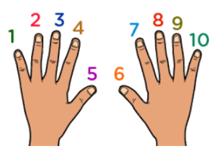
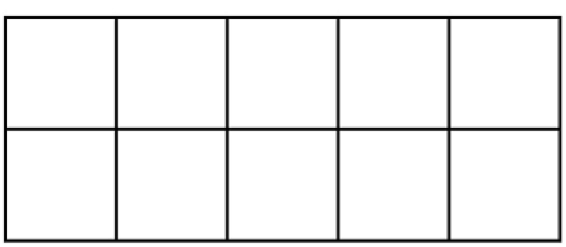
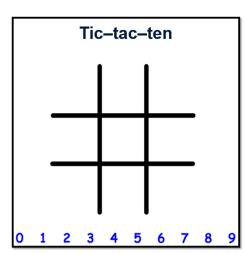
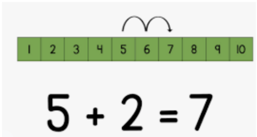
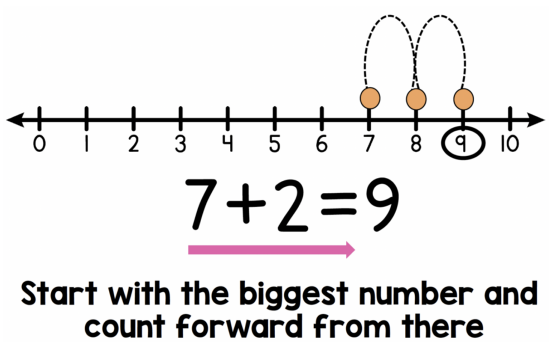
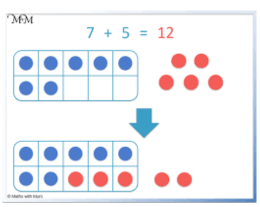
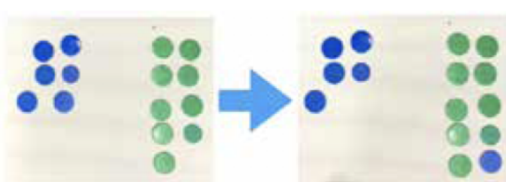
Maths Parent Information Evening 2022

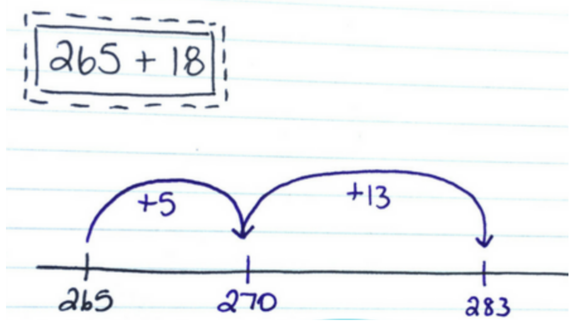
Support Materials for Parents

Woonona Public School is committed to improving our numeracy outcomes for all students K-6.

Strategy	Explanation	Activities to practise at home
Friends of 10 	When children understand number combinations of ten, they can add and subtract more efficiently. **Why use ten-frames?** ● Ten-frames have a particular structure that help us understand important mathematical relationships to 5 and 10 such as: ○ 10 is one more than 9 ○ 6 is 4 less than 10 ○ 10 is 7 and 3 ● A ten-frame can help us to see different properties such as: ○ 10 is double five ○ 5 is 5 less than 10 ○ 5 and 5 makes ten 	**How many more make ten?** *You will need a blank ten frame (resources), a dice and 10 counters* Roll a dice and put the counters on the ten frame. Children work out how many more make ten and write a number sentence to match. **Friends of 10 'Snap'** *You will need playing cards for this.* Deal the cards. Can you 'snap' a friend of 10? **Friends of 10 'Go Fish'** *You will need playing cards for this* Deal the cards. Can you 'pick' a friend of 10? **Tic-Tac-Ten** *You will need a gameboard and a partner* Use the tic-tac-ten game board (in resources) or draw your own. With a partner, take turns to put a number on the board. As a player does this, they cross out the number used from the bottom of the board. The first player to get three numbers in a row which make ten, scores a point. 

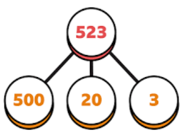
Counting On 	Counting on is an important beginning addition strategy. Students are encouraged to start from the largest number and 'count on' from there. For example, **5+3.** We start with the 5 and count up 3. So, **6, 7, 8.** When students are adding up larger numbers, this strategy becomes less efficient and we then encourage other strategies in their 'tool box' . 	**Domino Count-On.** *You will need dominoes for this.* Using dominoes, take turns to flip over, start from the largest number and add the other number by 'counting on'. If you get the answer right, you keep the domino and the first to 10 dominoes wins. **Dice count.** *You will need dice and paper.* With a partner, take turns to roll 2 dice. Add them together by starting from the largest number and counting on. Record your number sentence. The player to roll and add 6+6 first, wins the game. **First to 24.** *You will need counters, pegs or pasta pieces for this and a die.* Use 24 as a target number. Take it in turns to roll the die and place the counters/pegs in a central pile as they are counted. You need to count up from the total each time. Players win when they reach the target number.
Bridging through 10 	Using the 'make ten' (also sometimes called 'bridging to ten' or 'using landmark numbers') helps students solve problems flexibly. For example, when they see 6 and 9, they know they need 1 more to make 10 and there will be 5 more from the original 6 to add on.  For 45 + 8, Students take 45, add 5 more on to bridge to 50 (50 is a landmark number) and then, they have 3 more left. So 45 + 8 = 45 + 5 + 3 = 53. And 154-7 = 154 - 4 - 3 = 147 Bridging to 'the decade' or to 'landmark numbers' is an efficient strategy for addition and subtraction,	**Capture 10.** *Scan the QR code to learn how to play.* *You will need playing cards (Ace-10), pencil, game board* Turn over 2 playing cards. Can you 'capture a 10'? How? Record your cards in the appropriate column before you put them at the bottom of the pile. e.g. I turn over an 8 and 6. I can use 2 from the 6 to add onto the 8 to 'capture 10' and then I'll have 4 more. So really, it's 10 + 4. I can record 8+6 in the 10+4 column on my game board.

even when working with larger numbers.



10 +1 ten +1	10 +2 ten +2	10 +3 ten +3	10 +4 ten +4	10 +5 ten +5	10 +6 ten +6	10 +7 ten +7	10 +8 ten +8	10 +9 ten +9

Partitioning



Partitioning is a way of splitting numbers into smaller parts to make them easier to work with. Partitioning links closely to place value. A child will be taught to recognise that the number 54 represents 5 tens and 4 ones, which shows how the number can be partitioned into 50 and 4. By moving tens and ones between the two parts, the number can be partitioned in many other ways like 54 = 30 + 24 and 54 = 34 + 20.

Partitioning also supports an understanding of subtraction:
54 - 30 = 54 - 10 - 10 - 10 = 24

Students will use partitioning in many other parts of maths too, such as when they use the jump and split strategy (see below) and when multiplying larger numbers:
34 x 6 = (30 x 6) + (4 x 6)

Useful Video:

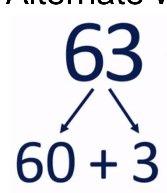
Split my number.

You will need a partner, some dice and some paper.

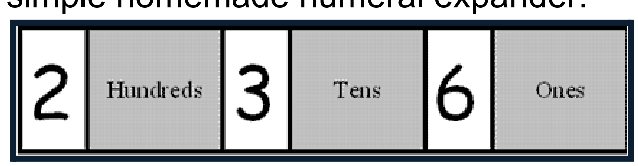
If your child is working with 2 digit-numbers, roll 2 dice. If they are working with 3-digit numbers, roll 3 dice etc. Roll the dice, make a number and partition in as many ways as possible, according to its place value.

e.g.
234 = 200 + 30 + 4 (this is called the standard form)
234 = 100 + 100 + 30 + 4
234 = 200 + 15 + 15 + 4
234 = 150 + 50 + 30 = 4 (this is called the non-standard form)

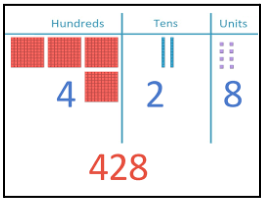
Alternate ways of showing partitioning:



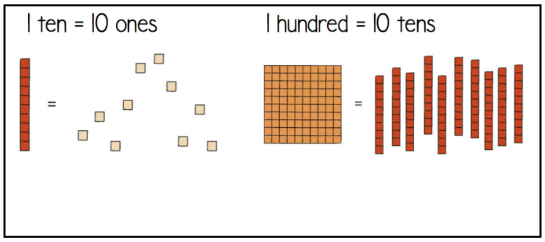
You may also want to model with a simple homemade numeral expander:



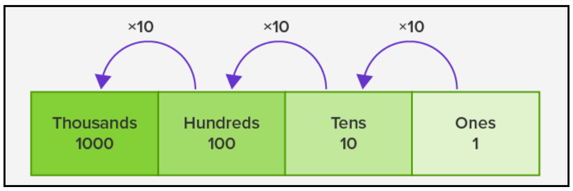
Place Value



Our base ten place value system underpins all we do in maths. To support a deep understanding, students first need to understand '10 of these is 1 of those'.



The structure of the base ten number system is essentially multiplicative, as it involves counts of different sized groups that are powers of 10.

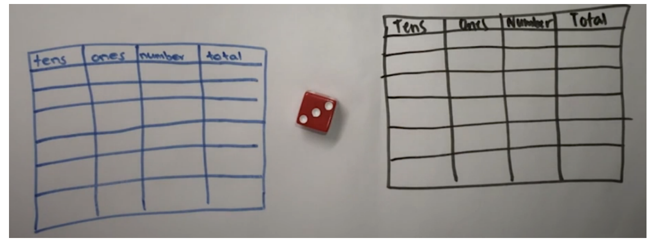


One of the most important skills we can support students to develop is the capacity to confidently rename numbers in a range of ways.
e.g. 123 as 1 hundred, 2 tens and 3 ones.
We could also rename it as 12 tens and 3 ones;
11 tens and 13 ones;
1 hundred, 1 ten and 13 ones, and so on.
Useful Video:

101 and you're out.

You will need a partner, paper, dice, pencils.

Make a game board by drawing two 7 x 4 tables like this:



Each time you roll the dice, you have to decide whether the number is representing 'ones' or 'tens'. For example, if I roll a 3, I could use it as 3 ones (3) or 3 tens (which we rename as 30). If you choose to use your 3 as 3 ones, record the number in the ones column. If you choose to use your 3 as 3 tens (30), record your number in the left column. Continue to play for six rolls.

Once you write a number, you can't change it. The winner is the player with the sum that is closest to 100 without going over!

To see how to play this game, visit:

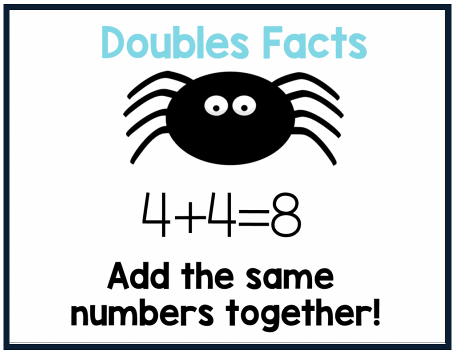
Doubles and Near Doubles

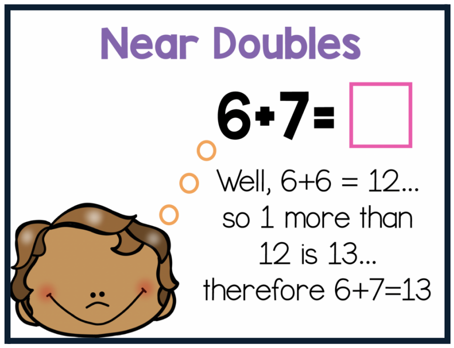
Children need to be able to engage with the use-doubles strategy (or near-doubles strategy) as another efficient way for solving addition and subtraction problems.

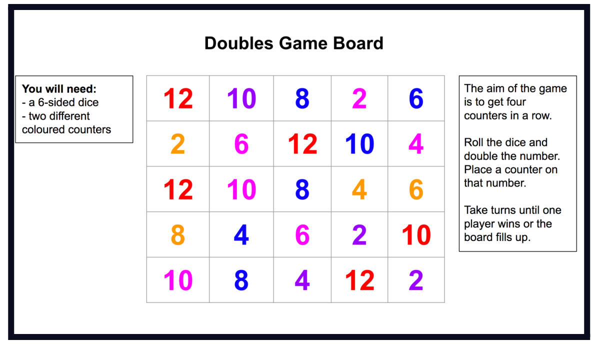
4 in a Row Doubles.

You will need a partner, game board, dice, 5c and 10c coins or 2 different coloured counters

The aim of the game is to get four counters in a row. Roll the dice and double the number. Place a counter on that number. Take turns until one player wins or the board fills up.



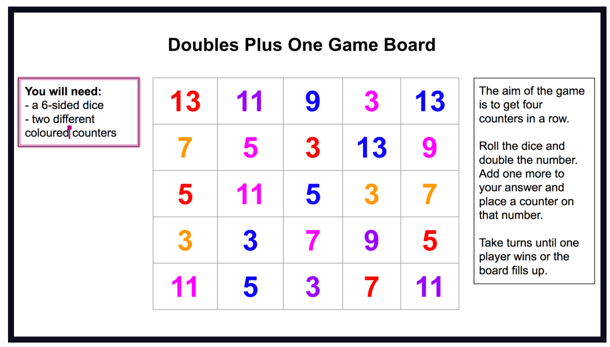




Doubles Plus 1 Dice Game.

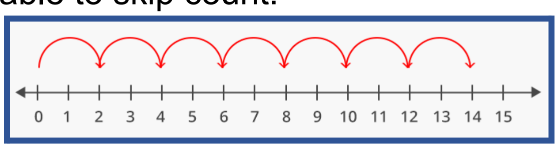
You will need a partner, game board, dice, 5c and 10c coins or counters / pencils

The aim of the game is to get four counters in a row. Roll the dice and double the number. Add one more to your answer and place a counter on that number. Take turns until one player wins or the board fills up.



Multiplication Tables

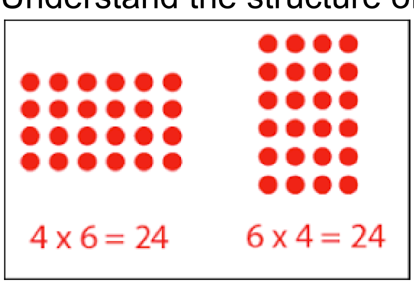
Learning tables by rote is a very important skill, but before any of this can occur, children need to have a deep understanding of the structure of equal groups. They need to be able to skip count:



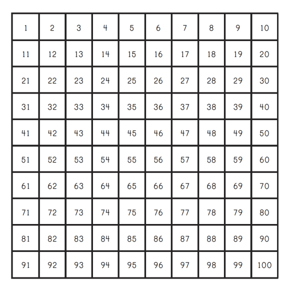
Use repeated addition:

$$2 + 2 + 2 + 2 + 2 = 10$$

Understand the structure of arrays:



Highlight each fact on a hundreds chart (in different colours) to see the patterns:



Multiplication Number Battle:

You will need a partner, playing cards: Face cards are worth 10 and Ace is worth 1 (or 11)

Players split a deck of cards and simultaneously flip over their 2 top cards. The highest product wins all 4 cards. Players keep going until one player wins all the cards!

<table>
<tr>
<td></td>
<td>
And ‘see’ multiplication and division as inverse operations:

8 x 2 = 16
2 x 8 = 16
16 ÷ 8 = 2
16 ÷ 2 = 8

They also need to ‘see’ the many patterns in our multiplication tables. Using a hundreds chart to highlight each fact is a good way to see patterns.

The 2’s facts - Double
The 4’s facts - Double Double
The 8’s facts - Double Double Double

The 3’s facts - Double and one more
The 6’s facts - Double the 3’s

The 5’s facts - Relate to 10s
The 9’s facts - 10’s facts, less one group
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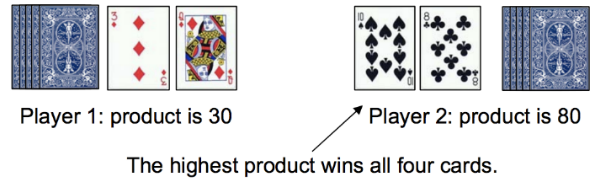

Hit the Button Online Game:

Play with the multiplication fact you are trying to learn.

Fruit Splat Online Game:

Play with the multiplication fact you are trying to learn.

Make Arrays:
Roll 2 dice and practice making an array with that many rows and columns (you could use pasta, lego, counters, coins or dots for your arrays).
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The Jump Strategy

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<td>
The Jump strategy - This is a mental calculation method, jumping from one number (the largest number) either forwards (addition) or backwards (subtraction) to the answer.
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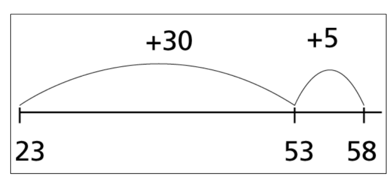
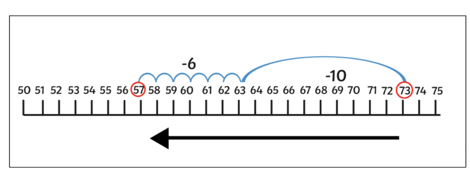
Try some like this at home:
Addition:

23 + 35 = 58



Subtraction:

73 - 16 = 57



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<tr>
<td>The Split Strategy</td>
<td>The Split Strategy - This is a mental computation method where numbers are 'split' according to their place value to make it easier to add or subtract them.</td>
<td>Try some like this at home:
Addition:

23 + 35 = (20 + 30) + (3 + 5)
= 50 + 8
= 58

Subtraction:

97 - 63 = (90 - 60) + (7 - 3)
= 30 + 4
= 34</td>
</tr>
<tr>
<td>The Formal Algorithm for Addition</td>
<td>Before learning the formal algorithm, children must be familiar with place value and the mathematics behind the process. Many addition algorithms require students to trade (or regroup). Partitioning, the jump strategy and the split strategy should be mastered before students learn the processes behind the formal algorithm. Conceptual knowledge before procedural knowledge is always best in the teaching of mathematics.</td>
<td>Addition with no trading

H T O
6 2 3
+ 2 1 5
8 3 8

Ensure your numbers are lined up in their correct place value. Start with the ones column, 3 and 5 more is 8, 2 and 1 more is 3, 6 and 2 more is 8. 838
Addition with trading

1 1
Hundreds | Tens | Ones
2 | 6 | 9
+ 1 | 4 | 8
4 | 1 | 7

Ensure your numbers are lined up in their correct place value. Start with the ones column, 9 and 8 more is 17. The ten from the 17 goes in the tens column (put a one above the tens column) and the 7 ones go under the ones column. When we add the tens column, we add 6+4+1 which is 11. The first one here is actually worth 100 so we put the 1 in the hundreds column. The other 1 is worth 10, so we place a 1 directly below the tens column. Now for the hundreds column, we add the 2+1+1 which equals 4. Our answer is 417.</td>
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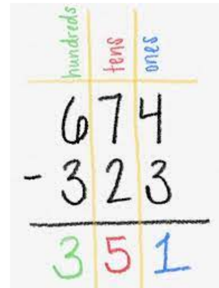
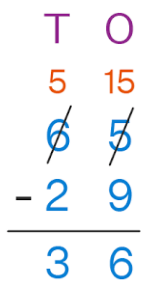
<table>
<tr>
<td>The Formal Algorithm for Subtraction</td>
<td>Again, partitioning, the jump strategy and the split strategy should be mastered before students learn the processes behind the formal subtraction algorithm. Students will need to be shown a range of questions that include subtraction without trading, questions with trading in one or more places, and questions with one or more zeros in the first number.</td>
<td>Please keep in mind that the following are processes and we talk about the maths behind these processes at school.

Subtraction with no trading



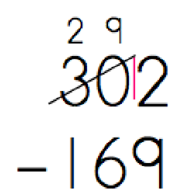
Ensure your numbers are lined up in their correct place value. Start with the ones column, 4 subtract 3 is 1, 7 subtract 2 is 5, 6 subtract 3 is 3.

Subtraction with trading



Start with the ones column. We can't take 9 from 5, so we take a 10 from the tens column. The 5 becomes 15 (10 more) and the 6 in the tens column is now one ten less. It becomes a 5. 15 subtract 9 is 6 and 5 subtract 2 is 3.

Subtraction with 0 in the top number



When we can’t take from the next column (because there is a zero there), we look at the next number beside the zero. ‘What number comes just before 30?’ We cross out 30, make it a 29, and add the ‘1’ in front of the number in the one's place. So here the ‘2’ becomes ‘12,’ as we have added a ten.</td>
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<tr>
<td>The Formal Algorithm for Multiplication</td>
<td>After mastering a deep understanding of equal groups, skip counting, repeated addition and the structure of arrays (see above), students can then learn the formal algorithm for multiplication (see opposite). Partitioning is an important strategy for larger numbers:</td>
<td>Once the deep understanding is mastered, the formal algorithm can be introduced and practiced:

1. Multiply each digit of the 3-digit number by the single digit, starting with the ones column.
2. Only a single digit can be placed in each column of the answer</td>
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</table>

52 x 38

Multiply each partition together and add the products.

50 x 30 = 1500
2 x 30 = 60
50 x 8 = 400
2 x 8 = 16

1976

The area model (below) is another alternative that we teach in Stage 2:

x	50	2
30		
8		

Draw a grid.
Write the partitioned numbers at the top and left of the grid.

x	50	2
30	1500	60
8	400	16

Multiply the partitioned numbers.

1500
+ 60
+ 400
+ 16

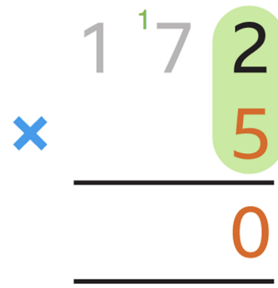
1976

Add the products.

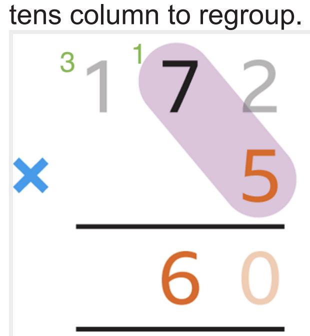
space.

3. Place digits in the next column if necessary, according to their place value.

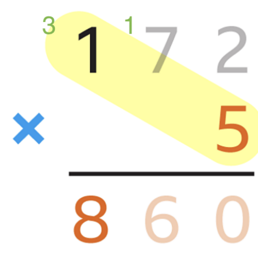
SO:



5 x 2 is 10. Write 0 aligned to the right in the answer space and place the 1 from the 10 in the tens column to regroup.



Now work out 5 x 7 tens. 5 x 7 is 35, add the extra 1 ten to give 36. Write 6 in the tens column in the answer space and place the 3 in the hundreds column.



Now work out 5 x 1 hundred. 5 x 1 is 5 (hundred), add the 3 to make 8. Write 8 in the hundreds column in the answer space.

To learn how to multiply by multi-digits using the long multiplication method, click here:

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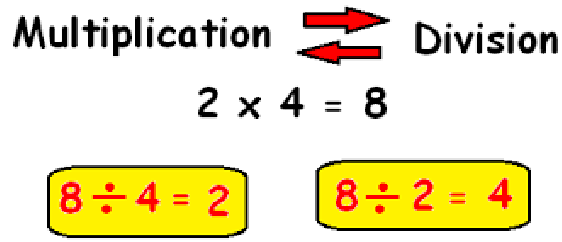
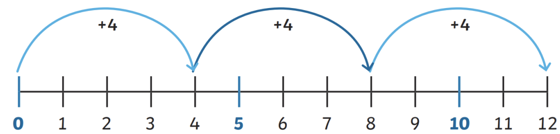
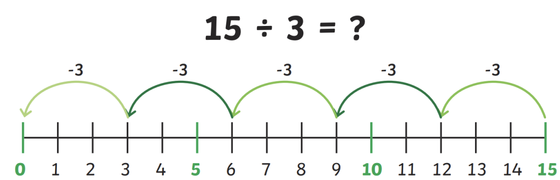
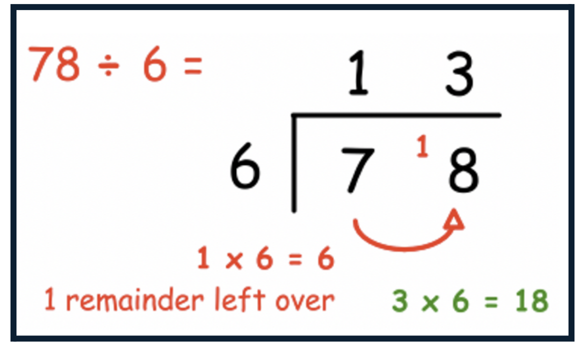
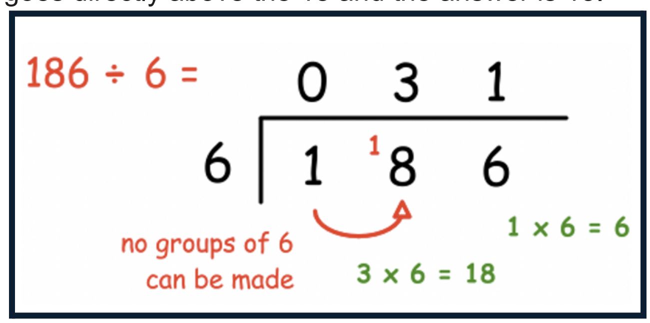
<td>The Formal Algorithm for Division</td>
<td>We can use turn around facts using our knowledge of multiplication:


We can use repeated addition to see how many groups make up the number:
12 ÷ 4 = 3


We can also use repeated subtraction to see how many times a smaller number goes into a larger one:

</td>
<td>Once the deep understanding is mastered, the formal algorithm can be introduced and practiced:


How many times does 6 go into 7? There is one group of 6 in 7 so we write this directly above the 7, but there is one left over so we put this 1 directly down below the next number. Then we ask, how many times does 6 go into 18? 3 times. So the 3 goes directly above the 18 and the answer is 13.


How many times does 6 go into 1? Zero times because no groups of 6 can be made so the 1 is now placed directly in front of the next number. How many 6's in 18? 3 groups so we write 3 above the 18. How many groups of 6 in 6? 1. The answer is 31.</td>
</tr>
<tr>
<td>Fractions and decimals</td>
<td>Fractions are equal parts of a whole. Fractions are all around us and children learn very early on, that much of our life requires sharing equal parts! The number of equal parts names the parts (denominator), and the number of parts required tells how many (numerator). Equivalent fractions require an understanding that whatever we do to the numerator, we do to the denominator (and vice versa).</td>
<td>Many real-life connections can be made. Parents can assist with knowledge of fractions and decimals while cutting sandwiches, folding paper, talking about quantities of the whole, dealing out portions of food, when shopping for discounts, when cooking, when cutting cake or pizza, when party planning and when reading a half or quarter past the hour. The opportunities are endless!

Online Fraction Games</td>
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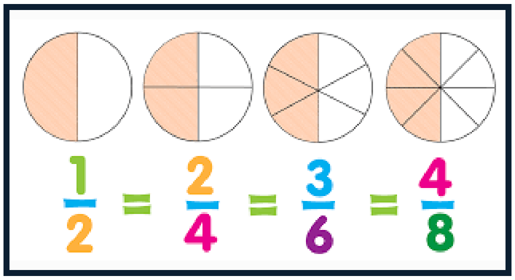
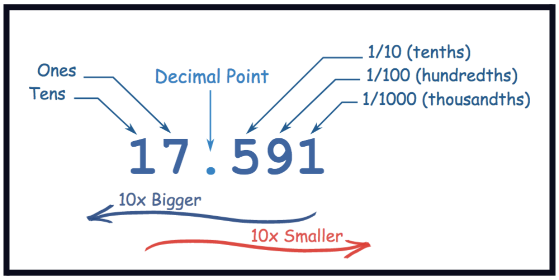
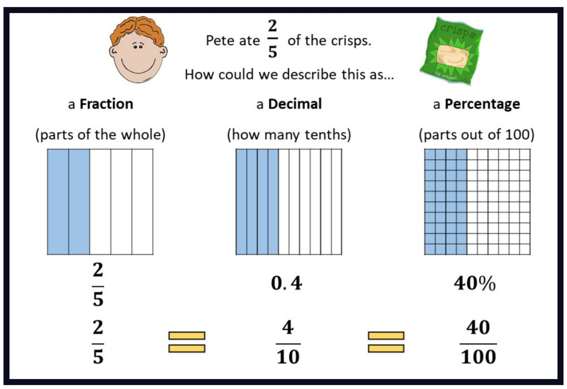
</table>

	 Decimal fractions are simply fractions that have a denominator (number of equal parts) of 10, 100 or 1000 (a power of 10).  Knowledge of place value is once again a crucial part of understanding decimals.  	**The Fraction Game**

Reading the Time

With the predominant form of time display being digital time, it makes sense to teach students to read 'minutes after the hour' on an analogue clock. Students learn that the long hand is the minute hand and it says to count by fives. When we count the minutes past o'clock, we say zero at 12 then count by fives as we point to each number. Practise pointing and counting by fives from zero to 30.

Provide examples of the long hand pointing to each number 12, 1, 2, 3, 4, 5 and 6 in random order and have students count by fives to give the number of minutes past the hour.

Tell students if it is thirty minutes after the hour we can also say half past. Combine the short hand and long hand by asking the students to identify the hour and the number of minutes after or past the hour. Include examples of o'clock and examples of the minute hand pointing to a number.

Learn to Tell the Time Interactive Site:

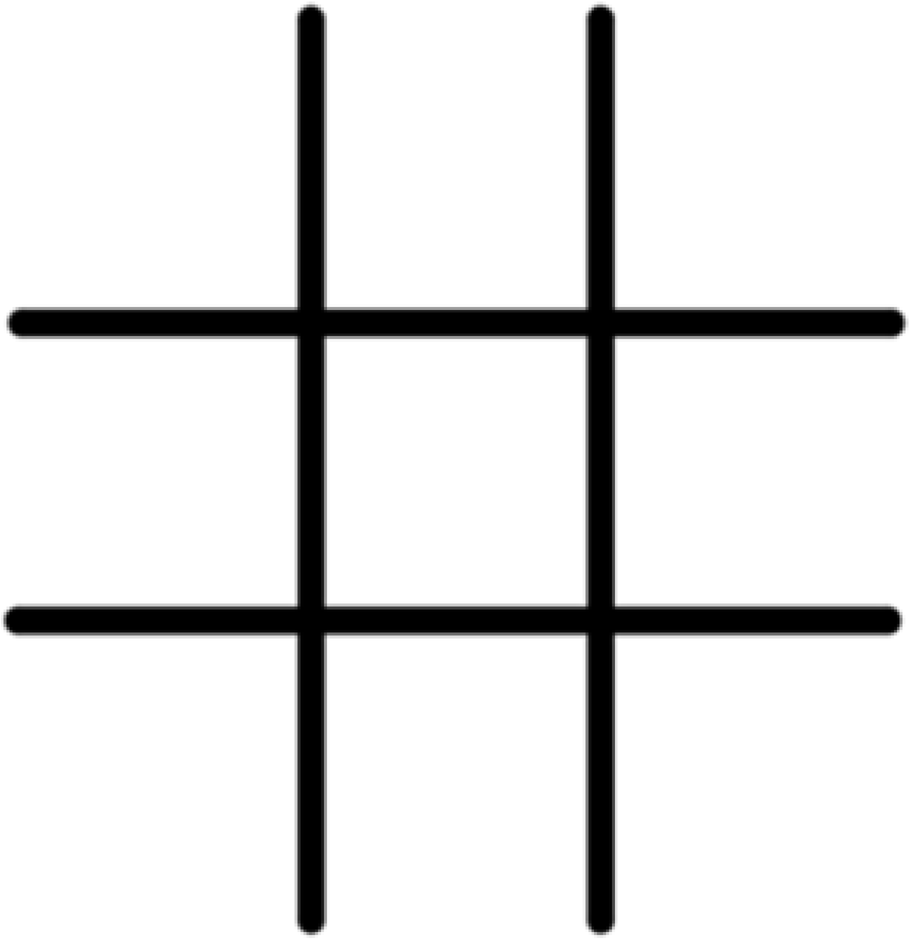
Interactive Clock:

For further information, visit:

The Everyday Maths Hub

Maths A-Z

Tic–tac–ten



0 1 2 3 4 5 6 7 8 9

Doubles Game Board

You will need:
- a 6-sided dice
- two different coloured counters

12	10	8	2	6
2	6	12	10	4
12	10	8	4	6
8	4	6	2	10
10	8	4	12	2

The aim of the game is to get four counters in a row.

Roll the dice and double the number. Place a counter on that number.

Take turns until one player wins or the board fills up.

Doubles Plus One Game Board

You will need:
- a 6-sided dice
- two different coloured counters

13	11	9	3	13
7	5	3	13	9
5	11	5	3	7
3	3	7	9	5
11	5	3	7	11

The aim of the game is to get four counters in a row.

Roll the dice and double the number. Add one more to your answer and place a counter on that number.

Take turns until one player wins or the board fills up.

Capture ten

10 +1 ten +1	10 +2 ten +2	10 +3 ten +3	10 +4 ten +4	10 +5 ten +5	10 +6 ten +6	10 +7 ten +7	10 +8 ten +8	10 +9 ten +9

100 Square

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100