PARENT SUPPORT KIT

GRADE EXPECTATIONS IN NUMERACY

FOR YEAR 3 CHILDREN

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Browley Sreet, Moss Vale, New South Wales 2577
www.mossvale-p.schools.nsw.edu.au

In conjunction with Exeter Public School
47 -59 School Lane, Exeter, New South Wales 2579
www.exeter-p.schools.nsw.edu.au

Project Coordinator Erin Griffith
Principal Consultant Susan Hilliar
Editor Erin Griffith
Designer Natalie Bowra

Teacher Contributors:
Moss Vale Public School
Terri Byron
Erin Griffith
Meredith Hines
Carol Vandenbergh
Exeter Public School
Rob Griffith

Parent Contributors:
Moss Vale Public School
Jane Aylen
Tonia Krebs

Year 3 Parent Numeracy Checklist

YEAR 3

In Year 3, children work towards the following key skills. How confident is your child with the skills on this checklist? If you'd like help to help your child with these skills, you've come to the right place!

Your child will be learning the skills on this checklist throughout the year. There is no specific order to learning them and you can revisit them at any time.

Whole Numbers

- ☐ 1 Skip count forwards and backwards by 10s and 100s from any starting point
- ☐ 2 State the place value of digits in numbers of up to 9 999 (4-digit numbers)
- ☐ 3 Read, write and order numbers of up to 9 999 (4-digit numbers)

Addition and Subtraction

- ☐ 4 Show that numbers can be added in any order to arrive at the same total. This is the associative law
- ☐ 5 Use the jump strategy to add and subtract
- ☐ 6 Use the split strategy to add and subtract
- ☐ 7 Use the compensation strategy to add and subtract
- ☐ 8 Perform calculations with money
- ☐ 9 Use the equals sign to record number sentences that are equal on both sides

Multiplication and Division

- ☐ 10 Recall multiplication facts for 2s, 3s, 5s and 10s
- ☐ 11 Write number sentences using the symbols x (multiply), ÷ (divide) and = (equals)
- ☐ 12 Link multiplication and division using arrays
- ☐ 13 Show and apply the commutative law for multiplication
- ☐ 14 Use mental strategies to multiply 1-digit numbers by multiples of 10
- ☐ 15 Use and write mental strategies for multiplication of 2 x 1-digit numbers

Fractions and Decimals

- ☐ 16 Model and show fractions with denominators 2, 3, 4, 5 and 8
- ☐ 17 Count by halves, quarters and thirds, including with mixed numerals
- ☐ 18 Show fractions on number lines, including number lines that go past 1

Patterns and Algebra

- ☐ 19 Work with number patterns, including identifying, describing, continuing and creating patterns
- ☐ 20 Identify odd and even numbers up to 9 999 (4-digit numbers)

Introduction to ***parent support kit in numeracy***

YEAR 3

Maths is everywhere! This kit can help you and your child to make real-life connections to what they're learning in the classroom. When children see, hear and use maths in real life, it gives their learning purpose. Use maths whenever you see the chance! Play maths games in the car. Involve the kids when you're cooking, shopping or budgeting. Add up the footy and cricket scores together. Talk about fractions as you serve food.

This parent support kit in numeracy is designed to help parents understand what children learn in each grade. At school, teaching is adjusted for the needs of each student. Children who show they have the skills listed in this kit will be working at grade level and assessed as sound.

This parent support kit uses parent-friendly language to explain the skills that children work to achieve by the end of each grade. We hope it empowers parents to help their children, and to participate in their child's education.

We know that every family is busy! The activities here are simple and straightforward. Any numeracy work you do at home with your child will help them in their learning. Your child's education is a partnership. Let's work together …

How to use this kit

This parent support kit:

- lists and explains the skills of children working towards a sound level
- shows ways to develop that skill with your child, including links to online resources like videos and games

Watch the videos to gain a deeper understanding of the skill. Work through the activities with your child. The suggestions here are a drop in the ocean – the internet has thousands! Use these as a starting point, and change them as you like.

Definitions are indicated by this icon throughout the kit. Lots of the definitions we use come from ***www.schoolatoz.nsw.edu.au***.

Why is it important? Next to this icon, you'll see 2 types of explanations:

1 Why this particular skill is important in the real world or for what children will be learning later on
2 Tips to help with learning

A closer look: This icon points the way to:

- an activity to help develop the skill or concept using familiar language for your child
- examples of problems
- handy tricks to help remember skills

WEB link This icon points the way to online resources you can use at home, like games, videos and further explanations.

Notes: Helping young kids get maths

Video: Helping your child with primary school maths

Use the kit whenever and however you can! Your child will be working towards these skills all year. You might like to review the kit each term, or more regularly. If you have any questions about your child's learning, always talk to their teacher. Remember – we're all in this together!

Where do I learn more?

The key skills listed in this parent support kit are taken from the NSW Standards and Education Authority's (NESA's) Mathematics K-6 continuum of key ideas. You can find the complete mathematics syllabus for every grade at the NESA website.

Whole Number: Key Skill 1

YEAR 3

Skip count forwards and backwards by 10s and 100s from any starting point

Skip counting is counting forwards or backwards in groups or multiples of a particular number.

Counting forwards and backwards helps children learn how numbers work in relation to each other. Learning to skip count helps children learn strategies for addition and subtraction. It builds confidence with numbers and strong multiplication skills. Skip counting helps children to move from counting by 1s, to using number facts to count e.g. starting at 7 to count on by 4s.

Children learn skip counting with 2s, 3s, 4s, 5s, 10s, 100s and then add in 6s, 7s, 8s, 9s, 11s and 12s. Children find skip counting forwards easier than skip counting backwards. Counting over 10s and 100s can sometimes be tricky too, especially backwards!

Practice this skill often but for a short amount of time for maximum impact.

Play snakes and ladders! This game is a great example of moving around 100s chart.

Use counters on a numbers chart showing 100s. Put a counter on 47; add counters to the squares that are more than 10 and less than 10. (Here's a 100s chart you can print.)

Count together! See how high or low you can go taking turns to count the next number. Here are some examples:

- Start at 1 220 and count forwards by 10
- Start at 450 and count backwards by 100

WEB LINKS go to:

Notes: Interactive 100s chart

Notes: 1 to 1000 number chart

Game: Interactive snakes and ladders

Video: 10 less and 10 more

Whole Number: Key Skill 2

YEAR 3

State the place value of digits in numbers up to 9 999 (4-digit numbers)

A **digit** is a symbol used to write a numeral. The digits 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 are used to write all the numbers in our number system. A 4-digit number is any 4 numbers together e.g. 2 504 or 7 618.

Place value shows the amount a digit is worth due to its position in a number. Place value is how many ones, tens, hundreds and thousands are in a number e.g. the number 8 374 has 8 thousands, 3 hundreds, 7 tens and 4 ones or 8 000 + 300 + 70 + 4.

Understanding place value helps children understand the meaning and value of a number, which helps with maths strategies they learn later like trading in addition and subtraction.

Dealing with 4-digit numbers builds confidence when working with numbers. Being able to read numbers easily and quickly helps children to work with them.

Remember to include 0s when working with place value!

Use cards (Uno cards are great!) to make random numbers of 4 or more digits and ask questions e.g. shuffle the cards and make the number 1 472. Ask:

- How many hundreds are there in 1 472?
- Which number is in the tens column?
- Which number is in the ones column?
- What is the number after this one?
- What is the smallest number you can make with these cards?
- What is the second largest number you can make with these cards?

Try this with lots of different numbers. Have a race to see who can find the cards and make a said number.

Make a table and use it to work out the place value of a number. Fill one out and leave gaps to be filled in. Here are some examples:

number	thousands	hundreds	tens	ones
4 518	4	5	1	8
3 602		6	0	
	2	4	7	7
1198	1		9	8

WEB LINKS go to:

Notes: Place value explained

Notes: Counting and place value explained

Game: Place value pandemonium

Whole Number: Key Skill 3

YEAR 3

Read, write and order numbers up to 9 999 (4-digit numbers)

A **digit** is a symbol used to write a numeral. The digits 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 are used to write all the numbers in our number system. A 4-digit number is any 4 numbers together e.g. 2 504 or 7 618.

Place value shows the amount a digit is worth due to its position in a number. Place value is how many ones, tens, hundreds and thousands are in a number e.g. the number 8 374 has 8 thousands, 3 hundreds, 7 tens and 4 ones or 8 000 + 300 + 70 + 4.

Dealing with big numbers builds mathematical confidence. Being able to read big numbers easily and quickly helps children to work with them later on e.g. when we see a number with 3 zeros on the end, we know it's in the thousands, and we can think of it as 1 thousand or 1 000.

It helps to remember that we group place value in sets of 3. In Europe, a comma is used as a decimal point! So we leave a space and not a comma when writing big numbers e.g. 23 000 not 23,000.

Order numbers together! Show your child 4 numbers and ask them to put them in order, from biggest to smallest or vice versa. Work together to find the 2nd largest or 2nd smallest number.

Talk about numbers as you go about your day. Ask your child to tell you about the numbers they notice. Which ones are big? Which ones are small? Make comparisons.

Make 4-digit numbers using playing cards/Uno cards/dominoes. Have a race to see who can make a number the fastest.

Play 'I'm thinking of a number'. Choose a number, give the guesser 15 guesses, answers can only be higher or lower. See if you can find the number with only 15 guesses! It helps to repeat the field as it narrows e.g. 'We now know that it is higher than 5 000, but lower than 6 000.'

Play the highest to lowest number card game (see Video: Highest and lowest card game).

WEB LINKS go to:

Video: Highest and lowest card game

Game: Using blocks to show place value

Addition and Subtraction: Key Skill 4

YEAR 3

Show that numbers can be added in any order to arrive at the same total. This is the associative law

The **associative law** shows that numbers can be grouped and added in any way and the answer will be the same. This law only works for addition and multiplication - not subtraction or division.

Look at 3 + 5 = ?

3 + 5 = 8 or 5 + 3 = 8 the answer is the same!

So, 3 + 5 = 5 + 3. It can be added in ***any*** order!

The associative law is an essential skill for mental maths strategies (working out answers in your head). It helps children work with numbers and find answers. If children prefer a group of numbers to work with, they can shuffle the numbers around to answer questions faster and easier!

Let's look at 5 + 6 + 15 and shuffle the numbers to add.

5 + 6 + 15 = 15 + 5 + 6
= 20 + 6
= 26

or

5 + 6 + 15 = 6 + 5 + 15
= 11 + 15
= 26

or

5 + 6 + 15 = 15 + 6 + 5
= 21 + 5
= 26

Create an 'addition machine' from recycled materials that has 2 paths (holed out cups or rolled up cardboard) that join to a box underneath. Drop each group of objects through the different paths to combine them in the box below. Count up the amount in the box to find your answer! Explore if the order the objects are dropped in is important.

Write a group of 3 numbers down and work together to find which combinations make adding 3 numbers together easier. Friends of 10 (Kindergarten Key Skill 9) are useful here. Let's add 6, 7 and 4.
6 and 4 are friends of 10, so they are easy to add together, then add 7 to 10! Is this the easiest way? Are there any other ways? Show me! (There is no right or wrong answer.)

Become scientists and test this law! Make some questions and swap the numbers around to see if this theory always works. Does it only work when adding 3 numbers? Now test it on subtraction. Did it work? Why/why not?

WEB LINKS go to:

Notes: Addition machine

Video: Associative property of addition

Video: Associative and commutative explained

Addition and Subtraction: Key Skill 5

YEAR 3

Use the jump strategy to add and subtract

The **jump strategy** is a mental strategy of jumping numbers to add or subtract. Using a number line, children jump forwards to add and backwards to subtract. Children count in jumps, by 10s, 5s, 2s or 1s along the line to get to the answer.

A **number line** is a line of any length that can be used to show the position of numbers in relation to each other. The line can start and end on any number. Number lines use measurements to locate the place of numbers.

The jump strategy is 1 way to answer an addition or subtraction question. The jump strategy works best when trading is needed.

The aim of the jump strategy is to show children how to mentally add or subtract to find the answer. We begin learning the jump strategy using drawings (jumps) on a number line. In later years, children are encouraged to continue to use this strategy to find answers mentally (in their head).

There are 3 strategies that are taught to answer addition and subtraction questions. The jump strategy, split strategy and compensation strategy. Children can choose which strategy they prefer or which strategy is best for the question based on the numbers in the question.

Split – when no trading is needed
Jump – when trading is needed
Compensation – when 1 of the numbers is close to 10s or 100s

Use a number line to practise the jump strategy. Plot the first number on the number line, and add or subtract the second number by jumping along the number line. Try jumping by 2s, then 5s, then 10s. Look to jump from the biggest number in the question.

Remember to jump forwards to add and backwards to subtract. It is easier to jump starting with the larger number on the number line. With the jump strategy we;

1 Start by writing an empty number line (see Notes: Empty number lines)
2 Write the larger number on the left for addition and on the right for subtraction.
3 Split the second number into 10s and 1s
4 Jump by 10s until you have used all the 10s in the second number
5 Jump by 5s, 2s or 1s, until you have used all the 1s in the second number
6 The number you finish at is your answer!

You can also jump using a 100s chart. Jump forwards for adding and backwards for subtracting in groups of 10s, 5s, 2s or 1s until you have your answer.

For more information including diagrams (see Notes: Jump strategy explained).

WEB LINKS go to:

Notes: Jump strategy explained
Notes: Empty number lines
Video: Jump strategy in action
Video: Jump strategy examples
Video: Using the jump strategy to subtract numbers
Video: Using the jump strategy to add and subtract numbers

Addition and Subtraction: Key Skill 6

YEAR 3

Use the split strategy to add and subtract

The **split strategy** is mental strategy where numbers are 'split' into their place value to make it easier to add or subtract them.

Children 'split' (expand) numbers to work with them

e.g. 42 + 33 = 40 + 2 + 30 + 3
= 40 + 30 + 2 + 3
= 70 + 5
= 75

The split strategy is 1 way to answer an addition or subtraction question. The split strategy works best used when there is no trading needed.

There are 3 strategies that are taught to children to answer addition and subtraction questions. The jump strategy, split strategy and compensation strategy. Children can choose which strategy they prefer or which strategy is best for the question based on the numbers in the question.

Split – when no trading is needed
Jump – when trading is needed
Compensation – when 1 of the numbers is close to 10s or 100s

To solve addition or subtraction problems with the split strategy we

1 Split the numbers into their place value being 100s, 10s and 1s
2 Group the 100s together, 10s together and 1s together
3 Add/subtract the 100s, add/subtract the 10s and add/subtract the 1s
4 Add the 100s, 10s and 1s together.

Sometimes it is helpful to draw circles (1 for each place value) and link it to the number to help children split the numbers (see Video: Using the split strategy to add numbers).

Here are some examples for you (see Notes: Split strategy to add).

21 + 48 = (20 + 1) + (40 + 8) (split)
= 20 + 40 + 1 + 8 (group then add)
= 60 + 9 (add)
= 69

86 – 45 = (80 + 6) – (40 + 5) (split)
= (80 – 40) + (6 – 5) (group then subtract)
= 40 + 1 (add)
= 41

WEB LINKS go to:

Notes: Split strategy explained

Video: Using the split strategy to add numbers

Video: Split strategy to add

Video: Using the split strategy to subtract numbers

Game: The amoeba addition game

Addition and Subtraction: Key Skill 7

YEAR 3

Use the compensation strategy to add and subtract

The **compensation strategy** is a mental strategy of rounding numbers up or down to add or subtract.

The compensation strategy is 1 way to answer an addition or subtraction question. It works best used when 1 of the numbers close to 10s or 100s. Children need to be able to round numbers to be able to use this strategy.

There are 3 strategies that are taught to children to answer addition and subtraction questions. The jump strategy, split strategy and compensation strategy. Children can choose which strategy they prefer or which strategy is best for the question based on the numbers in the question.

Split – when no trading is needed
Jump – when trading is needed
Compensation – when 1 of the numbers is close to 10s or 100s

There are 2 ways to use the compensation strategy. Children can choose which 1 they want to use.

Option 1

1 Round 1 of the numbers.
2 Solve the question.
3 Add or take away the amount you used to round the number from the answer

Option 2

1 Round 1 of the numbers
2 Add or take away the amount you used to round the number from the other number in the question
3 Solve the question.

Here are some examples for you (see Notes: Compensation strategy explained).

Option 1 – Addition

29 + 44 = 44 + 30 (+1)
= 74
= 74 (–1)
= 73

Option 2 – Addition

29 + 44 = 43 + 30 (1 from 44 is given to 29)
= 43 + 30
= 73

Option 1 – Subtraction

82 – 34 = 82 – 30 (–4)
= 52
= 52 (–4)
= 48

Option 2 – Subtraction

82 – 34 = 78 – 30 (4 from 34 is taken away from 82)
= 78 – 30
= 48

Use a number line to help your child jump to your answer and then jump forwards or backwards after they have compensated (see Video: Compensation strategy with number line).

WEB LINKS go to:

Notes: Compensation strategy explained
Video: Adding with option 1
Video: Adding with option 2
Video: Compensation strategy with 2 options
Video: Subtracting with option 1
Video: Compensation strategy with number line

Addition and Subtraction: Key Skill 8

YEAR 3

Perform calculations with money

Learning the value of coins helps children to order the coins. This is the first step in learning to count, then to add and subtract money. Children will count money 1 coin at a time in the order the coins are given to them. So if they start with a 5c coin then a 50c coin and then a 20c coin, they will add 5c + 50c + 20c in that order.

Work together at the shops to find the right money needed to make purchases.

Have your child help you to make purchases at the shops. Ask them to find the right money and check the change.

Make towers of coins that all add up to the same amount and explore the similarities and differences between them.

Play board games that have money as part of the game like Monopoly or the Game of Life.

Work together to set up a market stall. Open your stall for people to come and purchase your goods. This can be real or pretend.

WEB LINKS go to:

Notes: Board games that teach kids about money

Video: Counting coins

Video: Funny money

Addition and Subtraction: Key Skill 9

YEAR 3

Use the equals sign to record number sentences that are equal on both sides

The **equals sign** is a symbol used to show that 2 or more amounts have the same value e.g. 5 + 3 = 9 -1

A **number sentence** is an equation. It uses numbers and symbols to describe a maths problem.

The equals sign is like a balance beam! The numbers on either side must always be equal. It doesn't just mean 'write the answer here'. The equals sign's job is easily and quickly forgotten and children need reminding of this often! Talk to your child about number sentences and the equals sign. Use words like 'value', 'same', 'different' and even 'balance beam'.

The key is to be able to explain ***how*** they got their answer (show working out).

Play with questions like 4 + 6 = 25 – 15.

Play a missing number game where you leave a number out of a number sentence and work together to find out what the number is.

Play a detective game where 1 of the numbers in a number sentence puts the sentence out of balance. Work together to fix the sentence and put it back in balance (see Video: True or false number sentences).

WEB LINKS go to:

Video: Equal number sentences

Video: The equals sign

Video: True or false number sentences

Multiplication and Division: Key Skill 10

YEAR 3

Recall multiplication facts for 2s, 3s, 5s and 10s

Multiplication is a process of repeatedly adding the same number a given amount of times. Multiply, product of, times and lots of all mean the same thing.

Children need to know their times tables as they are used in all areas of maths. They are extremely important and any progress in maths slows if they do not know their times tables. Knowing and using them with speed and accuracy makes maths so much easier.

Times tables are easily forgotten and need to be practised often! It can be challenging to fill the gaps of unknown facts so it is important to spend more time on learning these. Check your child remembers their times tables as often as you can!

We teach times tables in 2 ways. Both ways need to be taught:

1 **Rote learning** – repeating them over and over until they are stuck in childrens' minds. Sing along to times tables songs, write out times tables, and test your child each day.

   This can be effective for many children but doesn't help to build a deep understanding of multiplication and how numbers work. For instance, many children can quickly tell you that 4 x 6 = 24 but not 24 ÷ 4 = 6. So we also teach times tables another way.

2 **Meaningful learning** – This way helps children to find the answer to a multiplication problem from what they know with the other times tables, e.g. skip counting (e.g. 3, 6, 9, 12 etc.) and the commutative law (which means multiplication problems can be solved in any order, e.g. 7 x 3 = 3 x 7). Your child may not know 7 x 5, but they can easily find 5 x 7 using these strategies.

Notes: Rote vs meaningful learning

Work together using a combination of songs, playing with arrays, skip counting, races, charts and online games to help your child convert the times tables into their long-term memory.

Here are some useful strategies to help children learn times tables:

2 x tables: Double the number
3 x tables: Double plus 1 more set. 3 x 5 = 2 x 5 + 5
5 x tables: Skip count by 5s. Always end with 5 or 0
10 x tables: Multiples of 10. Always end in 0.

Work together to fill out the 2s, 3s, 5s, and 10s of a multiplication grid. Race against a clock and track your progress. (Here's a multiplication grid you can print.)

WEB LINKS go to:

Notes: Times tables

Notes: Mental strategies

Video: How to easily memorise times tables

Video: 3 times tables – uptown funk

Game: Tables games

Game: Times tables shoot em up

Multiplication and Division: Key Skill 11

YEAR 3

Write number sentences using the symbols x (multiply), ÷ (divide) and = (equals)

A **number sentence** is an equation. It uses numbers and symbols to describe a maths problem.

Being able to read and write symbols helps children to create their own maths questions and understand how to use symbols in the right way.

Play a game of memory, go fish or old maid using maths symbols as the cards.

Play a game of celebrity head where each person has a number sentence on their head and they have to guess what it says. The other player can only answer yes or no to questions. The first person to guess their number sentence correctly wins! Solve your number sentences for bonus points.

Roll 2 dice and use the numbers rolled to create multiplication and division number sentences. Work together to solve them with multiplication. Attempt to solve them with division, or work together to change the number sentence so that it can be solved with whole numbers as the answer.

WEB LINKS go to:

Notes: DIY celebrity head game

Multiplication and Division: Key Skill 12

YEAR 3

Link multiplication and division using arrays

An **array** is a rectangle divided into rows and columns.

Multiplication is a process of repeatedly adding the same number a given amount of times. Multiply, product of, times and lots of all mean the same thing.

Division is to share into equal groups or parts. Divide, split, quotient, distribute, share equally and separate all mean the same thing.

Inverse operations are functions that are the opposite of each other. This is a way of checking if answers are correct.

Addition and subtraction are inverse operations. Multiplication and division are inverse operations.

Arrays create a picture to help children understand multiplication and division. Learning to create and use arrays helps children to learn how to skip count to multiply or divide.

Children often begin by counting each object in the array and then learn to skip count the rows to find the answer. It is helpful to show that you can count from the rows or the columns of the rectangle e.g. in 4 x 2 you can count 4 rows twice (4 + 4) or 2 columns four times (2 + 2 + 2 + 2).

Knowing that multiplication and division questions are opposites helps to make learning division easier.

Make arrays and work together to create division and multiplication questions from them. Write down the possible questions could be made from that array e.g. An array of 12 (3 rows of 4) questions could be:

12 ÷ 3 = 4 12 ÷ 4 = 3 3 x 4 = 12 4 x 3 = 12 12 = 3 x 4

Play a game where you make an array and quickly flash the entire array. Then cover all the pieces except for 1 row and 1 column with a piece of paper. Work together to work out the total of the array. Challenge yourselves to write them as division and multiplication questions.

WEB LINKS go to:

Notes: Arrays

Notes: Division using arrays

Video: Repeated addition

Video: Repeated addition and array

Game: The array

Game: Pobble arrays

Multiplication and Division: Key Skill 13

YEAR 3

Show and apply the commutative law for multiplication

The **commutative law** shows that numbers can be added or multiplied in any order and the answer will be the same. Commutativity and turn around facts mean the same thing.

Multiplication is a process of repeatedly adding the same number a given amount of times. Multiply, product of, times and lots of all mean the same thing.

This is a maths skill needed for mental maths strategies (working out answers in your head). Children can spin the numbers around to answer questions faster and easier! Remember that this works only for addition and multiplication - not subtraction or division.

$20 \times 5 = 5 \times 20$ $\quad 20 \div 5 \neq 5 \div 20$

This is very handy in teaching children to spin the numbers around to make the question easier e.g. 4 x 5 by skip counting or 4 x tables might be hard to work out but 5 x 4 by skip counting or using their 5 times tables is easier.

Encourage your child to spin the numbers around when multiplying if they are more confident with 1 of the numbers in the question.

Associative law (Key Skill 4) – we ***shuffle*** numbers to add or multiply $(4 + 9 + 1 = 9 + 1 + 4)$

Commutative law – we ***spin*** numbers to add or multiply $(6 \times 5 = 5 \times 6)$.

Play a dice game! Roll 2 dice, put them next to each other, and multiply. Switch the order, and multiply again. Explore if the order changes the result.

Explore a multiplication grid and map pairs of multiples to so see if they have the same answer. 4 x 5 and 5 x 4 etc. (Here's a multiplication grid you can print.)

Test the commutative law using arrays! Build arrays and see if you can spin the numbers in the question and keep the array the same shape e.g. 4 rows with 5 columns or 5 rows with 4 columns.

WEB LINKS go to:

Video: Commutative law of multiplication

Video: Commutative law

Video: Commutative law in the classroom

Multiplication and Division: Key Skill 14

YEAR 3

Use mental strategies to multiply 1-digit numbers by multiples of 10

Children use **mental strategies** to figure out the maths problem in their head.

A **multiple** is the result of multiplying a number by another number. The multiples of 3 are 3, 6, 9, 12, 15, 18, 21 etc. (times tables can help here: 3 x 1 is 3, 3 x 2 is 6, 3 x 3 is 9, 3 x 4 is 12 etc.)

The first multiple of a number is always the number itself (because it can be multiplied by 1).

When children understand multiples, they find it easier and faster to work with numbers. Multiples help with fractions, decimals, multiplication, division and much more.

Multiplying by 10 is an important skill because it shows an understanding of place value. When we multiply by 10, the digits move 1 place to the left. It is the same with 10s, 100s, 1 000s etc.

question	thousands	hundreds	tens	ones
43			4	3
43 x 10		4	3	0
43 x 100	4	3	0	0

Help your child to multiply a number by 10. Work together to find all the different ways you can work to reach the same answer.

Use multiplying by 10s to round and estimate answers.

A little trick to use is to multiply the 2 digits furthest to the left, and then however many 0s in the question behind them, is however many 0s will be in the answer e.g. 3 x 40 = ? The 2 digits furthest to the left are 3 and 4, so 3 x 4 = 12. There is one 0 in the question, so there will be one 0 in the answer. 3 x 40 = 120. This only works when the numbers end with 0s. When 0 is being used as a place holder, this trick doesn't work.

WEB LINKS go to:

Video: Multiplication mental strategies

Multiplication and Division: Key Skill 15

YEAR 3

Use and write mental strategies for multiplication of 2 x 1-digit numbers

Children use **mental strategies** to figure out the maths problem in their head.

Multiplication is a process of repeatedly adding the same number a given amount of times. Multiply, product of, times and lots of all mean the same thing.

Children need to be able to use strategies to work out unknown multiplication facts. These strategies include:

- Skip counting
- Repeated addition
- Commutative law

Play a game where you start on any number and take turns to say the next number while skip counting (forwards or backwards). See how high you can go!

Pull a group of objects (like pegs) and work together to move them as you skip count. This is really helpful in reinforcing the idea that this can be used to find multiplication facts. Try to write the numbers as you are adding on a piece of paper to show what this would look like if you only had pen and paper.

Use sticky dots, textas, M&Ms, playdough or Lego to make groups and work together to write the repeated addition facts to match.

Try a multiplication grid and colour in the numbers as you repeatedly add to find the answer to your question. Can you find any patterns? (Here's a multiplication grid you can print.)

WEB LINKS go to:

Notes: 6 Skip counting strategies

Video: Multiplication and division relationships

Video: Year 3 multiplication and division examples

Game: Bubble skip counting

Fractions and Decimals: Key Skill 16

YEAR 3

Model and show fractions with denominators 2, 3, 4, 5 and 8

A **fraction** is part of a whole that has been broken into equal parts. It has a:

- **numerator** (top number: how many parts we have)
- **denominator** (bottom number: how many parts the whole has been broken up into)
- **fraction bar** (the line in between).

It will help your child to use these words when talking about fractions.

Pictures are hugely helpful in understanding fractions. A common mistake is thinking the larger denominator creates a larger fraction. It is the opposite for fractions. The smaller the denominator, the larger the fraction. Use circles for odd denominators and rectangles for even denominators when drawing fractions.

Use food! Slice in half a pizza, cake, banana etc. Explain that both sides are equal, so the item has been halved.

Divide other objects into halves, thirds, quarters, fifths and eighths. Talk about what different fractions look like and how they are made.

Read "My Half Day" by Doris Fisher. This book talks about lots of different sized fractions. Can you find them all and work out how much they are? Can you order them from smallest to largest or plot them on a number line?

WEB LINKS go to:

Video: Fractions song

Video: "My half day" book reading

Video: Basic fractions

Fractions and Decimals: Key Skill 17

YEAR 3

Count by halves, quarters and thirds, including with mixed numerals

A **fraction** is part of a whole that has been broken into equal parts. It has a:

- **numerator** (top number: how many parts we have)
- **denominator** (bottom number: how many parts the whole has been broken up into)
- **fraction bar** (the line in between).

It will help your child to use these words when talking about fractions.

A **mixed numeral** is a number made up of a whole number and a proper fraction.

Counting forwards and backwards helps children learn how numbers work in relation to each other. Children will find counting forwards easier than counting backwards. Counting over whole numbers can be tricky for children e.g. $1\frac{1}{2}$, 2, $2\frac{1}{2}$, 3, $3\frac{1}{2}$

Number lines are extremely helpful in showing how fractions work with whole numbers.

Use number lines and diagrams together to show fractions. Plot the fractions on the number line and draw a picture underneath each fraction to show its size. Remember to go past 1.

Use groups to show how fractions work. If there are 4 socks, and 3 of them are yellow, then $\frac{3}{4}$ of the socks are yellow.

Play a game. Start from 0, and take turns to count by halves, quarters, thirds etc. See how far can you go!

Draw a number line and plot a group of fractions on it. Leave gaps to fill in at the end. Give a set of 3 or 4 fractions to be grouped on the same fraction number line. This is trickier than it sounds!

Count by fractions taking turns to say the next number. Deliberately make a mistake and work together to fix it!

WEB LINKS go to:

Notes: Mixed numeral

Video: Fractions on a number line

Video: Counting fractions on a number line

Video: Fractions song

Video: Comparing fractions

Fractions and Decimals: Key Skill 18

YEAR 3

Show fractions on number lines, including number lines that go past 1

A **fraction** is part of a whole that has been broken into equal parts. It has a:

- **numerator** (top number: how many parts we have)
- **denominator** (bottom number: how many parts the whole has been broken up into)
- **fraction bar** (the line in between).

It will help your child to use these words when talking about fractions.

A **number line** is a line of any length that can be used to show the position of numbers in relation to each other. The line can start and end on any number. Number lines use measurements to locate the place of numbers.

Equivalent fractions are fractions that are equal in value but have different names e.g. $\frac{1}{2}$, $\frac{3}{6}$ or $\frac{5}{10}$.

This skill helps children to understand that a fraction is a part of a whole. Children sometimes see the numerator and denominator as 2 separate whole numbers joined together to make the fraction and not the fraction as a number itself. Working with a number line helps to explain where fractions are in comparison to whole numbers.

Look for children counting on with the denominator e.g. instead of counting $\frac{1}{5}$, $\frac{2}{5}$, $\frac{3}{5}$, $\frac{4}{5}$ they might count $\frac{1}{5}$, $\frac{1}{6}$, $\frac{1}{7}$, $\frac{1}{8}$ and so on. Draw pictures of the fractions if needed to help show their size and where they should be on the number line.

An understanding of equivalent fractions helps greatly with this skill.

Write some fractions on paper and use 1 length of your clothesline to be a horizontal number line. Work together to peg your fractions on the clothesline in the right places.

Use the door frame as a vertical number line. Use post it notes to create fractions and then work together to stick the fractions in the right places.

Draw a number line, add some of the numbers, and ask your child to fill in the rest.

Draw a number line and fill in the fractions (make sure you go past 1) but make deliberate errors. Work together to find the mistakes and fix them.

WEB LINKS go to:

Notes: Number line

Notes: Equivalent fractions

Video: Equivalent fractions year 3

Video: Fractions on a number line

Video: Fractions number line song

Video: Fractions on number lines

Video: Plotting fractions on number lines

Video: Fractions on a number line

Patterns and Algebra: Key Skill 19

YEAR 3

Work with number patterns, including identifying, describing, continuing and creating patterns

Patterns are formed by **rules**. A **rule** is used to work out the value of any part of the pattern. Rules also help children to continue patterns.

Number patterns are patterns created by numbers.

Patterns help children to apply rules, check answers, and see relationships between numbers. Children learn a lot about numbers and build strong operation skills when working with patterns.

Identifying and describing patterns are the easier of these skills, with continuing and creating patterns being harder.

On a 100s chart colour in multiples of 3. Now use a different colour for multiples of 6 and so on. What patterns can you see? (Here's a 100s chart you can print.) Now use your coloured 100s chart to practise counting in multiples of 3, 6 etc. Go forwards and backwards!

Work together to create patterns by arranging coloured blocks, crayons, different sized objects, or stringing beads and more. Ask open-ended questions. Here are some questions to ask:

Do you see a pattern? Tell me about it.

What comes next? Could you make a pattern with these different materials?

How could we make pictures that would help us remember this pattern?

Can you show me a pattern with your body? What would you do first? Second?

What happens over and over again with these blocks?

How would you read this pattern?

What would happen to the pattern if I changed _____?

WEB LINKS go to:

Video: Finding patterns in numbers

Patterns and Algebra: Key Skill 20

YEAR 3

Identify odd and even numbers up to 9 999 (4-digit numbers)

Even numbers are whole numbers ending in 0, 2, 4, 6, or 8.

Odd numbers are whole numbers ending in 1, 3, 5, 7 and 9.

A **digit** is a symbol used to write a numeral. The digits 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 are used to write all the numbers in our number system. A 4-digit number is any 4 numbers together e.g. 2 504 or 7 618

Even and odd numbers help children with skip counting, doubling, halving, and division. Later, they'll help with prime numbers.

When you talk about numbers, ask your child whether they are odd or even. Talk about how many letters are in the names of people in your family, house numbers of people you know, the number of cousins your child has etc. Odd or even?

Read the book "Even Steven and Odd Todd" by Kathryn Christaldi. Make puppets of Even Steven and Odd Todd and write the even and odd numbers they like from the book on their jumpers. Make a puppet show (or a new story) where Even Steven and Odd Todd explore bigger numbers (into the 1000s).

Colour in the even and odd numbers on 100s chart. See if you can find a pattern!
(Here's a 100s chart you can print.)

WEB LINKS go to:

Video: Even and odd numbers cartoon

Video: Even and odd numbers

Video: Even and odd numbers explained

Video: Even steven and odd todd book reading

Video: Odd and even numbers

Video: adding even and odd numbers

Game: Odd and even

Game: Number jumbler