PARENT SUPPORT KIT

GRADE EXPECTATIONS IN NUMERACY

FOR YEAR 5 CHILDREN

HELPING CHILDREN TO LEARN WELL
MOSS VALE PUBLIC SCHOOL

EXETER PUBLIC SCHOOL
LEARN TO LIVE

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Published in 2018 by Moss Vale Public School
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Year 5 Parent Numeracy Checklist

YEAR 5

In Year 5, 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 Deal with numbers as big as 10 million by reading, writing, ordering and stating the place value of digits
- ☐ 2 Record numbers using expanded notation
- ☐ 3 Find all the factors of a number
- ☐ 4 Find the multiples of a number

Addition and Subtraction

- ☐ 5 Use mental strategies to add and subtract 2 or more numbers
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Fractions and Decimals

- ☐ 16 Compare and order fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12 and 100
- ☐ 17 Convert a mixed numeral to an improper fraction and vice versa
- ☐ 18 Add and subtract fractions with the same denominator
- ☐ 19 State the place value of digits up to 3 decimal places
- ☐ 20 Compare, order and write decimals with up to 3 decimal places

Patterns and Algebra

- ☐ 21 Identify, describe, continue and create number patterns with whole numbers, fractions or decimals
- ☐ 22 Find missing numbers in number sentences (equations) involving addition, subtraction, multiplication or division on both sides of the equals sign

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

YEAR 5

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 the Grade Expectations 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 Numbers: Key Skill 1

YEAR 5

Deal with numbers as big as 10 million by reading, writing, ordering and stating the place value of digits

Place value shows the amount a digit is worth due to its position in a number – ones, tens, hundreds, thousands etc.

Dealing with big numbers builds mathematical confidence. Being able to read big numbers easily and quickly helps children to work with them later on. For example, when we see a number with 6 zeros on the end, we know it's in the millions, and we can think of it as 1 million or 1 000 000.

Big numbers are important in everyday life when it comes to budgeting, especially incomes and mortgages.

Write these numbers from smallest to largest: 2 067 234, 68 998, 67 401 682

Answer: 68 998, 2 067 234, 67 401 682

Write this number in words: 1 345 067

Answer: one million, three hundred and forty-five thousand and sixty seven

State the place value of 7 in these numbers:

89 678 *Answer:* tens

270 891 *Answer:* ten thousands

1 348 790 *Answer:* hundreds

Check out the number of views on YouTube clips. Read the numbers out loud. Compare them to similar clips. You could even make a list of your favourites, from biggest to smallest.

Read the books "If ... " or "If the World Were a Village" by David J Smith and compare the numbers in the story.

WEB LINK go to:

Video: Reading large numbers

Video: Place value up to 10 million

Video: Place value

Whole Numbers: Key Skill 2

YEAR 5

Record numbers using expanded notation

Expanded notation shows the amount each digit is worth because of its place in a number. For example, in 287 we know that there are 2 lots of 100, because the 2 is in the hundreds position.

Expanding numbers helps children to understand numbers better and helps build confidence in doing calculations in their head.

Write 56 276 in expanded notation

Answer: 50 000 + 6 000 + 200 + 70 + 6

Write 142 081 in expanded notation

Answer: 100 000 + 40 000 + 2 000 + 80 + 1

Make an expanded notation machine with cups or a paper snake

Remember to use numbers where the 0 is being used as a place holder. Numbers like 3 085 where there are 3 thousands, no hundreds, 8 tens and 5 ones.

WEB LINKS go to:

Video: Expanded form and expanded notation

Video: Expanded notation cups

Whole Numbers: Key Skill 3

Find all the factors of a number

YEAR 5

A **factor** is a whole number that can be divided exactly into a whole number. For example, the factors of 12 are 12, 6, 4, 3, 2 and 1 (because 12 x 1 is 12, 3 x 4 is 12 and 6 x 2 is 12).

Determining or finding the factors of a given number helps children to work with the division of numbers. It also helps them when working with fractions. We need to find common factors when adding or subtracting fractions.

Times tables really help children with multiples and factors. A times tables chart in the toilet will help, as will songs, CDs, quizzes, competitions.

What are the factors of 24?

Answer: 24, 12, 8, 6, 4, 3, 2 and 1

Use the concept of the 'Factor Ninja' who chops numbers up to help your child to remember how to find factors.

WEB LINKS go to:

Notes: Factor ninja and multiple monster

Notes: How to find factors

Video: Factors and multiples

Game: Factors and multiples

Whole Numbers: Key Skill 4

Find the multiples of a number

YEAR 5

A **multiple** is the result of multiplying a number by another number. For example, 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.

Times tables really help children with multiples and factors. A times tables chart in the toilet will help, as will songs, CDs, quizzes and competitions.

What are the first 6 multiples of 4?

4, 8, 12, 16, 20, 24 This is the same as skip counting.

Taking turns skip counting out loud can be a fun car game. See how high you can go!

Use the concept of the 'Multiple Monster' who makes numbers bigger to help your child to remember how to find multiples.

WEB LINKS go to:

Notes: Factor ninja and multiple monster

Video: Factors and multiples

Game: Bike racing factors

Game: Factors and multiples

Games: Multiplication and division games

Addition and Subtraction: Key Skill 5

YEAR 5

Use mental strategies to add and subtract 2 or more numbers

Children use **mental strategies** to figure out the maths in their head, without writing anything down.

Children will have learned a range of strategies they can use to add and subtract numbers in their head, including the jump strategy, split strategy and compensation strategy.

The key is to use the best strategy for the numbers. For example, compensation is the best strategy when numbers are close to 10, 100 or 1 000.

Split – when no trading is needed

Jump – when trading is needed

Compensation – when 1 of the numbers is close to 10s or 100s

To find 456 + 207, children might use:

- jump strategy (456 + 200 + 7)
- split strategy (400 + 200 + 50 + 6 + 7).

To find 456 – 207, children might use:

- jump strategy (456 – 200 – 7)
- compensation strategy (456 – 207 = 449 – 200).

WEB LINKS go to:

Notes: Mental calculation

Video: Jump strategy

Video: Split strategy

Video: Compensation strategy

Addition and Subtraction: Key Skill 6

YEAR 5

Use the formal algorithm to add and subtract 2 or more numbers

The **formal algorithm** is a step-by-step process to solving addition and subtraction problems. Formal algorithm and vertical algorithm mean the same thing.

The formal algorithm uses the same steps in the same order every time to find the answer and is essential for more complex questions.

Before they use the formal algorithm, children should be encouraged to estimate an answer first by using rounding. This can help them to limit simple errors in calculations.

If there is no operation written next to the question, it is always an addition question. It is important to practice questions where trading across 2 place values is needed as children find it the most difficult.

Use questions where 0s are needed.

Examples without trading:

$$\begin{array}{r} 345 \\ +\ 124 \\ \hline 469 \end{array} \qquad \begin{array}{r} 678 \\ -\ 135 \\ \hline 543 \end{array}$$

Examples with trading:

$$\begin{array}{r} 257 \\ +\ 138 \\ \hline 395 \end{array} \qquad \begin{array}{r} 403 \\ -\ 362 \\ \hline 41 \end{array}$$

Addition Poem

Adds up to 9,
Everything is fine.
10 or more,
take the extra next door!

Subtraction Poem

More on top?
No need to stop!
More on the floor?
Go next door and get ten more!
Numbers the same?
Zero's the game!

WEB LINKS go to:

Notes: Adding and subtracting

Video: Written addition methods

Games: Word problems and solutions

Video: Written subtraction methods

Games: Addition and subtraction

Addition and Subtraction: Key Skill 7

YEAR 5

Use a calculator to add and subtract numbers of any size

Calculators are used in class for the first time this year. Children use it to find and check answers. **Basic calculators** are used in primary school (not scientific calculators like high school).

To find the answer to 194 x 5, press the buttons 1, 9 and 4.

Then press x (for multiply) and then 5.

Now press = (equals).

The result should be 790.

Use the calculator to help check answers after other addition and subtraction strategies have been applied to find an answer.

WEB LINKS go to:

Game: Bamzooki – using a calculator

Addition and Subtraction: Key Skill 8

YEAR 5

Use rounding to estimate the answer to addition and subtraction problems

Rounding means to increase or decrease to the nearest 10, 100, 1 000 etc. For 1, 2, 3, 4 we round down to 0. For 5, 6, 7, 8, 9 we round up to 10.

Rounding helps children check their answers, or come up with a rough answer they can work towards. For example, 416 x 23 is roughly 400 x 20. So the answer should be around 8 000.

We estimate by rounding the numbers to the nearest 10 or 100:

- 38 rounded to the nearest 10 is 40.
- 623 rounded other the nearest 100 is 600.
- $7.99 rounds to $8.
- 12¼ is rounded to 12

To estimate 456 + 207, round both numbers to the nearest 10 (460 + 200). This gives an estimate of 660.

Another example rounding to 10s

843 – 127 = 840 – 130

= 110

Rounding Poem

Underline the digit,
Look next door.
If it's 5 or greater,
Add one more.
If it's less than 5,
Leave it for sure.
Everything after is a zero,
not more.

WEB LINKS go to:

Video: Using rounding for estimation

Addition and Subtraction: Key Skill 9

YEAR 5

Solve word problems and record the strategy used

For **word problems**, children read a story about a problem (often a real-life problem!), and then figure out what operations are needed to reach the answer.

To record the **strategy used**, children show their working or talk about how they got their answer.

Word problems are important because children must be able to choose and apply a strategy, estimate, solve it and check their answer. Most children will have difficulties in understanding what they need to do. Ask them to read the question carefully and decide what the most important information is and what operation they need to solve the question.

Try the strategy **CUBES** when working with word problems.

C Circle the numbers

U Underline the question

B Box the keywords

E Eliminate information not needed

S Solve by showing your working out

Newman's Analysis is another strategy to help with word problems.

1 **Read** the question to me.

2 Tell me **what** the question is asking you to do.

3 Tell me **how** you are going to find the answer.

4 **Show** me what to do to get the answer.

5 Now, **write** down your answer.

Isaac had $42. He was then given $156 and found another $345. How much money does Isaac have now?
Answer: $42 + $156 + $345 = $543 Isaac now has $543.

Annabel had 670 sheep. He sold 256. How many sheep are left?
Answer: 670 – 256 = 414 Annabel had 414 sheep left.

WEB LINKS go to:

Video: Math word problems, easier

Video: Math word problems, harder

Video: Newmans explained

Multiplication and Division: Key Skill 10

YEAR 5

Use and record a range of mental and written strategies to multiply by 1-digit and 2-digit operators

Children use **mental strategies** to figure out the maths problem in their head, without writing anything down.

Using a **written strategy** means to show your way of working something out using known relationships, patterns and operations.

Operators are the numbers that you multiply by. For example in 345 x 6, the operator is 6.

There are lots of mental strategies that children can use for division and multiplication. Encourage your child to become familiar with a range of different strategies. Look for your child developing strategies that suit them best, and to communicate how they used that strategy. Examples include doubling, halving and estimation. Written strategies include area and distributive multiplication.

To find 45 x 3, children might:

- estimate (50 x 3 = 150, so the answer will be around 150)
- use the skip count strategy (45 + 45 + 45 = 135)
- use the split strategy (40 x 3 + 5 x 3 = 120 + 15 = 135)
- use doubling (45 doubled is 90) 90 + 45 =135
- use the area model (40 x 3) + (5 x 3) = 120 + 15 = 135
- use the distributive method (3 x 40) + (3 x 5) = 120 + 15 = 135

WEB LINKS go to:

Video: Mental strategies

Video: Chinese multiplication

Video: Lattice multiplication

Video: Area multiplication

Video: Distributive property

Video: Written strategies for multiplication

Games: Multiplication and division games

Multiplication and Division: Key Skill 11

YEAR 5

Use the formal algorithm to multiply a 2-digit or 3-digit number by a 1-digit number

The **formal algorithm** is a step-by-step process to solving multiplication and division problems. Formal algorithm and vertical algorithm mean the same thing.

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 3-digit number can be made from any 3 digits, e.g. 584 or 109.

The formal algorithm uses the same steps in the same order every time to find the answer. The formal algorithm is essential for more complex questions. Start with questions that don't need trading first because they are easier.

Practice this skill over and over with lots of different questions to build confidence. Mulitply with smaller numbers first, and then work up to larger numbers. Here are some examples.

45	124	134
x 3	x 5	x 7
135	620	938

WEB LINKS go to:

Video: Mulitplying with the formal algorithm

Games: Multiplication and division games

Multiplication and Division: Key Skill 12

YEAR 5

Use mental and written strategies to divide numbers with 3 or more digits by a 1-digit operator, including remainders

A **remainder** is the number left over when the problem cannot be divided equally.

Children use **mental strategies** to figure out the maths in their head, without writing anything down.

Using a **written strategy** means to show your way of working something out using known relationships, patterns and operations.

A **fact family** is a group of related facts in addition and subtraction, and multiplication and division. It helps children understand the relationship between operations.

4 x 5 = 20
5 x 4 = 20
20 ÷ 4 = 5
20 ÷ 5 = 4

For division, it is important to remember the fact family. Strong multiplication skills and strategies help with division. There are divisibility tests that children can learn as a quick way to see if a large number can be divided by a 1 digit number without a remainder.

There are lots of different methods to solve division and all are acceptable. Children can choose which one they like best to use.

Let's solve 248 ÷ 4 = ? and try the divisibility test for 4.

The Rule for **4**: If the last 2 digits of a whole number are **divisible** by **4**, then the entire number is **divisible** by **4**. So in 248, 48 is divisible by 4 without any left over.

To divide 248 by 4, children might use the split strategy (200 + 40 + 8) ÷ 4 =

200 ÷ 4 = 50
40 ÷ 4 = 10
8 ÷ 4 = 2
50 + 10 + 2 = 62

Using a fact family, let's split 248 and work with 240 and 8.

A With 240, 4 x 6 = 24, so 4 x 60 = 240 and therefore: 240 ÷ 4 = 60
B With 8, 4 x 2 therefore: 8 ÷ 4 = 2
C Add A and B together so 60 + 2 = 62
248 ÷ 4 = 62

WEB LINKS go to:

Notes: Division strategies
Video: Written methods for division
Video: Long division method explained
Video: Long division rap
Game: Multiplication and division games
Video: Big 7 long division
Video: Divisibility rap – class
Video: Area division
Video: Divisibility tests
Game: Bamzooki – mental multiplication

Multiplication and Division: Key Skill 13

YEAR 5

Solve word problems and record the strategy used

For **word problems**, children need to read a story about a problem (often a real-life problem!) and then figure out what operations are needed to reach the answer.

To record the **strategy used**, children show their working or talk about how they got their answer.

Word problems are important because children must be able to choose and apply a strategy, estimate, solve it and check their answer. Most children will have difficulties in understanding what they need to do. Ask them to read the question carefully and decide what the most important information is and what operation they need to solve the question.

Try the strategy **CUBES** when working with word problems.

C Circle the numbers

U Underline the question

B Box the keywords

E Eliminate information not needed

S Solve by showing your working out

Newman's Analysis is another strategy to help with word problems.

1 **Read** the question to me.

2 Tell me **what** the question is asking you to do.

3 Tell me **how** you are going to find the answer.

4 **Show** me what to do to get the answer.

5 Now, **write** down your answer.

171 people visit The Great Gardens each day. How many would visit each week?

Answer: 171 x 7 = 1 197 1 197 people visit The Great Gardens each week.

There are 240 children travelling on 6 buses. How many children are on each bus?

Answer: 240 ÷ 6 = 40 There are 40 children on each bus.

Natalie needs 245 party poppers for a party. They come in packets of 8. How many packets does Natalie need to buy to have enough?

Answer: $245 \div 8 = 30\frac{5}{8}$ Natalie needs 31 packets of party poppers to have enough for her party. She will have 3 party poppers left over.

WEB LINKS go to:

Video: Math word problems, easier

Video: Math word problems, harder

Video: Newmans explained

Multiplication and Division: Key Skill 14

YEAR 5

Explain remainders in division problems

A **remainder** is the number left over when the problem cannot be divided equally. For example, if we want to divide 12 slices of cake among 5 people, each person would get 2 slices each and there would be 2 pieces left over – these are the remainder.

There are divisibility tests that children can learn as a quick way to see if a number can be divided by a number without a remainder.

We write the remainder as an 'r' so 5 remainder 2 is written as 5 r2.

How many 5-seater cars are needed to take 47 people to the beach?

Using the divisibility test for 5.

The Rule for **5**: If the last digit of a whole number ends in 5 or 0, then the entire number is **divisible** by **5**. So 47 does not end in a 5 or a 0, so it is not divisible by 5 and will have a remainder.

Answer: 47 ÷ 5 = 9 r 2

10 cars are needed.

If I can fit a maximum of 7 cupcakes in a box, how many boxes do I need for 15 cupcakes?

Answer: 15 ÷ 7 = 2 r 1

3 boxes are needed for 15 cupcakes.

WEB LINKS go to:

Video: Long division with remainders, easier

Video: Long division explained

Video: Divisibility tests

Video: Divisibility rap – teacher

Video: Divisibility rap – class

Multiplication and Division: Key Skill 15

YEAR 5

Use rounding to estimate answers and check the calculation

Rounding is to increase or decrease to the nearest 10, 100, 1 000 etc. For 1, 2, 3, 4 go down to 0. For 5, 6, 7, 8, 9 go up to 10. With fractions, rounding is to go to the nearest whole number. Nearest whole number and rounding mean the same thing.

Estimating is rounding numbers to make an educated guess close to the answer.

Children are encouraged to estimate to give them a guide as to what a reasonable answer would be. They also help to avoid simple mistakes. Always round and estimate before attempting to answer a question.

To estimate 12 x 253, round both numbers to the nearest 10 (10 x 250). This gives an estimate of 2 500. Children should be looking for an answer that is close to 2 500. If you're answer is not close to this check your calculations.

294 ÷ 9 = 300 ÷ 10 = 30 as an estimate

Children should be looking for an answer that is close to 30

Rounding Poem

Underline the digit,
Look next door.
If it's 5 or greater,
Add one more.
If it's less than 5,
Leave it for sure.
Everything after is a zero,
not more.

WEB LINKS go to:

Video: Using rounding

Fractions and Decimals: Key Skill 16

YEAR 5

Compare and order fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12 and 100

A **numerator** is the number above the line in a fraction which shows how many parts are being considered.

A **denominator** is the number below the line in a fraction. It shows the number of parts a whole has been divided into.

The line in between the numerator and the denominator is called the **fraction bar**. Division bar and vinculum mean the same thing.

Pictures are hugely helpful in understanding fractions. A common mistake is thinking the larger denominator creates the larger fraction. It is the opposite for fractions. The smaller the denominator, the larger the fraction.

In Year 5, children start to play with fractions where the numerator changes the size of the fraction too. For example, $\frac{7}{8}$ is larger than $\frac{1}{2}$.

Placing fractions on a number line helps children to see fractions as a (smaller) number in their own right. This is important for learning multiply and divide fractions in later years.

Try making fraction strips and number lines to help show that fractions are part of a whole.

Create pictures of different fractions from the same size whole and compare them.

Have a go at placing different fractions on the same number line!

The following exercise shows fractions being ordered from smallest to biggest.

$\frac{8}{12}\ \frac{1}{2}\ \frac{2}{6} \longrightarrow \frac{2}{6}\ \frac{1}{2}\ \frac{8}{12}$

$\frac{1}{4}\ \frac{2}{5}\ \frac{1}{8} \longrightarrow \frac{1}{8}\ \frac{2}{5}\ \frac{1}{4}$

$\frac{3}{4}\ \frac{1}{2}\ \frac{5}{12} \longrightarrow \frac{5}{12}\ \frac{1}{2}\ \frac{3}{4}$

WEB LINKS go to:

Notes: Fractions on a number line

Video: Using a number line to order fractions

Game: Fraction fiddle

Fractions and Decimals: Key Skill 17

YEAR 5

Convert a mixed numeral to an improper fraction and vice versa

A **numerator** is the number above the line in a fraction which shows how many parts are being considered.

A **denominator** is the number below the line in a fraction. It shows the number of parts a whole has been divided into.

The line in between the numerator and the denominator is called the **fraction bar**. Division bar and vinculum mean the same thing.

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

An **improper fraction** is a fraction where the numerator is equal to, or larger than, the denominator.

This is an important skill needed to work in areas of fractions. Knowing your times tables helps children convert mixed numeral and improper fractions easily. Drawing pictures of fractions helps show the mixed numeral or improper fraction for children who are learning this skill. Use circles for odd denominators and rectangles for even denominators.

In the following exercise, the mixed numerals have been converted into improper fractions.

$1\frac{1}{3} = \frac{4}{3}$

$2\frac{1}{3} = \frac{7}{3}$

$3\frac{1}{2} = \frac{7}{2}$

M 1 x 3 = 3 (whole number x denominator)
A 1 + 3 = 4 (numerator + answer to M)
D 3 (denominator stays the same)

Answer: $\frac{4}{3}$

In the following exercise, the improper fractions have been converted into mixed numerals.

$\frac{7}{4} = 1\frac{3}{4}$

$\frac{5}{2} = 2\frac{1}{2}$

$\frac{6}{5} = 1\frac{1}{5}$

D $\frac{7}{4}$ = 1 with 3 remainder (numerator ÷ denominator)
W 1 = whole and 3 = numerator (write 1 as the whole, 3 as the numerator)
D 4 (denominator stays the same)

Answer: $\frac{4}{3}$

To convert a mixed numeral to an improper fraction try using **MAD**

M **Multiply** the whole number by the denominator
A **Add** the numerator and your answer for M – this is the new numerator!
D **Denominator** stays the same

To convert an improper fraction to a mixed numeral try **DWD**

D **Divide** the numerator by the denominator
W **Write** your answer as the whole number and the remainder as the numerator
D **Denominator** stays the same.

WEB LINKS go to:

Video: Converting mixed numerals
Video: Converting mixed numerals to improper fractions
Video: Converting improper fractions to mixed numerals

Fractions and Decimals: Key Skill 18

YEAR 5

Add and subtract fractions with the same denominator

A **numerator** is the number above the fraction bar which shows how many parts you have.

A **denominator** is the number below the fraction bar. It shows the number of parts a whole has been divided into.

The line in between the numerator and the denominator is called the **fraction bar**. Division bar and vinculum mean the same thing.

When we add or subtract fractions with the same denominator (bottom number), we only add or subtract the numerator (top number).

Pictures are hugely helpful in working out how to add and subtract fractions. Use circles for odd denominators and rectangles for even denominators.

Start adding and subtracting fractions with answers smaller than a whole number, then try questions where a conversion is needed! (Key Skill 17)

Level 1: Simple adding and subtracting of fractions. $\frac{1}{3}$ of the kids in Bailey's class played basketball at recess. $\frac{1}{3}$ of the kids played handball. $\frac{1}{3}$ of the kids sat under the tree.
What fraction of kids played sport?

Working out: $\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$

$\frac{2}{3}$ of the kids in Bailey's class played sport.

$\frac{5}{6} - \frac{2}{6} = \frac{3}{6}$

Level 2: Where converting improper fractions and mixed numerals is needed. (Key Skill 17)

$$\frac{3}{4} + \frac{3}{4} = \frac{6}{4}$$
$$= 1\frac{2}{4}$$

$$1\frac{1}{4} - \frac{2}{4} = \frac{5}{4} - \frac{2}{4}$$
$$= \frac{3}{4}$$

WEB LINKS go to:

Video: Adding and subtracting fractions

Video: Adding and subtracting common denominator fractions

Game: Adding and subtracting fractions

Game: Shoot the hoop

Fractions and Decimals: Key Skill 19

YEAR 5

State the place value of digits up to 3 decimal places

Decimal places are the numbers after (to the right of) the decimal point. Understanding **decimal place value** is essential for children to work with decimals. Decimals are part of a whole – that is, 0.1 means $\frac{1}{10}$ of a whole number, and 0.01 means $\frac{1}{100}$ of a whole number.

When we read decimals out loud, we read each digit on the right of the decimal point as single digits. So 1.62 is read as 'one point six two' not 'one point sixty two' and and 354.509 is read as 'three hundred and fifty four point five zero nine'.

When children can write decimals on number lines, it helps them to use mental strategies (such as the jump strategy) to solve problems involving decimals. Number lines also reinforce their knowledge of decimal place value.

What is the place value of the **bold** digits in these numbers?:

45.06**8** = 8 thousandths or 0.008

4.**9**2 = 9 tenths or 0.9

0.10**6** = 6 thousandths or 0.006

999.5**6**7 = 6 hundredths or 0.06

Try and plot a group of decimals on a number line. Have competitions to see who can be the fastest and most accurate!

WEB LINKS go to:

Notes: Place value chart

Notes: Decimal place value

Game: Decimal place value

Fractions and Decimals: Key Skill 20

YEAR 5

Compare, order and write decimals with up to 3 decimal places

Decimals are a fraction that is made by dividing a whole into tenths (10 equal parts) or hundredths (100 equal parts). Uses a decimal point when written.

Decimal and **decimal fraction** mean the same thing.

Comparing and ordering decimals helps children to improve their number sense. A common mistake here is that children think a shorter number must be smaller. This is not always the case with decimals e.g. 4.3 is bigger than 4.123.

5.6 can be read as 5.60 and even 5.600! This is because the 0s are acting as place holders and don't change the size of the number.

Play a card game. Give 2 players half the deck each, and place the 2 piles face down. Turn over 1 card and place it in the middle – that stands for the whole number. Turn over 3 more cards and place them under the whole number – they stand for your 3 decimal places. The player with the biggest number wins the cards. Keep playing again until all the cards are with 1 player.

Write these decimals from smallest to largest: 5.369, 5.055, 5.923 and 5.926

Answer: 5.055, 5.369, 5.923, 5.926

Write these decimals from largest to smallest: 7.001, 7.035, 7.648 and 7.5

Answer: 7.648, 7.5 (7.500), 7.035, 7.001

WEB LINKS go to:

Notes: Ordering decimals

Video: Comparing decimal value

Video: Comparing 3-digit decimals

Video: Ordering decimals

Patterns and Algebra: Key Skill 21

YEAR 5

Identify, describe, continue and create number patterns with whole numbers, fractions or decimals

Number patterns are patterns created by numbers.

Patterns are formed by **rules**. A **rule** is used to work out any number further along in the pattern. Rules also help children to continue patterns.

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.

Here are some examples of number patterns.

5 $5\frac{1}{2}$ 6 $6\frac{1}{2}$ 7 $7\frac{1}{2}$ (the number increases by a half)

4 4.5 5 5.5 6 6.5 (the number increases by 0.5)

5.6 4.6 3.6 2.6 1.6 0.6 (the number decreases by 1)

0.45 0.50 0.55 0.60 0.65 0.70 (the number increases by 0.05)

Use rhythm challenges to help learn times tables and explore patterns (check out the cup song, or some drumming games).

WEB LINKS go to:

Notes: Patterns

Video: Patterns

Video: Cup song

Patterns and Algebra: Key Skill 22

YEAR 5

Find missing numbers in number sentences (equations) involving addition, subtraction, multiplication or division on both sides of the equals sign

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

A **fact family** is a group of related facts in addition and subtraction, and multiplication and division. It helps children understand the relationship between operations.

4 + ▲ = 10	20 x 5 = ▲
▲ + 4 = 10	5 x 20 = ▲
10 – 4 = ▲	▲ ÷ 5 = 20
10 – ▲ = 4	▲ ÷ 20 = 5

These skills will be used by the children for the rest of their maths careers! To find missing numbers, we focus on the idea of ***equivalence*** and the role of the equals (=) sign. Remembering that the equals sign means 'the same on both sides' makes it easier to find missing numbers.

Children use their knowledge of numbers to find what is missing. Strategies include:

- guess what the missing number is, and test it to see if the equation works with that number
- use the fact family to help solve the question.

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

Here are some examples of equations with missing numbers.

4 + ▲ = 16 18 – ▲ = 5 25 = ▲ + 21 75 = 13 ÷ ▲

Jack had a piece of rope and cut off 70 metres. He was left with 38 metres. How long was the rope?

▲ – 70m = 38m (remembering the fact family)
70m + 38m = ▲
70m + 38m = 108m
▲ = 108m

Jack's rope was 108m long before it was cut.

Matilda saved $83 towards a trip to the snow, and her parents gave her $100. How much more money does she need if the trip costs $300?

$83 + $100 + ▲ = $300 (take $100 from both sides)
$83 + ▲ = $200 (take $83 from both sides)
▲ = $117

Matilda needs another $117 to reach her $300 goal for the cost of her trip.

WEB LINKS go to:

Video: Missing numbers and fact family

Video: Finding missing numbers