



# Year 4

This booklet has been written to help you understand how mathematics is taught in school. It also gives practical ideas and suggestions for helping your child at home.

We know that parents are keen to help with their child's education but may find they do not understand what their child is doing as it is different to the way they were taught or find they confuse their children with their methods.

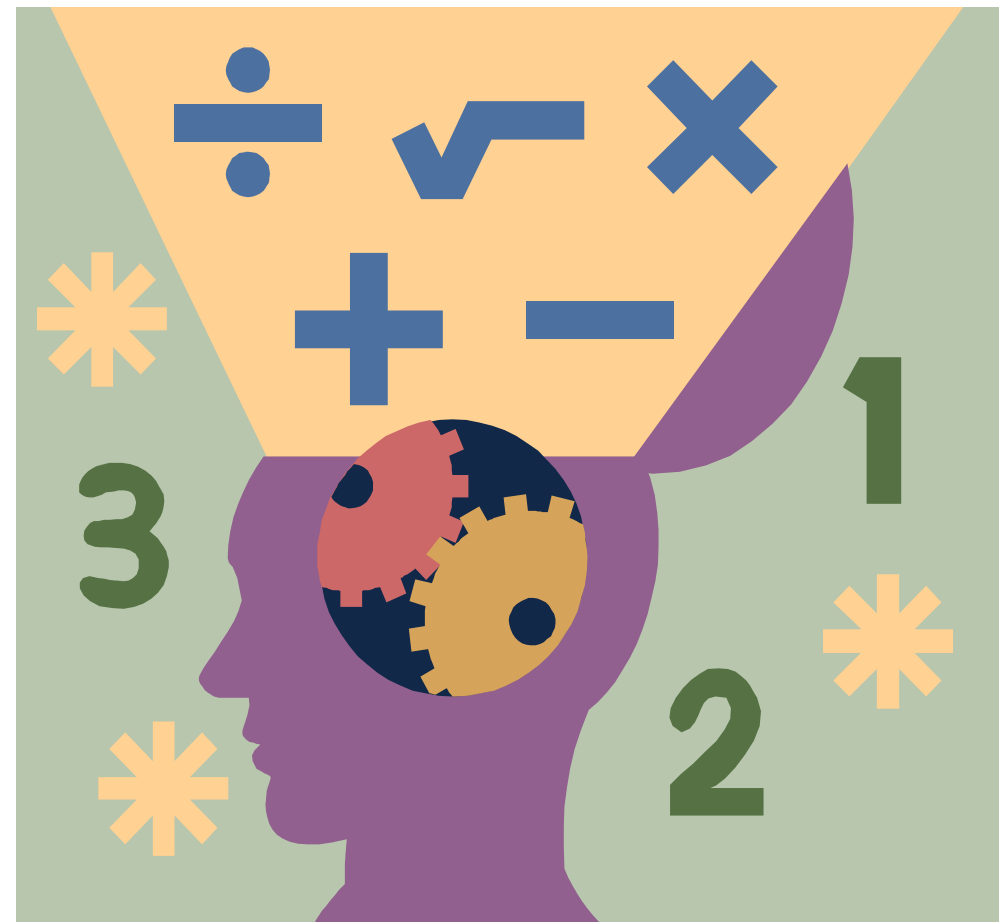
The days are gone when maths lessons are endless pages of calculations to be done in silence. Today it is a lot more about collaboration and investigation. Children are taught why the methods work, not just how to perform them. It is the difference between telling someone directions or giving them a map.

Many parents also feel less confident in mathematics as they feel they do not understand it. This feeling could rub off onto your child.

So use this guide to help you and your child gain in confidence and remember to make maths fun!

Reference materials include: Mathematical Vocabulary booklet (DfE), target setting booklet (DfE), Maths for Mums & Dads (Rob Eastaway & Mike Askew)

## SHUSTOKE C.E. PRIMARY SCHOOL



A Parent's Guide to Mathematics

## Maths props to have in the house

Tape measure and ruler - get your child involved when completing DIY.

Bar of chocolate (with squares) - good for showing multiplication and fractions.

Magnet numbers - a great way for impromptu maths in the house.

Dartboard - darts teaches not only addition, subtraction and multiplication but also raises discussions of what is needed to finish the game.

Unusual dice - they don't have to be 6 sided.

Dominoes - another great game to show combinations of numbers

Guess who - this game shows how to group characters into categories and can be extended to shapes and numbers.

Thermometer - shows both positive and negative numbers to discuss.

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**Remember to make maths fun and relevant!**

## Some Do's and Don'ts

- Make maths silly, gruesome, scary or dangerous—get your child excited about maths questions e.g. I bet you don't know the answer?
- Recognise there's more than one way of doing calculations— children's methods may be long winded or confusing, but you should always let them try their own way of solving a problem. Notice one method does not solve all calculations e.g. you would use different methods to find  $3,786+4,999$  to  $3,786 + 4,568$ .
- Don't expect children to 'get it' after you've explained to once—it can take a long time for the penny to drop. It is perfectly normal for children not to recognise a concept learnt in a new context.
- Don't tell your child you are hopeless at maths—many adults claim to be hopeless at maths and this can give the message that maths is difficult, not enjoyable and ultimately not important to succeed in life. This just isn't true, as adults we deal with mathematics everyday and cope with it. Just because you don't understand or remember how to complete long division, doesn't mean you don't understand mathematics.
- Mathematics is a large, rich and imaginative subject that can inspire and be used in the everyday life and you can make this subject come to life!

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## Some Do's and Don'ts

- When a child gets a question wrong, it is tempting to tell them they are wrong and how to correct it. Why not ask them to explain their method and help them spot their mistake.
- Similarly if a child gets a question right, get them to explain how they reached their answer, perhaps pretending not to understand their reasoning.
- Play maths with your child — games are full of maths and are an ideal way to engage mathematical thinking. Consider questioning when playing e.g. Can you be the banker and change £500?
- Let your child win, or be 'better than you' - of course you know your child best, so will know the correct balance of winning and losing, but can compete against one another within a mathematical context e.g. I bet you can't get ready for bed in 5 minutes.
- Make maths a casual part of what you do while you're doing something else — instead of making maths formal find ways to sneak it in e.g. How many more plates do I need? Have we got enough for the bread and milk? Did you see the number 23 bus? I was wondering, is 23 a prime number?
- Make maths 'hands on'—remember the three C's of everyday maths: cash, clocks and cooking. All three **22** perfect opportunities to practise maths.

## Maths props to have in the house

A prominent clock - try using both an analogue and digital clock. Can you compare the two?

A wall calendar - not only good for noticing days and months, but also for finding patterns e.g. 7 times table

Board games with dice or spinner - why not make your own board game?

Pack of playing cards - not only can you learn about counting but also chance and probability.

Calculator - you can discover so many patterns with calculators, not just basic computation.

Measuring jug - discover both imperial and metric ways of measuring.

Scales - traditional balances can show counting as well as measuring.

Dried beans, pasta - useful for counting, dividing and finding the difference.

**Remember to make maths fun and relevant!**

# Maths Overview Year by Year

## Reception

Counting is important and the basis of arithmetic. Children in Reception will be learning to say the number names in order, forwards and backwards, and count collections of objects.

They will be encouraged to use the language more or less to add and subtract with numbers to 10.  
e.g. 1 more than 6? The number 1 less than 7?

Children will engage in activities such as putting two groups of objects together to find the total. They remove some objects showing 'taking away.'

The beginnings of multiplication and division are developed through counting groups of the same size and sharing.

Making patterns, building models and sorting things around the classroom develop reasoning using everyday language to describe them.

They will compare things using language like bigger, greater, heavier and lighter.

**Remember this is an overview, not an exhaustive list.**

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# Vocabulary to know by the end of the year

## Instructions

listen, join in, say, recite  
think, imagine, remember  
start from, start with, start at  
look at, point to, show me

put, place  
arrange, rearrange  
change, change over  
split, separate

carry on, continue, repeat  
what comes next? predict  
describe the pattern, describe the rule

find, find all, find different  
investigate

choose, decide  
collect

use, make, build, **construct**

tell me, describe, name, pick out  
discuss, talk about  
explain  
explain your method  
explain how you got your answer  
give an example of...  
show how you...  
show your working  
**justify**  
**make a statement**

read, write, record  
write in figures  
present, represent  
interpret  
trace, copy  
complete, finish, end

fill in, shade, colour  
label, **plot**

tick, cross  
draw, sketch  
draw a line between, join (up), ring, arrow

cost, count, tally

calculate, work out, solve  
investigate, question  
answer  
check

## General

same, different  
missing number/s  
number facts, number pairs, number bonds  
greatest value, least value

number line, number track  
number square, hundred square  
number cards, number grid  
abacus  
counters, cubes, blocks, rods  
die, dice  
dominoes  
pegs, peg board, **pin board**  
geo-strips

same way, different way  
best way, another way  
in order, in a different order

not  
all, every, each

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# Vocabulary to know by the end of the year

am, pm, **noon**, midnight  
today, yesterday, tomorrow  
before, after, next, last  
now, soon, early, late, earliest, latest  
quick, quicker, quickest, quickly  
fast, faster, fastest, slow, slower, slowest, slowly  
old, older, oldest, new, newer, newest  
takes longer, takes less time  
how long ago? how long will it be to...?  
how long will it take to...?  
**timetable**, **arrive**, **depart**  
hour, minute, second  
o'clock, half past, quarter to, quarter past  
clock, watch, hands  
digital/analogue clock/watch, timer  
how often?  
always, never, often, sometimes, usually

## SHAPE AND SPACE

shape, pattern  
flat, **line**  
curved, straight  
round  
hollow, solid  
corner  
point, pointed  
face, side, edge, end  
sort  
make, build, **construct**, draw, **sketch**  
centre, **radius**, **diameter**  
**net**  
surface  
**angle**, **right-angled**  
**base**, **square-based**  
vertex, vertices  
layer, diagram  
**regular**, **irregular**  
**concave**, **convex**  
open, closed

## 3D SHAPES

**3D**, **three-dimensional**  
cube  
cuboid  
pyramid  
sphere, **hemi-sphere**, **spherical**  
cone  
cylinder, **cylindrical**  
prism  
**tetrahedron**, **polyhedron**

## 2D SHAPES

**2D**, **two-dimensional**  
circle, **circular**, **semi-circle**  
triangle, **triangular**  
**equilateral triangle**, **isosceles triangle**

square  
rectangle, **rectangular**, **oblong**  
pentagon, **pentagonal**  
hexagon, **hexagonal**  
**heptagon**  
octagon, **octagonal**  
**polygon**  
quadrilateral

## PATTERNS AND SYMMETRY

size  
bigger, larger, smaller  
symmetrical  
line of symmetry, **line symmetry**  
fold  
match  
mirror line, reflection, **reflect**  
pattern, repeating pattern, **translation**

## POSITION, DIRECTION AND MOVEMENT

position  
over, under, underneath  
above, below, top, bottom, side  
on, in, outside, inside, around  
in front, behind, front, back  
before, after, beside, next to  
opposite, apart  
between, middle, edge, centre  
corner  
direction  
journey, route, map, plan  
left, right  
up, down, higher, lower  
forwards, backwards, sideways, across  
close, far, near  
along, through, to, from, towards, away from  
ascend, descend  
grid  
row, column  
**origin**, **coordinates**  
clockwise, anti-clockwise  
compass point, north, south, east, west (N, S, E, W)  
**north-east**, **north-west**, **south-east**, **south-west**  
(**NE**, **NW**, **SE**, **SW**)  
horizontal, vertical, diagonal  
movement  
slide, roll  
whole turn, half turn, quarter turn, **rotate**  
angle, ... is a greater/smaller angle than  
right angle  
**degree**  
straight line  
stretch, bend  
**ruler**, **set square**  
**angle measurer**, **compasses**

# Maths Overview Year by Year

## Year 1

Counting is extended to objects up to 20 and recording the total.

Children learn pairs of numbers that add up to 10 (number bonds e.g. 4+6 or 7+3.) They also learn that addition can be reversed e.g. 2+8=8+2.

Skills needed for multiplication are developed by learning to count in twos and fives. They also double numbers to 10. Sharing collections of objects into equal groups will help explore division and talk about half and quarter.

Children make patterns, pictures and models of common 2-D and 3-D shapes using their names. They will also talk about the position of things using everyday language like behind, above, next to.

Estimating, measuring, comparing and weighing objects help them to understand measuring. They will talk about when things happen or put events in order to introduce time.

Block graphs and pictograms help to display information. **5**

**Remember this is an overview, not an exhaustive list.**

# Maths Overview Year by Year

## Year 2

The reading and writing of numbers is extended up to 1000. Children learn about odd and even numbers. Number bonds to 20 should be learnt and the patterns in counting to tens help children to answer calculations like  $50+20$  or  $80-30$ .

They work on mental methods to add and subtract single digits or multiples of 10 e.g.  $36+40$ ,  $45-8$ . A key idea is learning that subtraction is the inverse of addition: knowing  $16+7=23$  means you also know  $23-7=16$ .

In multiplication children will be doubling numbers to 20 and halving the answers. Tables are introduced starting with the 2, 5 and 10 times tables.

Children learn common 2D and 3D shapes e.g. square, cube. In addition they look at symmetry of shapes.

Half, quarter and full turns are introduced. Measuring becomes more accurate using metres, centimetres, kilograms and litres. Learning to read divisions on scales is also introduced.

Children gather data linked to topics. This data is then represented in tables, diagrams, block graphs and pictograms.

Remember this is an overview, not an exhaustive list.

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# Vocabulary to know by the end of the year

## Solving problems

### MAKING DECISIONS AND REASONING

pattern, puzzle  
calculate, calculation  
mental calculation  
method  
jotting  
answer  
right, correct, wrong  
what could we try next?  
how did you work it out?  
number sentence  
sign, operation, symbol, equation

### MONEY

money  
coin, note  
penny, pence, pound (£)  
price, cost  
buy, bought, sell, sold  
spend, spent  
pay  
change  
dear, costs more, more/most expensive  
cheap, costs less, cheaper, less/least expensive  
how much...? how many...?  
total, amount  
value, worth

## Handling data

count, tally, sort, vote  
survey, questionnaire, data  
graph, block graph, pictogram  
represent  
group, set  
list, chart, bar chart, tally chart  
table, frequency table  
Carroll diagram, Venn diagram  
label, title, axis, axes  
diagram  
most popular, most common  
least popular, least common

## Measures, shape and space

### MEASURES (GENERAL)

measure, measurement  
size  
compare  
unit, standard unit  
metric unit, imperial unit

measuring scale, division  
guess, estimate  
enough, not enough  
too much, too little  
too many, too few  
nearly, roughly, about, close to  
about the same as, approximately  
just over, just under

### LENGTH

length, width, height, depth, breadth  
long, short, tall, high, low  
wide, narrow, deep, shallow, thick, thin  
longer, shorter, taller, higher... and so on  
longest, shortest, tallest, highest... and so on  
far, further, furthest, near, close  
distance apart/between, distance to... from...  
edge, perimeter  
kilometre (km), metre (m)  
centimetre (cm), millimetre (mm)  
mile  
ruler, metre stick, tape measure

### MASS

mass: big, bigger, small, smaller, balances  
weight: heavy/light, heavier/lighter, heaviest/lightest  
weigh, weighs  
kilogram (kg), half-kilogram, gram (g)  
balance, scales

### CAPACITY

capacity  
full, half full  
empty  
holds, contains  
litre (l), half-litre, millilitre (ml)  
pint  
container, measuring cylinder

### AREA

area, covers, surface  
square centimetre (cm<sup>2</sup>)

### TIME

time  
days of the week: Monday, Tuesday...  
months of the year: January, February...  
seasons: spring, summer, autumn, winter  
day, week, fortnight, month  
year, leap year, century, millennium  
weekend, birthday, holiday  
calendar, date, date of birth  
morning, afternoon, evening, night

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# Vocabulary to know by the end of the year

## Numbers and the number system

### PLACE VALUE, ORDERING AND ROUNDING

units, ones  
tens, hundreds, thousands  
ten thousand, hundred thousand, million  
digit, one-, two-, three- or four-digit number  
numeral  
'teens' number  
place, place value  
stands for, represents  
exchange  
the same number as, as many as  
equal to  
Of two objects/amounts:  
>, greater than, more than, larger than, bigger than  
<, less than, fewer than, smaller than  
Of three or more objects/amounts:  
greatest, most, largest, biggest  
least, fewest, smallest  
one... ten... one hundred... one thousand more/less  
compare, order, size  
first... tenth... twentieth  
last, last but one  
before, after  
next  
between, half-way between  
guess how many, estimate  
nearly, roughly, close to, about the same as  
approximate, approximately  
just over, just under  
exact, exactly  
too many, too few, enough, not enough  
round (up or down), nearest  
round to the nearest ten  
round to the nearest hundred  
integer, positive, negative  
above/below zero, minus

### PROPERTIES OF NUMBERS AND NUMBER SEQUENCES

number, count, how many...?  
odd, even  
every other  
how many times?  
multiple of  
digit  
next, consecutive  
sequence  
continue  
predict  
pattern, pair, rule  
relationship  
sort, classify, property

## FRACTIONS AND DECIMALS

part, equal parts  
fraction  
one whole  
half, quarter, eighth  
third, sixth  
fifth, tenth, twentieth  
proportion, in every, for every  
decimal, decimal fraction  
decimal point, decimal place

## Calculations

### ADDITION AND SUBTRACTION

add, addition, more, plus, increase  
sum, total, altogether  
score  
double, near double  
how many more to make...?  
subtract, subtraction, take (away), minus, decrease  
leave, how many are left/left over?  
difference between  
half, halve  
how many more/fewer is... than...?  
how much more/less is...?  
equals, sign, is the same as  
tens boundary, hundreds boundary  
inverse

### MULTIPLICATION AND DIVISION

lots of, groups of  
times, multiply, multiplication, multiplied by  
multiple of, product  
once, twice, three times... ten times...  
times as (big, long, wide... and so on)  
repeated addition  
array  
row, column  
double, halve  
share, share equally  
one each, two each, three each...  
group in pairs, threes... tens  
equal groups of  
divide, division, divided by, divided into  
remainder  
factor, quotient, divisible by  
inverse

# Maths Overview Year by Year

## Year 3

Numbers up to 1000 will now be worked with, and placed on a number line. Children should be confident in counting on or back in tens. They will be able to partition a number into hundreds, tens and units and be able to round to the nearest 10 or 100.

Learning to add and subtract pairs of numbers mentally helps children to begin to look at how they can be recorded in writing.

The 3, 4 and 6 times tables will be rehearsed along with multiplying and dividing by 10, 100 and 1000. The idea that division is the inverse of multiplication is introduced to help divide e.g. knowing that  $6 \times 9 = 54$  shows  $54 \div 6 = 9$  or  $54 \div 9 = 6$

Proper fractions are developed further through diagrams, fractions of numbers and amounts. Work on angles is extended to recognising right angles. Children work on relationships in measures e.g. metres in a kilometre.

Telling the time to the nearest 5 minutes on a clock is developed. Venn and Carroll diagrams are used to sort information.

Remember this is an overview, not an exhaustive list.

## Maths Overview Year by Year

### Year 4

Children move from working with whole numbers to meeting decimals, particularly in relation to money and measurement.

Mental calculations like  $700+600$  or  $6000-3000$ , continue to build on knowledge of number bonds. They continue with mental addition and subtraction along with written calculations for 3 digit numbers and money.

Knowing your tables up to  $10 \times 10$  is extended and the use of the grid method for multiplication is shown. The idea of equivalent fractions is introduced along with mixed and improper fractions. Children identify fractions that total a whole and carry out calculations using fractions e.g.  $1/5$  of 30 apples or shading  $5/8$  of a rectangle.

Children work on the ideas of vertical and horizontal. They find areas perimeters of rectangular shapes and measure angles in degrees.

They tell the time to the nearest minute using different clock notations: am, pm or the 24-hour clock.

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## Some fun ideas to try at home

### Number game 3

Use three dice.

If you have only one dice, roll it 3 times.



- ◆ Make three-digit numbers, e.g. if you roll 2, 4 and 6, you could make 246, 264, 426, 462, 624 and 642.
- ◆ Ask your child to round the three-digit number to the nearest multiple of 10. Check whether it is correct, e.g.  
76 to the nearest multiple of 10 is 80.  
134 to the nearest multiple of 10 is 130.  
(A number ending in a 5 always **rounds up**.)
- ◆ Roll again. This time round three-digit numbers to the nearest 100.

### Tables

Practise the 3x, 4x and 5x tables. Say them forwards and backwards.

Ask your child questions like:

What are five threes?

What is 15 divided by 5?

Seven times three?

How many threes in 21?

$$8 \times 3 = 24 \quad 24 \div 3 = 8$$

### Measuring

Use a tape measure that shows centimetres.

- ◆ Take turns measuring lengths of different objects, e.g. the length of a sofa, the width of a table, the length of the bath, the height of a door.
- ◆ Record the measurement in centimetres, or metres and centimetres if it is more than a metre, e.g. if the bath is 165 cm long, you could say it is 1m 65cm (or 1.65m).
- ◆ Write all the measurements in order.

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## Some fun ideas to try at home

### Number game 1

You need about 20 counters or coins.

- ◆ Take turns. Roll two dice to make a two-digit number, e.g. if you roll a 4 and 1, this could be 41 or 14.
- ◆ Add these two numbers in your head. If you are right, you win a counter. Tell your partner how you worked out the sum.
- ◆ The first to get 10 counters wins.

Now try subtracting the smaller number from the larger one.

### Number game 2

- ◆ Put some dominoes face down.
- ◆ Shuffle them.
- ◆ Each choose a domino.
- ◆ Multiply the two numbers on your domino.
- ◆ Whoever has the biggest answer keeps the two dominoes.
- ◆ The winner is the person with the most dominoes when they have all been used.



### Dicey tens

For this game you need a 1–100 square (a snakes and ladders board will do), 20 counters or coins, and a dice.

- ◆ Take turns.
- ◆ Choose a two-digit number on the board e.g. 24.
- ◆ Roll the dice. If you roll a 6, miss that turn.
- ◆ Multiply the dice number by 10, e.g. if you roll a 4, it becomes 40.
- ◆ Either add or subtract this number to or from your two-digit number on the board, e.g.  $24 + 40 = 64$ .
- ◆ If you are right, put a coin on the answer.
- ◆ The first to get 10 coins on the board wins.

## Maths Overview Year by Year

### Year 5

Children are mentally adding, subtracting and doubling simple decimals e.g.  $6.5 - 2.7$  or double 2.4. They use written methods to add and subtract large whole numbers and decimals up to two places e.g.  $23.45 - 17.67$

Children find factor pairs of 2-digit numbers. They learn about common multiples of two numbers. Written methods are now used to multiply and divide 3-digit numbers and decimals.

As well as solving fraction problems like finding  $\frac{1}{100}$  of 5 litres, they find percentages of numbers and quantities e.g. 10% of £60.

Children use co-ordinates and recognise and construct parallel and perpendicular lines. Measuring becomes increasingly accurate e.g. to the nearest millimetre

They meet the idea of mode as a measure of average.

# Maths Overview Year by Year

## Year 6

Children find the difference between positive and negative numbers in a context e.g. difference between  $+5^{\circ}\text{C}$  and  $-4^{\circ}\text{C}$ .

Children are using a variety of written methods to add and subtract integers (positive and negative) and decimals.

They use their knowledge of table facts to mentally work out decimal multiplications and divisions, e.g.  $0.6 \times 7$ . They figure out squares of numbers. Prime numbers less than 100 are explored and the prime factors of 2-digit numbers are found e.g.  $24 = 2 \times 2 \times 2 \times 3$ .

They learn to multiply and divide integers and decimals with confidence in written methods. Children relate fractions to multiplication and division e.g.  $9 \div 3 = 1/3$  or  $9 = 9 \times 1/3$ . They find fractions and percentages of whole numbers.

Children calculate angles in triangles and convert between metric units using decimals. They use the terms mode, range, median and mean when learning about averages. **10**

**Remember this is an overview, not an exhaustive list.**

# Some fun ideas to try at home

## Looking around

Choose a room at home.  
Challenge your child to spot 20 right angles in it.



## Dicey division

You each need a piece of paper. Each of you should choose five numbers from the list below and write them on your paper.

**5    6    8    9    12    15    20    30    40    50**

- ◆ Take turns to roll a dice. If the number you roll divides exactly into one of your numbers, then cross it out, e.g. you roll a 4, it goes into 8, cross out 8.
- ◆ If you roll a 1, miss that go. If you roll a 6 have an extra go.
- ◆ The first to cross out all five of their numbers wins.

## Sum it up

- ◆ Each player needs a dice.
- ◆ Say: *Go!* Then each rolls a dice at the same time.
- ◆ Add up all the numbers showing on your own dice, at the sides as well as at the top.
- ◆ Whoever has the highest total scores 1 point.
- ◆ The first to get 10 points wins.

## Out and about

- ◆ Choose a three-digit car number, e.g. 569.
- ◆ Make a subtraction from this, e.g.  $56 - 9$ .
- ◆ Work it out in your head. Say the answer.
- ◆ If you are right, score a point.
- ◆ The first to get 10 points wins.



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## Learning intentions by the end of the year

- By the end of Year 4, most children should be able to...
- Know the 2,3,4,5 and 10 times tables by heart. E.g. Know facts like  $7 \times 5$  and  $36 \div 4$ .
- Round numbers like 672 to the nearest 10 or 100.
- Work out that a simple fraction like  $\frac{2}{6}$  is equivalent to  $\frac{1}{3}$ .
- Work out calculations like  $26 + 58$  and  $62 - 37$  in their heads.
- Work out calculations like  $234 + 479$  or  $791 - 223$  using pencil and paper and writing them in columns.
- Multiply numbers like 38 by 10 or by 100, and divide numbers like 4200 by 10 or by 100.
- Multiply and divide numbers up to 100 by 2,3,4 or 5, and find remainders, e.g.  $36 \times 3$ ,  $87 \div 4$ .
- Change pounds to pence and centimetres to metres, and vice versa, e.g. Work out that  $\pounds 3.45$  is the same as 345p, and that 3.5 metres is the same as 350 centimetres.
- Tell the time to the nearest minute and use a simple timetable.
- Pick out shapes with similar features, e.g. Shapes with sides the same length, or with right angles, or symmetrical shapes.
- Use  $+$ ,  $-$ ,  $\times$ ,  $\div$  to solve problems and decide whether it is best to calculate in their head or on paper.

## Maths Overview Year by Year

### Moving On

By now children work on ordering fractions by converting them into decimals and they use ratio notation. They are familiar with the ideas of multiples, factors, divisors, common factors, highest common factors and lowest common multiples. They calculate percentage increases or decreases and calculate efficiently.

They learn to calculate area of right-angled triangles and volume and surface area of cubes and cuboids.

They work with the probability scale from 0 to 1 and carry out statistical inquiries.

Further mathematical skills are introduced in other areas like trigonometry and algebra.

On this page should be information on our calculation policy.  
Unfortunately it would not convert to a PDF format.  
These pages can still be found on the website as  
Microsoft Word document.  
Apologies for any inconvenience caused.