identify a rule, verify it, make conclusions and apply the rule	
• investigate relationships, patterns and structures to interpret mathematical statements	• investigate relationships, patterns and structures to interpret mathematical statements	
	• compare processes and solutions with others and identify the best approaches used	
• discuss, explain and present methods, reasoning, ideas and solutions using mathematical language and symbols	• discuss, explain and present methods, reasoning, ideas and solutions using mathematical language and symbols	

4. Contents

The core teaching tool for Mathematics in the primary classes is the ***Intermath*** material, and teachers are obliged to use it. It has been especially developed for the European Schools and is available in all the section languages. The books aim to cover the main teaching objectives for each year group. Each book is supplemented by a teachers' handbook, available in English, French and German, which provides references to the teaching objectives, key vocabulary, answers, teaching activities and resources, and support and extension work. Teachers may also use books and materials from their home country, but these should complement, not replace the Intermath material.

Teachers should also make use of ICT to enhance and enrich teaching and learning in mathematics. Specific software is available to support Intermath. Mathematics achievement is increased through the long term use of concrete instructional materials. Annex II lists the minimum requirement of materials needed to deliver high quality multi-sensory teaching and schools should ensure that their teachers have access to such materials.

5. Assessment

5.1. Formative and summative assessment

Assessment is an integral part of planning, teaching and learning. It takes into account the needs of the diverse community of learners in the European Schools and is based on a common assessment approach.
The learning objectives are the basis for assessment. They include pupils′ competences – knowledge, skills and attitudes. It is important that pupils' competences are made visible in a valid and reliable way.

General objectives of assessment policy:
- Assessment provides teachers with specific information about pupils' level of learning, including strengths and weaknesses, in order to enable them to adapt their planning and teaching.
- Assessment allows pupils to follow their own progress as well as being aware of any difficulties they encounter, in order to enable them to improve their learning.
- Assessment provides continuity of pupils' progress throughout their primary years.
- Assessment provides information for school reports and for making decisions about promotion to the next class.
- Assessment provides feedback for parents.

The emphasis on assessment in Mathematics should be on what pupils *know* and what they *can* do, as well as *how* they do it. Assessment should identify the pupil's existing knowledge, misconceptions and strategies. Pupils should see assessment in a positive way; as a means of improving their learning skills. It also helps the pupils, as well as the teacher, to identify the various difficulties they experience while working in mathematics. Pupil's self assessment is also an important tool to make pupils' learning more effective.

Formative assessment
Formative assessment takes place during the learning process and helps pupils to reflect on their own learning and helps teachers to adapt and modify learning activities to best suit the needs of their pupils. Teachers should employ a wide range of formal and informal procedures to provide qualitative feedback to pupils.

Examples:
- Teacher observation and constructive feedback
- Teacher-designed tasks and tests
- Work samples, portfolios and projects
- Pupils self-evaluation
- Peer evaluation

Formative assessment is often used for diagnosis. It helps to identify specific learning strengths and needs, and determines targets and appropriate strategies to achieve them.
Diagnostic assessment can be a basis for providing the pupil with appropriate support (LS, SEN, SWALS).

Examples:
- Teacher tests
- Diagnostic tests
- National tests
- Diagnostic procedures
- Diagnostic observations

Summative assessment
Summative assessment is usually conducted at the end of a period of learning and indicates if the learning objectives have been achieved.
Summative assessment is the formal testing of what has been learned. It can be used to provide a record of each pupil's achievement for bi-annual reporting to parents and for transition to the next class.

Examples:
- Teacher tests e.g. end of unit
- Commercial standardised tests

Transition Nursery-Primary-Secondary
Transition from nursery to primary is prepared in cooperation between early education teachers and primary teachers. This may involve formal and informal meetings between the teachers, where the abilities of the child are discussed, as well as any difficulties arising to be addressed in learning support. The early education teacher may also transfer the pupils' portfolios to the primary teacher.

Likewise in the transition between primary and secondary, the teachers may be involved in formal and informal meetings about the incoming students. They may also transfer the pupils' portfolios and/or test results to secondary teachers, in order to demonstrate the strengths and weaknesses of the student.

5.2. Attainment Descriptors

Attainment descriptors Mathematics Primary P1

Level of achievement **P1**	Key objectives **P1**	General Criteria for Achievement of Subject Objectives			
		+	**++**	**+++**	**++++**
Numbers	Count to 20, forwards and backwards. Order numbers.	Many mistakes, caused by lack of understanding, lack of comprehension. Very dependent on teacher´s help.	Frequent mistakes, often caused by lack of understanding. Usually works under the teacher´s or other pupil´s guidance.	Some mistakes caused by inattention, or misunderstanding. Works almost independently; sometimes needs encouragement.	Rare mistakes. Works independently, showing self-confidence.
Calculation	Add and subtract up to 20, with and without visual support.	Hardly any understanding. Many mistakes, caused by lack of understanding, lack of comprehension. Very dependent on teacher´s help. Unable to use the competence in common or simple situations.	Partial understanding. Frequent mistakes, often caused by lack of understanding. Usually works under the teacher´s or other pupil´s guidance. Able to use competence in common or simple situations only.	Good understanding. Some mistakes caused by inattention, or misunderstanding. Works almost independently; sometimes needs encouragement. Use of the competences with confidence. Use of learned strategies.	Deep understanding. Rare mistakes. Works independently, showing self-confidence. Use of the competence in different situations and contexts; ability to create own strategies.

Level of achievement **P1**	Key objectives **P1**	General Criteria for Achievement of Subject Objectives			
		+	**++**	**+++**	**++++**
Data handling	Collect and record data in a systematic way, at the level of P1.	Hardly any understanding. Many mistakes, caused by lack of understanding, lack of comprehension. Very dependent on teacher´s help. Unable to use the competence in common or simple situations.	Partial understanding. Frequent mistakes, often caused by lack of understanding. Usually works under the teacher´s or other pupil´s guidance. Able to use competence in common or simple situations only.	Good understanding. Some mistakes caused by inattention, or misunderstanding. Works almost independently; sometimes needs encouragement. Use of the competences with confidence. Use of learned strategies.	Deep understanding. Rare mistakes. Works independently, showing self-confidence. Use of the competence in different situations and contexts; ability to create own strategies.
Measurement	Estimate, measure, compare and record length/capacity/weight using non-standard units at the level of P1. Read the time to the hour and half hour on analogue clocks. Combine coins and notes to make different amounts up to 20.	Hardly any understanding. Many mistakes, caused by lack of understanding, lack of comprehension. Very dependent on teacher´s help. Unable to use the competence in common or simple situations.	Partial understanding. Frequent mistakes, often caused by lack of understanding. Usually works under the teacher´s or other pupil´s guidance. Able to use competence in common or simple situations only.	Good understanding. Some mistakes caused by inattention, or misunderstanding. Works almost independently; sometimes needs encouragement. Use of the competences with confidence. Use of learned strategies.	Deep understanding. Rare mistakes. Works independently, showing self-confidence. Use of the competence in different situations and contexts; ability to create own strategies.

Level of achievement **P1**	Key objectives **P1**	General Criteria for Achievement of Subject Objectives			
		+	**++**	**+++**	**++++**
Shape and space	Follow and give simple directions to move in space. Sort, name and describe simple 2-D shapes.	Hardly any understanding. Many mistakes, caused by lack of understanding, lack of comprehension. Very dependent on teacher´s help. Unable to use the competence in common or simple situations.	Partial understanding. Frequent mistakes, often caused by lack of understanding. Usually works under the teacher´s or other pupil´s guidance. Able to use competence in common or simple situations only.	Good understanding. Some mistakes caused by inattention, or misunderstanding. Works almost independently; sometimes needs encouragement. Use of the competences with confidence. Use of learned strategies.	Deep understanding. Rare mistakes. Works independently, showing self-confidence. Use of the competence in different situations and contexts; ability to create own strategies.
Problem solving	Solve simple one-step problems using a variety of approaches e.g. concrete materials, pictures and discussion.	Hardly any understanding. Many mistakes, caused by lack of understanding, lack of comprehension. Very dependent on teacher´s help. Unable to use the competence in common or simple situations.	Partial understanding. Frequent mistakes, often caused by lack of understanding. Usually works under the teacher´s or other pupil´s guidance. Able to use competence in common or simple situations only.	Good understanding. Some mistakes caused by inattention, or misunderstanding. Works almost independently; sometimes needs encouragement. Use of the competences with confidence. Use of learned strategies.	Deep understanding. Rare mistakes. Works independently, showing self-confidence. Use of the competence in different situations and contexts; ability to create own strategies.

Attainment descriptors Mathematics Primary P2

Level of achievement **P2**	Key objectives **P2**	General Criteria for Achievement of Subject Objectives			
		+	**++**	**+++**	**++++**
Numbers	• Count to 100, forwards and backwards. • Order numbers. • Locate and place a number up to 100 on a number line and in a hundred square. • Understand the place value of each digit in a 3 digit number.	Hardly any understanding. Many mistakes, caused by lack of understanding, lack of comprehension. Very dependent on teacher´s help. Unable to use the competence in common or simple situations.	Partial understanding. Frequent mistakes, often caused by lack of understanding. Usually works under the teacher´s or other pupil´s guidance. Able to use competence in common or simple situations only.	Good understanding. Some mistakes caused by inattention, or misunderstanding. Works almost independently; sometimes needs encouragement. Use of the competences with confidence. Use of learned strategies.	Deep understanding. Rare mistakes. Works independently, showing self-confidence. Use of the competence in different situations and contexts; ability to create own strategies.
Calculation	• Add and subtract 2-digit numbers with answers up to 100, with and without visual support. • Bridging. • Basic learning of multiplication tables up to 10.	Hardly any understanding. Many mistakes, caused by lack of understanding, lack of comprehension. Very dependent on teacher´s help. Unable to use the competence in common or simple situations.	Partial understanding. Frequent mistakes, often caused by lack of understanding. Usually works under the teacher´s or other pupil´s guidance. Able to use competence in common or simple situations only.	Good understanding. Some mistakes caused by inattention, or misunderstanding. Works almost independently; sometimes needs encouragement. Use of the competences with confidence. Use of learned strategies.	Deep understanding. Rare mistakes. Works independently, showing self-confidence. Use of the competence in different situations and contexts; ability to create own strategies.

Level of achievement **P2**	Key objectives **P2**	General Criteria for Achievement of Subject Objectives			
		+	**++**	**+++**	**++++**
Data handling	Collect, organise, read and interpret data at the level of P2.	Hardly any understanding. Many mistakes, caused by lack of understanding, lack of comprehension. Very dependent on teacher´s help. Unable to use the competence in common or simple situations.	Partial understanding. Frequent mistakes, often caused by lack of understanding. Usually works under the teacher´s or other pupil´s guidance. Able to use competence in common or simple situations only.	Good understanding. Some mistakes caused by inattention, or misunderstanding. Works almost independently; sometimes needs encouragement. Use of the competences with confidence. Use of learned strategies.	Deep understanding. Rare mistakes. Works independently, showing self-confidence. Use of the competence in different situations and contexts; ability to create own strategies.
Measurement	• Estimate, measure, compare and record length (m, cm), capacity (l) and weight (kg, g) using standard units at the level of P2. • Estimate and measure area using non-standard units. • Read and record the time to the hour, half hour and quarter hour on analogue clocks. • Combine coins and notes to make different amounts up to 100.	Hardly any understanding. Many mistakes, caused by lack of understanding, lack of comprehension. Very dependent on teacher´s help. Unable to use the competence in common or simple situations.	Partial understanding. Frequent mistakes, often caused by lack of understanding. Usually works under the teacher´s or other pupil´s guidance. Able to use competence in common or simple situations only.	Good understanding. Some mistakes caused by inattention, or misunderstanding. Works almost independently; sometimes needs encouragement. Use of the competences with confidence. Use of learned strategies.	Deep understanding. Rare mistakes. Works independently, showing self-confidence. Use of the competence in different situations and contexts; ability to create own strategies.

Level of achievement **P2**	Key objectives **P2**	General Criteria for Achievement of Subject Objectives			
		+	**++**	**+++**	**++++**
Shape and space	Sort, name and describe the properties of 2-D shapes (circle, semi-circle, oval, curved, straight, sides, corners, round, flat, faces).	Hardly any understanding. Many mistakes, caused by lack of understanding, lack of comprehension. Very dependent on teacher´s help. Unable to use the competence in common or simple situations.	Partial understanding. Frequent mistakes, often caused by lack of understanding. Usually works under the teacher´s or other pupil´s guidance. Able to use competence in common or simple situations only.	Good understanding. Some mistakes caused by inattention, or misunderstanding. Works almost independently; sometimes needs encouragement. Use of the competences with confidence. Use of learned strategies.	Deep understanding. Rare mistakes. Works independently, showing self-confidence. Use of the competence in different situations and contexts; ability to create own strategies.
Problem solving	Solve one-step and simple two-step problems using knowledge of operations and using concrete materials, e.g. pictures.	Hardly any understanding. Many mistakes, caused by lack of understanding, lack of comprehension. Very dependent on teacher´s help. Unable to use the competence in common or simple situations.	Partial understanding. Frequent mistakes, often caused by lack of understanding. Usually works under the teacher´s or other pupil´s guidance. Able to use competence in common or simple situations only.	Good understanding. Some mistakes caused by inattention, or misunderstanding. Works almost independently; sometimes needs encouragement. Use of the competences with confidence. Use of learned strategies.	Deep understanding. Rare mistakes. Works independently, showing self-confidence. Use of the competence in different situations and contexts; ability to create own strategies.

Attainment descriptors Mathematics Primary P3

Level of achievement **P3**	Key objectives **P3**	General Criteria for Achievement of Subject Objectives			
		+	**++**	**+++**	**++++**
Numbers	• Count to 1000, forwards and backwards. • Order numbers. • Understand the place value of each digit in a 4 digit number. • Identify and represent simple fractions. • Explore, recognise, record and create patterns and sequences with a variety of intervals.	Hardly any understanding. Many mistakes, caused by lack of understanding, lack of comprehension. Very dependent on teacher´s help. Unable to use the competence in common or simple situations.	Partial understanding. Frequent mistakes, often caused by lack of understanding. Usually works under the teacher´s or other pupil´s guidance. Able to use competence in common or simple situations only.	Good understanding. Some mistakes caused by inattention, or misunderstanding. Works almost independently; sometimes needs encouragement. Use of the competences with confidence. Use of learned strategies.	Deep understanding. Rare mistakes. Works independently, showing self-confidence. Use of the competence in different situations and contexts; ability to create own strategies.
Calculation	• Add and subtract 3-digit numbers with answers up to 1000, with and without visual support. • Explore simple relationships between the multiplication tables • Develop mental strategies for multiplication and division e.g. transposing the knowledge of simple multiplication and division facts to multiples of 10, 100, …	Hardly any understanding. Many mistakes, caused by lack of understanding, lack of comprehension. Very dependent on teacher´s help. Unable to use the competence in common or simple situations.	Partial understanding. Frequent mistakes, often caused by lack of understanding. Usually works under the teacher´s or other pupil´s guidance. Able to use competence in common or simple situations only.	Good understanding. Some mistakes caused by inattention, or misunderstanding. Works almost independently; sometimes needs encouragement. Use of the competences with confidence. Use of learned strategies.	Deep understanding. Rare mistakes. Works independently, showing self-confidence. Use of the competence in different situations and contexts; ability to create own strategies.

Level of achievement **P3**	Key objectives **P3**	General Criteria for Achievement of Subject Objectives			
		+	**++**	**+++**	**++++**
Data handling	Collect, organise and represent data using pictograms, block graphs and bar charts, where scales have intervals of differing step size.	Hardly any understanding. Many mistakes, caused by lack of understanding, lack of comprehension. Very dependent on teacher´s help. Unable to use the competence in common or simple situations.	Partial understanding. Frequent mistakes, often caused by lack of understanding. Usually works under the teacher´s or other pupil´s guidance. Able to use competence in common or simple situations only.	Good understanding. Some mistakes caused by inattention, or misunderstanding. Works almost independently; sometimes needs encouragement. Use of the competences with confidence. Use of learned strategies.	Deep understanding. Rare mistakes. Works independently, showing self-confidence. Use of the competence in different situations and contexts; ability to create own strategies.
Measurement	• Estimate, measure, compare and record lengths, capacity and weight of a wide variety of objects using appropriate instruments and metric units (m, cm, mm, l, cl, dl, ml, t, kg, g). • Estimate and measure in squares the area of regular and irregular shapes. • Read and record the time to the exact minute on analogue and digital clocks. • Combine coins and notes to make exact amounts.	Hardly any understanding. Many mistakes, caused by lack of understanding, lack of comprehension. Very dependent on teacher´s help. Unable to use the competence in common or simple situations.	Partial understanding. Frequent mistakes, often caused by lack of understanding. Usually works under the teacher´s or other pupil´s guidance. Able to use competence in common or simple situations only.	Good understanding. Some mistakes caused by inattention, or misunderstanding. Works almost independently; sometimes needs encouragement. Use of the competences with confidence. Use of learned strategies.	Deep understanding. Rare mistakes. Works independently, showing self-confidence. Use of the competence in different situations and contexts; ability to create own strategies.

Level of achievement **P3**	Key objectives **P3**	General Criteria for Achievement of Subject Objectives			
		+	**++**	**+++**	**++++**
Shape and space	• Sort, name and describe the properties of 2-D shapes including irregular shapes (e.g. parallelogram, trapezium, right angled triangle). • Sort, name and describe the properties of simple 3-D shapes. • Identify reflective symmetry in 2-D shapes and in the environment.	Hardly any understanding. Many mistakes, caused by lack of understanding, lack of comprehension. Very dependent on teacher´s help. Unable to use the competence in common or simple situations.	Partial understanding. Frequent mistakes, often caused by lack of understanding. Usually works under the teacher´s or other pupil´s guidance. Able to use competence in common or simple situations only.	Good understanding. Some mistakes caused by inattention, or misunderstanding. Works almost independently; sometimes needs encouragement. Use of the competences with confidence. Use of learned strategies.	Deep understanding. Rare mistakes. Works independently, showing self-confidence. Use of the competence in different situations and contexts; ability to create own strategies.
Problem solving	Record and explain the calculations used to solve a problem.	Hardly any understanding. Many mistakes, caused by lack of understanding, lack of comprehension. Very dependent on teacher´s help. Unable to use the competence in common or simple situations.	Partial understanding. Frequent mistakes, often caused by lack of understanding. Usually works under the teacher´s or other pupil´s guidance. Able to use competence in common or simple situations only.	Good understanding. Some mistakes caused by inattention, or misunderstanding. Works almost independently; sometimes needs encouragement. Use of the competences with confidence. Use of learned strategies.	Deep understanding. Rare mistakes. Works independently, showing self-confidence. Use of the competence in different situations and contexts; ability to create own strategies.

Attainment descriptors Mathematics Primary P4

Level of achievement P4	Key objectives P4	General Criteria for Achievement of Subject Objectives			
		+	++	+++	++++
Numbers	• Order numbers. • Understand the place value of each digit in a 6 digit number. • Read, write and order proper fractions, improper fractions, mixed numbers and decimal numbers (up to two decimal places). • Explore, recognise, record and create patterns and sequences with a variety of intervals (including fractions and decimal numbers), and more than one operation (e.g. multiply by 2, then add 3 to find the new term).	Hardly any understanding. Many mistakes, caused by lack of understanding, lack of comprehension. Very dependent on teacher´s help. Unable to use the competence in common or simple situations.	Partial understanding. Frequent mistakes, often caused by lack of understanding. Usually works under the teacher´s or other pupil´s guidance. Able to use competence in common or simple situations only.	Good understanding. Some mistakes caused by inattention, or misunderstanding. Works almost independently; sometimes needs encouragement. Use of the competences with confidence. Use of learned strategies.	Deep understanding. Rare mistakes. Works independently, showing self-confidence. Use of the competence in different situations and contexts; ability to create own strategies.
Calculation	• Add and subtract whole numbers and numbers up to one decimal place. • Apply appropriate strategies to support mental calculations. • write multiplication calculations using informal and standard written • write simple division calculations using informal methods with and without remainders .	Hardly any understanding. Many mistakes, caused by lack of understanding, lack of comprehension. Very dependent on teacher´s help. Unable to use the competence in common or simple situations.	Partial understanding. Frequent mistakes, often caused by lack of understanding. Usually works under the teacher´s or other pupil´s guidance. Able to use competence in common or simple situations only.	Good understanding. Some mistakes caused by inattention, or misunderstanding. Works almost independently; sometimes needs encouragement. Use of the competences with confidence. Use of learned strategies.	Deep understanding. Rare mistakes. Works independently, showing self-confidence. Use of the competence in different situations and contexts; ability to create own strategies.

Level of achievement **P4**	Key objectives **P4**	General Criteria for Achievement of Subject Objectives			
		+	**++**	**+++**	**++++**
Data handling	Collect, organise and represent data using pictograms, bar charts, pie charts and line graphs where scales have intervals of differing step sizes.	Hardly any understanding. Many mistakes, caused by lack of understanding, lack of comprehension. Very dependent on teacher´s help. Unable to use the competence in common or simple situations.	Partial understanding. Frequent mistakes, often caused by lack of understanding. Usually works under the teacher´s or other pupil´s guidance. Able to use competence in common or simple situations only.	Good understanding. Some mistakes caused by inattention, or misunderstanding. Works almost independently; sometimes needs encouragement. Use of the competences with confidence. Use of learned strategies.	Deep understanding. Rare mistakes. Works independently, showing self-confidence. Use of the competence in different situations and contexts; ability to create own strategies.
Measurement	• Understand the relationship between: mm, cm, dm, m, dam, hm and km, l-dl, l-cl, l-ml, dl-cl, cl-ml, t, kg, g. • Understand km^2, ha, a, m^2, dm^2, cm^2, mm^2 . • Estimate and measure in squares the area of regular and irregular shapes. • Read and record the time to the exact minute on analogue, digital and 24 clocks. • Calculate duration. • Calculate change.	Hardly any understanding. Many mistakes, caused by lack of understanding, lack of comprehension. Very dependent on teacher´s help. Unable to use the competence in common or simple situations.	Partial understanding. Frequent mistakes, often caused by lack of understanding. Usually works under the teacher´s or other pupil´s guidance. Able to use competence in common or simple situations only.	Good understanding. Some mistakes caused by inattention, or misunderstanding. Works almost independently; sometimes needs encouragement. Use of the competences with confidence. Use of learned strategies.	Deep understanding. Rare mistakes. Works independently, showing self-confidence. Use of the competence in different situations and contexts; ability to create own strategies.

Level of achievement **P4**	Key objectives **P4**	General Criteria for Achievement of Subject Objectives			
		+	**++**	**+++**	**++++**
Shape and space	• Sort, name, describe and classify regular and irregular 2-D and 3-D shapes to include prism, pentagon, hexagon, heptagon, octagon. • Identify, describe and use a ruler/squared paper to draw vertical, horizontal, parallel, perpendicular and intersecting lines • Complete the missing half of a shape, picture or pattern, using vertical, horizontal and diagonal lines of symmetry.	Hardly any understanding. Many mistakes, caused by lack of understanding, lack of comprehension. Very dependent on teacher´s help. Unable to use the competence in common or simple situations.	Partial understanding. Frequent mistakes, often caused by lack of understanding. Usually works under the teacher´s or other pupil´s guidance. Able to use competence in common or simple situations only.	Good understanding. Some mistakes caused by inattention, or misunderstanding. Works almost independently; sometimes needs encouragement. Use of the competences with confidence. Use of learned strategies.	Deep understanding. Rare mistakes. Works independently, showing self-confidence. Use of the competence in different situations and contexts; ability to create own strategies.
Problem solving	Select the relevant information and interpret it to solve oral and written problems.	Hardly any understanding. Many mistakes, caused by lack of understanding, lack of comprehension. Very dependent on teacher´s help. Unable to use the competence in common or simple situations.	Partial understanding. Frequent mistakes, often caused by lack of understanding. Usually works under the teacher´s or other pupil´s guidance. Able to use competence in common or simple situations only.	Good understanding. Some mistakes caused by inattention, or misunderstanding. Works almost independently; sometimes needs encouragement. Use of the competences with confidence. Use of learned strategies.	Deep understanding. Rare mistakes. Works independently, showing self-confidence. Use of the competence in different situations and contexts; ability to create own strategies.

Attainment descriptors Mathematics Primary P5

Level of achievement **P5**	Key objectives **P5**	General Criteria for Achievement of Subject Objectives			
		+	**++**	**+++**	**++++**
Numbers	• Use and apply appropriate estimation. • Convert improper fractions to mixed numbers and vice-versa. • Simplify fractions to the lowest term. • Understand the relationships between fractions, decimal numbers and percentages (limit percentages to 100%, 50%, 25% and 10%).	Hardly any understanding. Many mistakes, caused by lack of understanding, lack of comprehension. Very dependent on teacher´s help. Unable to use the competence in common or simple situations.	Partial understanding. Frequent mistakes, often caused by lack of understanding. Usually works under the teacher´s or other pupil´s guidance. Able to use competence in common or simple situations only.	Good understanding. Some mistakes caused by inattention, or misunderstanding. Works almost independently; sometimes needs encouragement. Use of the competences with confidence. Use of learned strategies.	Deep understanding. Rare mistakes. Works independently, showing self-confidence. Use of the competence in different situations and contexts; ability to create own strategies.
Calculation	• Estimate before calculating and check the answer, including using a calculator. • Add and subtract fractions and mixed numbers. • Use mental strategies including multiplying and dividing whole numbers and decimal numbers by 10 and 100 and 1000.	Hardly any understanding. Many mistakes, caused by lack of understanding, lack of comprehension. Very dependent on teacher´s help. Unable to use the competence in common or simple situations.	Partial understanding. Frequent mistakes, often caused by lack of understanding. Usually works under the teacher´s or other pupil´s guidance. Able to use competence in common or simple situations only.	Good understanding. Some mistakes caused by inattention, or misunderstanding. Works almost independently; sometimes needs encouragement. Use of the competences with confidence. Use of learned strategies.	Deep understanding. Rare mistakes. Works independently, showing self-confidence. Use of the competence in different situations and contexts; ability to create own strategies.

Level of achievement **P5**	Key objectives **P5**	General Criteria for Achievement of Subject Objectives			
		+	**++**	**+++**	**++++**
Data handling	• Collect, organise and represent data using the most appropriate form of graphical representation of data, including appropriate scales. • Describe and predict outcomes from data using the vocabulary of likelihood and chance: probable, chance, likely, even chance, unlikely, never, definitely.	Hardly any understanding. Many mistakes, caused by lack of understanding, lack of comprehension. Very dependent on teacher´s help. Unable to use the competence in common or simple situations.	Partial understanding. Frequent mistakes, often caused by lack of understanding. Usually works under the teacher´s or other pupil´s guidance. Able to use competence in common or simple situations only.	Good understanding. Some mistakes caused by inattention, or misunderstanding. Works almost independently; sometimes needs encouragement. Use of the competences with confidence. Use of learned strategies.	Deep understanding. Rare mistakes. Works independently, showing self-confidence. Use of the competence in different situations and contexts; ability to create own strategies.
Measurement	• Convert between mm, cm, dm, m, hm, km, l-dl, l-cl, l-ml, dl-cl, cl-ml, t-kg, kg-g. • Understand the relationship between units of area: km^2, ha, a, m^2, dm^2, cm^2, mm^2 . • Convert and calculate with units of time.	Hardly any understanding. Many mistakes, caused by lack of understanding, lack of comprehension. Very dependent on teacher´s help. Unable to use the competence in common or simple situations.	Partial understanding. Frequent mistakes, often caused by lack of understanding. Usually works under the teacher´s or other pupil´s guidance. Able to use competence in common or simple situations only.	Good understanding. Some mistakes caused by inattention, or misunderstanding. Works almost independently; sometimes needs encouragement. Use of the competences with confidence. Use of learned strategies.	Deep understanding. Rare mistakes. Works independently, showing self-confidence. Use of the competence in different situations and contexts; ability to create own strategies.

Level of achievement **P5**	Key objectives **P5**	General Criteria for Achievement of Subject Objectives			
		+	**++**	**+++**	**++++**
Shape and space	• Sort, name, describe and classify regular and irregular 2-D and 3-D shapes, including equilateral, scalene, isosceles triangles, and identify their properties. • Estimate, measure and construct angles. • Draw all lines of symmetry in polygons.	Hardly any understanding. Many mistakes, caused by lack of understanding, lack of comprehension. Very dependent on teacher´s help. Unable to use the competence in common or simple situations.	Partial understanding. Frequent mistakes, often caused by lack of understanding. Usually works under the teacher´s or other pupil´s guidance. Able to use competence in common or simple situations only.	Good understanding. Some mistakes caused by inattention, or misunderstanding. Works almost independently; sometimes needs encouragement. Use of the competences with confidence. Use of learned strategies.	Deep understanding. Rare mistakes. Works independently, showing self-confidence. Use of the competence in different situations and contexts; ability to create own strategies.
Problem solving	Identify, select and follow a line of enquiry, justify choices, explain reasoning and check answers.	Hardly any understanding. Many mistakes, caused by lack of understanding, lack of comprehension. Very dependent on teacher´s help. Unable to use the competence in common or simple situations.	Partial understanding. Frequent mistakes, often caused by lack of understanding. Usually works under the teacher´s or other pupil´s guidance. Able to use competence in common or simple situations only.	Good understanding. Some mistakes caused by inattention, or misunderstanding. Works almost independently; sometimes needs encouragement. Use of the competences with confidence. Use of learned strategies.	Deep understanding. Rare mistakes. Works independently, showing self-confidence. Use of the competence in different situations and contexts; ability to create own strategies.

Annex I Symbols and Language

	Year 1	Year 2	Year 3	Year 4	Year 5
Numbers	1-20	20-100	to 999	up to 1 000 000	Over 1 000 000 prime numbers, square numbers, triangular numbers
Calculations	+, -, =	x, ÷ , < >, ≠	as before	as before	() n
Fractions	vocabulary of half & double	half, quarter, double, 1/4, 1/2	proper fractions with denominators up to 10 e.g. 3/9 , 4/7, denominator, numerator	equivalent fractions, improper fractions, mixed numbers	
Decimals/ Percentages				tenth, hundredth up to 2 decimal places e.g. 0.25	up to 2 decimal places and percentages 10%, 25%, 50%
Lines and 2-D Shapes	circle, square, triangle, rectangle	oval, semi-circle	parallel, parallelogram, rhombus, trapezium, quadrilateral, right angle, °, vertex, edge, face, reflection, rotation	perpendicular, pentagon, hexagon, heptagon, octagon, obtuse angle, translation	reflex angle, equilateral, scalene, isosceles triangles, radius, diameter
3-D Shapes	awareness of...	cube, cuboid, cylinder, sphere, cone, pyramid	as before	net, prism	as before
Measure	awareness of...	m, cm, l, kg, g	perimeter, area, volume, capacity, mm, dl, cl, ml, t	km, m^2, cm^2	dm, hm
Time	hour, day, month, year	second, minute, week	century, 24 hour clock	as before	as before
Data Handling/ Probability		tally chart, frequency table, pictogram and bar chart, Venn diagram, Carroll diagram	block graph	pie chart, line chart	spreadsheet

Annex II Teaching Materials for Mathematics

Teaching Materials for Mathematics – Grade 1
The Number System and Calculation
Two colour counters (red and blue) Number and picture dominoes Operation cards Individual number cards Magnetic number cards Abacus Number lines (large class model and individual) Unifix cubes Base ten materials Dice – 6 sided and rewritable Calculation games
Shape and Space
2D shapes 3D shapes Blocks Cubes, Lego Mosaic and logic blocks Geoboards, Tangrams Computer Software program 1cm squared paper
Measures
Rulers A Weighing scale Weights Metre sticks Hourglass Class calendar Teaching clock and individual clocks Plastic money: Euro coins and notes

Teaching Materials for Mathematics – Grade 2
The Number System and Calculation
Two colour counters (red and blue) Operation cards Individual number cards Magnetic number cards Abacus Number lines (large class model and individual) Unifix cubes Base ten materials Dice – 6 sided,10 sided and rewritable Hundred squares (class model and individual) Blank hundred squares Dominoes Calculation games
Shape and Space
2D shapes 3D shapes Geoboards, Tangrams Cubes, Lego Computer Software program 1cm squared paper Mirrors Puzzles
Measures
Rulers Tape measures Metre sticks Trundle wheel Hourglass Calendars Teaching clock Individuals clocks Digital clock Various weighing scales Weights Measuring jugs Receptacles (containers) Plastic money: Euro coins and notes

Teaching materials for mathematics – Grade 3
The Number System and Calculation
Coloured counters (green, red and blue) Operation cards Individual number cards Magnetic number cards Place value charts Multiplication squares Abacus Calculators Number lines (large class model and individual) Base ten materials Dice – various sided and rewritable Hundred squares (class model and individual) Blank hundred squares Number demonstration materials (e.g German Thousand books) Fraction boards, disk Dominoes Calculation games
Shape and Space
2D shapes 3D shapes Geoboards, Tangrams Computer Software program 1cm squared paper Mirrors Puzzles
Measures
Rulers Tape measures Metre sticks Trundle wheel Hourglass Calendars, timetables Teaching clocks: analogue and digital Individual clocks: analogue and digital Weighing scales Weights Measuring jugs Receptacles (containers) Plastic money: Euro coins and notes Plans, maps Compass for direction

Teaching materials for mathematics – Grade 4
The Number System and Calculation
Coloured counters (yellow, green, red and blue) Operation cards Individual number cards Magnetic number cards Counting sticks Place value charts Multiplication squares Calculators Number lines (large class model and individual) Base ten materials Dice –various sided and rewritable Hundred squares (class model and individual) Blank hundred squares Fraction boards, disk Calculation games
Shape and Space
2D shapes 3D shapes cm cubes Shape construction kits Compasses Geoboards, Tangrams Computer Software program 1cm squared paper 1mm graph paper Mirrors Puzzles
Measures
Rulers Tape measures Metre sticks Trundle wheel Protractors Set squares Hourglass Stopwatch Timetables Thermometers Teaching clocks: analogue and digital Individual clocks: analogue and digital Various weighing scales Weights Measuring jugs Receptacles (containers) Plans, maps Compass for direction

Teaching materials for mathematics – Grade 5
The Number System and Calculation
Coloured counters Operation cards Individual number cards Magnetic number cards Counting sticks Place value charts Multiplication squares Calculators Number lines (large class model and individual) Base ten Dice – various sided and rewritable Hundred squares (class model and individual) Blank hundred squares Fraction boards, disk Calculation games
Shape and Space
2D shapes 3D shapes cm cubes Shape construction kits Compasses Geoboards, Tangrams Computer Software program 1cm squared paper 1mm graph paper Mirrors Puzzles
Measures
Rulers Tape measures Metre sticks Trundle wheel Protractors Set Squares Hourglass Stopwatches Timetables Thermometers Teaching clocks: analogue and digital Individual clocks: analogue and digital Various weighing scales Weights Measuring jugs Receptacles (containers) Plans, maps Compass for direction