Errington Primary School
Curriculum skills and knowledge document

Rationale: Maths is essential for everyday life and is necessary to support their economic futures. The maths curriculum will provide a foundation of knowledge to enable children to reason mathematically, think logically and solve puzzles and real-life problems. Pupils will learn to think creatively and make links between mathematical concepts through exploring patterns in the number system, shape, measures and statistics.
Intent:
At Errington it is our intent for children to develop a sense of enjoyment and curiosity about maths. Our overall aims for when children leave Errington Primary, are that the children:

- have access to a high-quality curriculum that is both challenging and enjoyable, and builds upon previous learning.
- can recall and apply knowledge accurately to solve problems.
- can reason mathematically using the correct mathematical language and vocabulary.
- develop mathematical skills and knowledge to recall basic facts and use the four operations.


## Implementation:

Maths is a core subject in the National Curriculum. At Errington Primary, we believe that teaching should be individualised so no schemes are followed in order to achieve this. Teachers have access to a variety of websites and planning to support their planning process which enables them to find high quality maths resources.
All lessons aim to teach children to be: fluent in their mathematical knowledge and skills; able to reason mathematically by following a line of enquiry; and be able to solve problems by applying their mathematical skills. Children will learn maths using concrete materials first and will then move onto pictorial representations before tackling abstract problems.

## Impact:

Children will develop a love and passion for mathematics.
Children will have the confidence and belief that they can achieve and succeed.
Children will recall facts and procedures to solve problems.
Children will have the ability to recognise relationships and make connections in mathematics.
Children will have the knowledge that maths underpins most of our daily lives.

|  | Early Learning Goal | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Number and Place Value | I can count to 20. <br> I can read and write numbers to 20. <br> I can subitise numbers to 5. | I can count to and across 100, forwards and backwards from any given number. <br> I can read and write numbers to 100 in numerals. | I can recognise the place value of each digit in a two digit number (tens and ones). | I can recognise the place value of each digit in a three-digit number (hundreds, tens, ones) | I recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones). I can count backwards through zero to include negative numbers. | I can recognise the place value of numbers to 1000000. <br> I can interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero. | I recognise the place value of each digit in numbers up to 10000 000. <br> I can use negative numbers in context and calculate intervals across zero. |
|  | I can say one more and one less than numbers to 10. | I can identify one more and one less than a given number to 100. | I can find 10 more and less than a number to 100. | I can find 10 or 100 more or less than a given number. | I can find 1000 more or less than a given number. |  |  |
|  | I can represent numbers 1-5 in different ways (objects and pictures). | I can identify and represent numbers pictorially. | I can identify, represent and estimate numbers using different representations, including the number line. | I can identify, represent and estimate numbers using different representations including those related to measure. | I can identify, represent and estimate numbers using different representations. |  |  |
|  | I can say which group of items has more or fewer. I can compare quantities and order numbers to 10. | I can use the language more than, less than, fewer, most and least. I can compare and order numbers to 20. | I can compare and order numbers from 0 up to 100 ; use and $=$ signs. | I can compare and order numbers up to 1000. | I can order and compare numbers beyond 1000 . |  | I can compare numbers up to 10000000. |
|  | I can read and write numbers to 20 in numerals. | I can read and write numbers to 20 in numerals and words. | I can read and write numbers to at least 100 in numerals and in words. | I can read and write numbers up to 1000 in numerals and in words. |  | I can read, write numbers to at least 1000000. | I can read and write numbers up to 10000 000. |
|  |  |  |  | I can read roman numerals to 12 . | I can read Roman numerals to 100 (I to C) | I can read Roman numerals to 1000 (M) and |  |

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|  |  |  |  |  | and know that over time, the numeral system changed to include the concept of zero and place value. | recognise years written in Roman numerals |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | I can count in multiples of twos, fives and tens. | I can count in steps of 2,3 and 5 forwards and backwards. | I can count from 0 in multiples of $4,8,50$ and 100. | I can count in multiples of $6,7,9,25$ and 1000. | I can count forwards or backwards in steps of powers of 10 for any given number up to 1000 000. |  |
|  |  |  | I can use place value and number facts to solve problems. | I can solve number problems and practical problems involving these ideas. | I can solve number and practical problems that involve all of the above and with increasingly large positive numbers. | I can solve number problems and practical problems that involve all of the above. | I can solve number and practical problems that involve all of the above. |
|  |  |  |  | I can round numbers to 100 to the nearest 10. | I can round any number to the nearest 10,100 or 1000. | I can round any number up to 1000000 to the nearest 10, 100, 1000, 10 000 and 100000 . | I can round any whole number to a required degree of accuracy. |
|  | I can add two groups of items to 10. | I can read and write number sentences using the + , - and $=s i g n s$. | I know that addition can be done in any order (commutative) and subtraction cannot. |  |  |  |  |
|  | I can recall number bonds to 5. <br> I am beginning to recall number bonds to 10 . I can represent bonds using images and objects. | I know my number bonds to 20. <br> I can represent and use number bonds and related subtraction facts within 20. | I can recall addition and subtraction facts to 20 fluently. <br> I can use and derive these facts to 100 . Eg if $7+3=$ $10,70+30=100$. |  |  |  |  |
| Addition and Subtraction | I can add a given number to a set of objects and state how many there are all together. <br> I can takeaway a given number from a set of objects and say how many are left. | I can add and subtract 1digit and 2-digit numbers to 20 . | I can add and subtract numbers using concrete objects, pictorial representations and mentally including: <br> - 2-digit and 1-digit <br> - 2-digit and tens <br> - Two 2-digit <br> - Three 1-digit numbers. | I can add and subtract numbers mentally including: <br> - 3-digit number and ones <br> - 3-digit number and tens <br> - 3-digit number and hundreds |  | I can add and subtract numbers mentally with increasingly large numbers. | I can perform mental calculations, including with mixed operations and large numbers. |
|  | I can solve simple problems involving concrete materials. | I can solve one-step problems that involve addition and subtraction within numbers to 20 using concrete objects and pictorial representations. | I can solve problems with addition and subtraction using concrete objects and pictorial representations, including those involving numbers, quantities and measures. | I can solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. | I can solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why. | I can solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. | I can solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. |
|  | I can use apparatus to state how many more are needed to make numbers to 5 . | I can solve missing number problems within numbers to 20. | I can use and recognise the inverse and use this to check calculations and | I can estimate the answer to a calculation and use inverse operations to check answers. | I can estimate and use inverse operations to check answers to a calculation. | I can use rounding to check answers to calculations and determine, in the context | I can use estimation to check answers to calculations and determine, in the context |

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|  |  |  | solve missing numbers problems. |  |  | of a problem, levels of accuracy. | of a problem, an appropriate degree of accuracy. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | I can write place value addition for teen numbers. | I can use place value addition to solve problems. I am beginning to use column addition and subtract 2-digit numbers. | I can add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction | I can add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate. | I can add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction). |  |
|  |  |  |  |  |  |  |  |
| Multiplication and division | I am beginning to count in 10s. | I can count in $2 \mathrm{~s}, 5 \mathrm{~s}$ and 10s. | I can recall and use multiplication and division facts for the 2,5 and 10 multiplication tables, including recognising odd and even numbers. | I can recall and use multiplication and division facts for the 3,4 and 8 multiplication tables. | I can recall multiplication and division facts for multiplication tables up to $12 \times 12$. | I can identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. |  |
|  | I can recall some basic doubling facts (double 1,2 and 5). <br> I can represent double facts with objects and images. | I can double numbers to 10. <br> I am beginning to recognise patterns in multiplication. | I can double numbers larger than 20. | Through doubling, I recognise the connection between the 2, 4 and 8 multiplication tables. |  | I can recognise and use factor pairs and commutativity in mental calculations. <br> I know and use the vocabulary of prime numbers, prime factors and composite (nonprime) numbers I can establish whether a number up to 100 is prime and recall prime numbers up to 19. | I can identify common factors, common multiples and prime numbers. <br> I can use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. |
|  | I can share a group of objects into 2 piles and say whether the groups are equal or unequal. | With support, I can represent one step problems involving multiplication and division with concrete objects, pictorial representations and arrays. | I can solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts. | I can solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which $n$ objects are connected to m objects. | I can solve problems involving multiplying and division, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to mobjects | I can solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes. I can solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign. <br> I can solve problems involving multiplication and division, including scaling by simple fractions | I can solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. <br> I can solve problems involving addition, subtraction, multiplication and division. |

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|  |  |  |  |  |  | and problems involving simple rates. |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | I am beginning to share objects equally into two piles. | I am beginning to use ' $x$ ' ' $\because$ ' and ' $=$ ' to write a multiplication or division number sentence. | I can use ' $x$ ', ' $\div$ ' and ' $=$ ' to write and solve a multiplication or division number sentence. | I can write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. | I can multiply two-digit and three-digit numbers by a one-digit number using formal written layout | I can use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1 ; dividing by 1 ; multiplying together three numbers | I can multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication. <br> I can divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context. <br> I can divide 4-digit numbers |
|  |  |  | I know and can show that multiplication can be done in any order (commutative) but division cannot. | I recognise and use factor pairs and commutativity in mental calculations. | I can multiply and divide numbers mentally drawing upon known facts. | I can multiply and divide numbers mentally drawing upon known facts. | I can use my knowledge of the order of operations to carry out calculations involving the four operations |
|  |  |  |  |  |  | I can multiply and divide whole numbers and those involving decimals by 10 , 100 and 1000. |  |
|  |  |  |  |  |  | I recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3) |  |
|  |  |  |  |  |  |  |  |
| Fractions (including decimals) |  | I can recognise half of a shape. <br> I recognise a half is two equal parts. <br> I can find half of an object or quantity. | I can write simple fractions (e.g $\frac{1 / 2}{2}$ of $6=3$ ). I can count in fractions (1/2) up to 10 . | I can count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing onedigit numbers or quantities by 10 . | I can count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. I can find the effect of dividing a one- or twodigit number by 10 and 100 , identifying the value of the digits in the answer as ones, tenths and hundredths. |  | I can identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10 , 100 and 1000 giving answers up to three decimal places |
|  |  |  | I recognise that 2/4 is equal to $1 / 2$. | I can recognise and show, using diagrams, | I can recognise and show, using diagrams, families | I can identify, name and write equivalent fractions | I can use common factors to simplify fractions; use |


|  |  |  |  | equivalent fractions with small denominators. | of common equivalent fractions. <br> I can recognise and write decimal equivalents to $1 / 41 / 2$ and $3 / 4$. <br> I can recognise and write decimal equivalents of any number of tenths or hundredths. | of a given fraction, represented visually, including tenths and hundredths. <br> I can recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents. <br> I can read and write decimal numbers as fractions [for example, $0.71=10071$ ]. | common multiples to express fractions in the same denomination. <br> I can associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, 83 ] |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | I know a quarter is one of 4 equal parts. I can find a quarter of a shape or object. | I can recognise, find, name and write fractions $1 / 3,1 / 4,2 . / 4$ and $3 / 4$ of a length, shape, set of objects or quantity. | I can recognise, find and write fractions of a discrete set of objects: unit fractions and nonunit fractions with small denominators. I can recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators. |  | I can recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements $>1$ as a mixed number $(2 / 5+4 / 5=6 / 5=11 / 5)$. |  |
|  |  |  |  | I can add and subtract fractions with the same denominator within one whole. | I can add and subtract fractions with the same denominator. | I can add and subtract fractions with the same denominator and denominators that are multiples of the same number. | I can add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions. |
|  |  |  |  | I can compare and order unit fractions, and fractions with the same denominators. | I can compare numbers with the same amount of decimals (up to 2decimal places). | I can compare and order fractions whose denominators are all multiples of the same number. <br> I can read, write, order and compare numbers with up to three decimal places. | I can compare and order fractions, including fractions $>1$. |
|  |  | I can find $1 / 4$ of a quantity using concrete objects and pictures to help me. |  | I can solve problems that involve all of the above. | I can solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including nonunit fractions where the answer is a whole number. <br> I can solve simple measure and money | I can solve problems involving number up to three decimal places. I can solve problems which require knowing percentage and decimal equivalents of $1 / 2,1 / 2$, $1 / 2,2 / 5,4 / 5$ and those fractions with a denominator of a multiple of 10 or 25. |  |


|  |  |  |  |  |  | problems involving fractions and decimals to two decimal places. |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  | I can round decimals with one decimal place to the nearest whole number. | I can round decimals with two decimal places to the nearest whole number and to one decimal place. | I can solve problems which require answers to be rounded to specified degrees of accuracy. |
|  |  |  |  |  |  |  | I can multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams. | I can multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, $41 \times 21=81$ ] I can divide proper fractions by whole numbers [for example, 3 $1 \div 2=61$ ]. <br> I can multiply one-digit numbers with up to two decimal places by whole numbers <br> I can use written division methods in cases where the answer has up to two decimal places. |
| Measurement |  | I can say whether items are big, small, little or large. <br> I can say which tower or item is tall/taller and small/smaller. <br> I can state if something is empty or full. <br> I can state which item is heavier or lighter. | I can describe length and height using the terms long(er)/short(er), tall, double/half. <br> I can describe mass/weight using the terms heavy/light etc. I can describe capacity and volume using the terms full/empty, more than, less than and half full. | I can describe length using $\mathrm{m} / \mathrm{mm} / \mathrm{cm}, \mathrm{kg} / \mathrm{g}$. $\mathrm{l} / \mathrm{ml}$ etc. | I can describe length with increasing accuracy using $\mathrm{m} / \mathrm{mm} / \mathrm{cm}, \mathrm{kg} / \mathrm{g}$. $/ / \mathrm{ml}$ etc. | I can convert between different units of measure [for example, kilometre to metre; hour to minute]. | I can convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre). <br> I understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints. | I can solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate. <br> I can use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places. I can convert between miles and kilometres. |
|  |  | I am beginning to measure ingredients using cups and spoons. | I am beginning to use non standard and standard units to measure: <br> - Length and height <br> - Mass/weight <br> - Capacity and volume | I can choose the appropriate standard units to measure length/height, mass, capacity and temperature. | I can measure lengths ( $\mathrm{m} / \mathrm{cm} / \mathrm{mm}$ ); mass ( $\mathrm{kg} / \mathrm{g}$ ); volume/capacity ( $/ / \mathrm{ml}$ ). |  |  |  |

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|  |  | I can solve practical problems for the above. | I can solve problems involving the above. | I can add and subtract: lengths ( $\mathrm{m} / \mathrm{cm} / \mathrm{mm}$ ); mass (kg/g); volume/capacity (I/ml) |  | I can use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling. |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | I am beginning to compare items stating which items are: long/short; heavier/lighter; and full or empty. | I can compare: <br> - Length and height <br> - Mass/weight <br> - Capacity and volume | I can compare and order lengths, mass, volume/capacity and record the results using $>$, < and $=$. | I can compare lengths ( $\mathrm{m} / \mathrm{cm} / \mathrm{mm}$ ); mass (kg/g); volume/capacity (l/ml) | I can estimate and compare different measures. | I can compare and estimate volume [for example, using 1 cm 3 blocks to build cuboids (including cubes)] and capacity [for example, using water] | I can calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm3) and cubic metres (m3), and extending to other units [for example, mm3 and km3]. |
|  |  |  |  | I can measure the perimeter of simple 2-D shapes. | I can measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres. | I can measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres. | I can recognise that shapes with the same areas can have different perimeters and vice versa. |
|  |  |  |  |  | I can find the area of rectilinear shapes by counting squares. | I can calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes. | I can recognise when it is possible to use formulae for area and volume of shapes. <br> I can calculate the area of parallelograms and triangles. |
|  |  | I recognise and know the value of different coins and notes. | I recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value. |  |  |  |  |
| $\begin{aligned} & \stackrel{\rightharpoonup}{\omega} \\ & \stackrel{0}{\Sigma} \end{aligned}$ |  |  | I can find different combinations of coins that equal the same amounts of money. I can solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change. | I can add and subtract amounts of money to give change, using both $£$ and $p$ in practical contexts. | I can estimate calculate different measures, including money in pounds and pence. |  |  |
|  |  |  |  |  |  |  |  |
|  | I am beginning to sequence events using the terms first and next. | I can sequence events in chronological order using the terms: before/after/next etc. | I can compare and sequence intervals of time. | I can compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, |  |  |  |

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|  |  |  |  | a.m./p.m., morning, afternoon, noon and midnight. <br> I can compare durations of events [for example to calculate the time taken by particular events or tasks]. |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | I can say what we do during the day and what we do during the night. | I know the days of the week and months of the year. <br> I can recognise and use language relating to dates. | I know the number of minutes in an hour and the number of hours in a day. | I know the number of seconds in a minute and the number of days in each month, year and leap year. | I can solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days. | I can solve problems involving converting between units of time. |  |
|  |  | I can tell the time to the hour. <br> I can tell the time to half past the hour. <br> I can draw hands on a clock to show this. | I can tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times. | I can tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12 -hour and 24hour clocks. | I can read, write and convert time between analogue and digital 12and 24 -hour clocks. |  |  |
|  | I can recognise and name triangles, circles, rectangles and squares. I can find these shapes in the environment. | I can recognise and name 2D shapes (rectangle, circles, triangles). | I can identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line. | I can draw and describe 2D shapes. <br> I can identify horizontal and vertical lines and pairs of perpendicular and parallel lines. | I can classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes. I can identify lines of symmetry in 2-D shapes presented in different orientation. I can complete a simple symmetric figure with respect to a specific line of symmetry. | I can use the properties of rectangles to deduce related facts and find missing lengths and angles. <br> I can distinguish between regular and irregular polygons based on reasoning about equal sides and angles. | I can draw 2-D shapes using given dimensions and angles. |
| Geometry properties of shapes |  | I can recognise and name simple 3D shapes (cuboids, pyramids and spheres). <br> I am beginning to recognise and identify the shapes of faces. | I can identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces. <br> I can identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]. | I can draw and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them. |  | I can identify 3D shapes from 2D representations. | I can recognise, describe and build simple 3-D shapes, including making nets. |
|  |  |  |  | I recognise angles as a property of shape or a description of a turn. I can use the correct terms to compare angles (acute/obtuse). | I can identify acute and obtuse angles and compare and order angles up to two right angles by size. | I know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles | I recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and can find missing angles. |

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|  |  |  |  |  |  |  | I can solve problems involving similar shapes where the scale factor is known or can be found. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  | I can solve problems involving unequal sharing and grouping using knowledge of fractions and multiples. |
|  |  |  |  |  |  |  | I can use simple formulae. |
|  |  |  |  |  |  |  | I can generate and describe linear number sequences. |
|  |  |  |  |  |  |  | I can express missing number problems algebraically. |
| Algebra |  |  |  |  |  |  | I can find pairs of numbers that satisfy an equation with two unknowns. |
|  |  |  |  |  |  |  | I can enumerate possibilities of combinations of two variables. |
|  |  |  |  |  |  |  |  |

