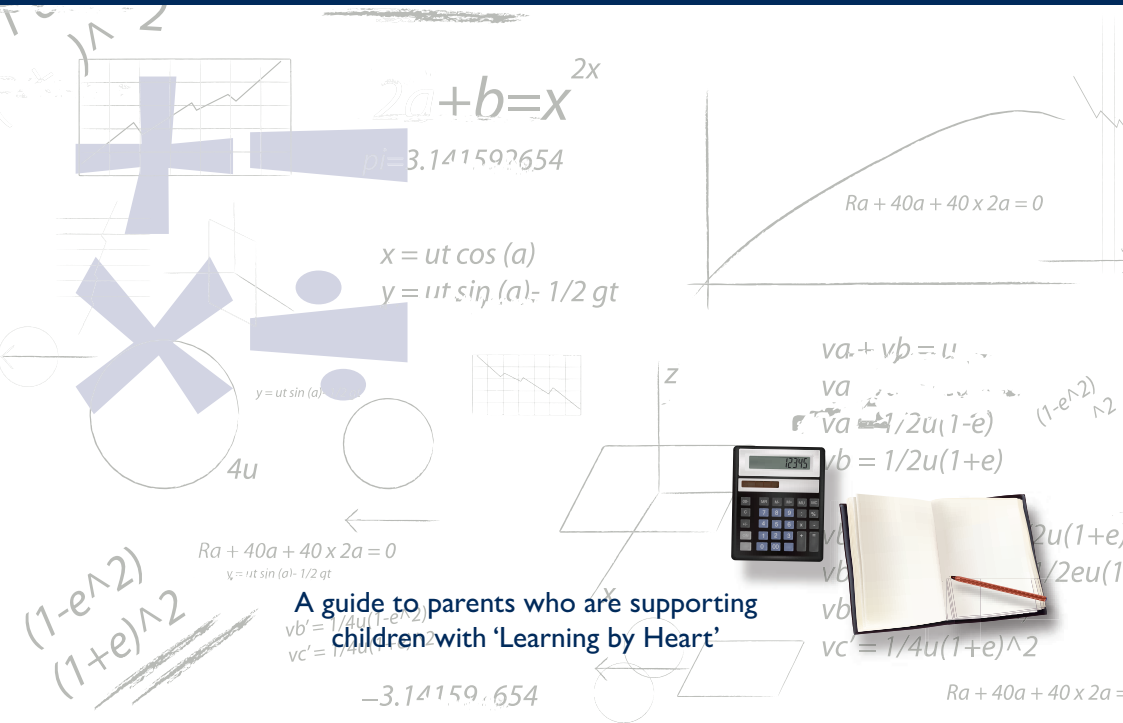
REIGATE GRAMMAR SCHOOL
VIETNAM

INSTANT RECALL AND DERIVING FACTS QUICKLY



A guide to parents who are supporting children with 'Learning by Heart'

GENERAL HINTS FOR PARENTS

This booklet has been produced to help parents develop instant recall with their children. It has been designed to show progression through the different year groups. Some children will move through instant recall quickly, others will take more time. Please help your child by working through at a pace which is comfortable for both of you.

Encourage children to talk about their calculation strategies. Ask questions such as:

'How did you work that out?'
'Can you think of any other ways?'
'What if you started with…….?'

Don't worry if some methods seem longwinded or unfamiliar to you. Building confidence in mathematics is crucial so be pleased with their efforts and always encourage with praise. Make sure these practice sessions are enjoyable! If your child is really not in the mood it is the wrong time to be practising.

With younger children always have apparatus….toys / small objects / coins etc available so that they can work at a very practical level and check their mental calculations with real materials. Older children may choose to support their thinking with rough jottings. Ultimately we are encouraging children to ask themselves 'Can I do this in my head?' but they should always work at a level in which they feel secure. To rush and discourage support materials would slow down the development of their thinking in the longer term.

The best possible way to develop a real understanding of meaningful calculations with money is to practise with real money and set up mini shopping situations. Involve older children in budgeting projects such as costing the purchase and weekly care cost of a new pet / the petrol costs of a regular shuttle service to the swimming pool / the cost of a season ticket compared to a weekly admission charge etc.

A sensible place to develop an early understanding of capacity is in the bath! Provide a range of containers and allow children to experiment. They will soon learn that narrow tall bottles / containers don't necessarily hold as much water as they thought! With older children look together at labels on food and drink products. You will find some interesting facts! Some 'liquids' are measured in grams and millilitres and products such as bark chippings and other garden products are measured in litres!

Comparing different containers and converting litres to millilitres / kilograms to grams and talking about fractions of measurements is an excellent way to provide practical opportunities for your child.

KINDERGARTEN - 1

Know by heart quick recall of a collection of objects and patterns up to ten

Subitising is recognising a collection (of objects, pictures, dots on dominoes etc) without counting, simply by looking. Since children begin to learn these patterns by repetitive counting they are closely connected to their understanding of the particular number concept. Young children should begin by learning the patterns of dots up to 10.

Quantities up to 10 can be known and named without the routine of counting. This can help children in counting on (from a known patterned set) or learning combinations of numbers (seeing a pattern of two known smaller patterns).

Subitising is a skill that develops before counting. Children learn to 'see how many at a glance' through games and activities. Counting evolves through subitising by children seeing that two looks different from and less than three and connecting this with the counting sequence.

Hints for Parents:

Students should also associate the dot patterns to numbers, numerals, finger patterns, bead strings, etc.

Use dice and dominos to assist the instant recall of these numbers.

Key Vocabulary

Numbers up to ten.
one
two
three
four
five
six
seven
eight
nine
ten

KINDERGARTEN - 2

✥ Know by heart all pairs of numbers with a total of 10

0 + 10 = 10
1 + 9 = 10
2 + 8 = 10
3 + 7 = 10
4 + 6 = 10
5 + 5 = 10
6 + 4 = 10
7 + 3 = 10
8 + 2 = 10
9 + 1 = 10
10 + 0 = 10

Hints for parents

Use fingers/ objects to consider the additions in a practical way.

Look at the patterns with both objects and numbers eg as one number increases the other one decreases

Practise with the numbers in order and chosen randomly

✥ Know by heart addition facts for all pairs of numbers with a total up to at least 5, and the corresponding subtraction facts

If I know	1 + 0 = 1	If I know	2 + 1 = 3
I also know	0 + 1 = 1	I also know	1 + 2 = 3
	1 – 0 = 1		3 – 1 = 2
	1 – 1 = 0		3 – 2 = 1
If I know	2 + 0 = 2	If I know	3 + 0 = 3
I also know	0 + 2 = 2	I also know	0 + 3 = 3
	2 – 0 = 2		3 – 0 = 3
	2 – 2 = 0		3 – 3 = 0

Important Facts

When you add or subtract 0, the number does not change.
When adding 1, you get the next number.

Continue in the same way with the total of 4 and then 5. When children are confident with these pairs to 5 extend to include addition and corresponding subtraction facts for all pairs of numbers up to at least 10.
Move from here to counting 10's from any number, concentrating on repeated addition.

KINDERGARTEN - 2

Hints to parents

The 'If I know, what else do I know' rule is a really important one for children to learn in Y1. It will be with them forever more and will support calculation skills when they begin to work with larger numbers.

Key vocabulary
Minus
Subtract
Take away
Fewer than
less than
difference between

❖ Know by heart addition doubles of all numbers to at least 5

1 + 1 = 2	double 1 is / makes / equals 2
2 + 2 = 4	double 2 is / makes / equals 4
3 + 3 = 6	double 3 is……..6
4 + 4 = 8	double 4 is…….....8
5 + 5 = 10	double 5 is……10

Key vocabulary
Makes
Equals
Becomes
Is
Gives

Hints to parents

Doubling is a really important strategy!

When children are confident with early doubles encourage them to practise the corresponding halves. When they are confident, move on to doubles of numbers to at least 10.

Key vocabulary

Double	two lots of	two times
Twice	times two	pair
Half	halved	divided by 2

Shared between two

GRADE 1

❖ Know by heart all addition and subtraction facts for each number to at least 10

Eg the number 7:

0 + 7 = 7
1 + 6 = 7
2 + 5 = 7
3 + 4 = 7
4 + 3 = 7
5 + 2 = 7
6 + 1 = 7
7 + 0 = 7

Then apply the 'If I know, I also know' rule for each of these addition statements.

If I know 3 + 4 = 7
I also know 4 + 3 = 7
7 – 4 = 3
7 – 3 = 4

❖ Know by heart all pairs of numbers with a total of 20

0 + 20 = 20
1 + 19 = 20
2 + 18 = 20
3 + 17 = 20
4 + 16 = 20
5 + 15 = 20
6 + 14 = 20
7 + 13 = 20
8 + 12 = 20
9 + 11 = 20
10 + 10 = 20

11 + 9 = 20
12 + 8 = 20
13 + 7 = 20
14 + 6 = 20
15 + 5 = 20
16 + 4 = 20
17 + 3 = 20
18 + 2 = 20
19 + 1 = 20
20 + 0 = 20

GRADE 1

Hints for parents

Play number ping pong!
Parent says '2'…….child responds rapidly with '18'.
Immediately follow with '18'……..'2'.
In this way you are reinforcing the fact that addition can be done in any order which encourages children to try turning addition sums around to make them look a bit more friendly.

It would be valuable to discuss points such as:

'If 3 + 7 = 10, why will 3 + 17 = 20?' or
'If 3 + 7 = 10, why will 13 + 7 = 20?'

Children who are enjoying work with larger numbers will soon make the link that 13 + 17 = 30 but don't push forwards too soon. It is much more helpful to create fun practice opportunities which allow children to enjoy success.

Work out the missing numbers together eg ? + 4 = 20 20 = ? + ?

Key vocabulary
Minus
Subtract
Take away
Fewer than
less than
Find the difference

✣ Know by heart all pairs of multiples of ten with a total of 100.

0 + 100 = 100	60 + 40 = 100
10 + 90 = 100	70 + 30 = 100
20 + 80 = 100	80 + 20 = 100
30 + 70 = 100	90 + 10 = 100
40 + 60 = 100	100 + 0 = 100
50 + 50 = 100	

GRADE 1

Hints for parents

Again, by considering the 'matching' pairs of numbers that total 100 you will be reinforcing one of the key mathematical rules that addition can be done in any order.

Continue to practise the 'If I know, what else do I know?' rule eg.
Corresponding division facts

If I know that	40	add	60	makes	100
I also know that	60	plus	40	totals	100
That	100	subtract	40	leaves	60
And that	100	minus	60	equals	40

Using a range of vocabulary in connection with now familiar concepts is an excellent way to extend children's use of a wider range of vocabulary when articulating their mathematical thinking.

Try the' ping pong' approach to practise rapid response of the complements in 100

'60'……'40'
'80'……..……'20'
'10'……'90' etc

Remember to include 0 (zero) in practice situations. In years one and two children learn that the effect of adding / subtracting 0 to a number leaves a number unchanged but do not always remember and frequently make errors when faced with zero!

✥ Know by heart multiplication facts for the 2 times table and derive quickly the corresponding division facts.

		Corresponding division facts	
0 × 2 = 0	2 × 0 = 0		
1 × 2 = 2	2 × 1 = 2	2 ÷ 2 = 1	2 ÷ 1 = 2
2 × 2 = 4	2 × 2 = 4	4 ÷ 2 = 2	4 ÷ 2 = 2
3 × 2 = 6	2 × 3 = 6	6 ÷ 2 = 3	6 ÷ 3 = 2
4 × 2 = 8	2 × 4 = 8	8 ÷ 2 = 4	8 ÷ 4 = 2
5 × 2 = 10	2 × 5 = 10	10 ÷ 2 = 5	10 ÷ 5 = 2
6 × 2 = 12	2 × 6 = 12	12 ÷ 2 = 6	12 ÷ 6 = 2
7 × 2 = 14	2 × 7 = 14	14 ÷ 2 = 7	14 ÷ 7 = 2
8 × 2 = 16	2 × 8 = 16	16 ÷ 2 = 8	16 ÷ 8 = 2
9 × 2 = 18	2 × 9 = 18	18 ÷ 2 = 9	18 ÷ 9 = 2
10 × 2 = 20	2 × 10 = 20	20 ÷ 2 = 10	20 ÷ 10 = 2

GRADE 1

Hints for parents

It is really important that children are as confident with division facts as they are with multiplication facts. Division is a much more difficult concept for most children partly because they do not have these facts instantly at their fingertips.

Practise using the 'If I know, what else do I know?
Rule e.g. If I know that $12 \div 2 = 6$ and that $12 \div 6 = 2$ know that $2 \times 6 = 12$
I also know that $6 \times 2 = 12$

Chanting tables/rapid response to questions/playing games and applying knowledge of tables to shopping problems are all good ways of reinforcing children's understanding. There are several audio tapes of musical tables / rap tables which help some children to learn. Many children who insist it is impossible to learn multiplication tables know every word of the latest pop songs in no time at all!

Key vocabulary

Times	**multiply**	**multiple of**	**lots of/groups of**
divided by	**shared**	**rows of**	**product**

✥ Know by heart multiplication facts and derive quickly corresponding division facts for the 10 times table

		Corresponding division facts	
$0 \times 10 = 0$	$10 \times 0 = 0$	$10 \div 1 = 10$	$10 \div 10 = 1$
$1 \times 10 = 10$	$10 \times 1 = 10$	$20 \div 2 = 10$	$20 \div 10 = 2$
$2 \times 10 = 20$	$10 \times 2 = 20$	$30 \div 3 = 10$	$30 \div 10 = 3$
$3 \times 10 = 30$	$10 \times 3 = 30$	$40 \div 4 = 10$	$40 \div 10 = 4$
$4 \times 10 = 40$	$10 \times 4 = 40$	$50 \div 5 = 10$	$50 \div 10 = 5$
$5 \times 10 = 50$	$10 \times 5 = 50$	$60 \div 6 = 10$	$60 \div 10 = 6$
$6 \times 10 = 60$	$10 \times 6 = 60$	$70 \div 7 = 10$	$70 \div 10 = 7$
$7 \times 10 = 70$	$10 \times 7 = 70$	$80 \div 8 = 10$	$80 \div 10 = 8$
$8 \times 10 = 80$	$10 \times 8 = 80$	$90 \div 9 = 10$	$90 \div 10 = 9$
$9 \times 10 = 90$	$10 \times 9 = 90$	$100 \div 10 = 10$	$100 \div 10 = 10$
$10 \times 10 = 100$	$10 \times 10 = 100$		

GRADE 1

Fizz Buzz is always fun to play but, take care, children will often win!
To practise the 2 and 10 times tables together take it in turns to count up in one (as many people as you like can play). If a number is in the 2 x table you must say Fizz instead of the number, if it is in the 10x table you must say Buzz if the number is in both tables you must say FIZZ BUZZ! So…….1, Fizz, 3, Fizz, 5, Fizz, 7, Fizz, 9, FIZZ BUZZ, etc simplify the game by using only one table at a time and make it more challenging by having another word e.g. Whiz to say if the number contains the digit 2!

✥ Begin to know multiplication facts for the 5 times table

0 × 5 = 0	5 × 0 = 0
1 × 5 = 5	5 × 1 = 5
2 × 5 = 10	5 × 2 = 10
3 × 5 = 15	5 × 3 = 15
4 × 5 = 20	5 × 4 = 20
5 × 5 = 25	5 × 5 = 25
6 × 5 = 30	5 × 6 = 30
7 × 5 = 35	5 × 7 = 35
8 × 5 = 40	5 × 8 = 40
9 × 5 = 45	5 × 9 = 45
10 × 5 = 50	5 × 10 = 50

Hints for parents

Encourage children to talk about the patterns and to notice that all the answers end in either 0 or 5. Look at a range of larger numbers together and decide if they would be multiples of 5.

GRADE 1

✥ Know by heart doubles of all numbers to 10 and their corresponding halves

Double 0 = 0	
Double 1 = 2	half of 2 = 1
Double 2 = 4	half of 4 = 2
Double 3 = 6	half of 6 = 3
Double 4 = 8	half of 8 = 4
Double 5 = 10	half of 10 = 5
Double 6 = 12	half of 12 = 6
Double 7 = 14	half of 14 = 7
Double 8 = 16	half of 16 = 8
Double 9 = 18	half of 18 = 9
Double 10 = 20	half of 20 = 10

Hints for parents

As well as having instant recall of these doubling and halving facts children need to recognise the opportunities for doubling / halving when questions are presented in a different way. It would be really supportive if you could practise this work using a range of questioning techniques e.g.

Double 1 is 2	half of 2 is 1
2 x 2 = 4	4 halved is 2
2 lots of 3 make 6	6 divided by 2 is 3
twice 4 is 8	$8 shared between 2 is $4 each
5 multiplied by 2 is the same as 10	10 divided by 2 is 5
6 x 2 = 12	12 ÷ 2 = 6
7 doubled will be 14	14 halved will be 7
double 8 to make 16	half 16 to make 8
18 is 2 lots of 9	there are 9 lots of 2 in 18
10 x 2 = 20	20 ÷ 2 = 10

When children are working confidently with all these approaches encourage them to solve real life problems by applying their doubling / halving strategies eg

2 children each spent 40c at the shop how much was spent altogether?
Tom spent half of his $20 pocket money. How much did he spend?
Two chocolate bars cost $8. How much did one chocolate bar cost?

GRADE 1

❖ Derive quickly doubles of all numbers to at least 15

Extend earlier work to include the larger numbers up to and including double 15 = 30.

❖ Derive quickly doubles of multiples of 5 to 50

Double 5 = 10
Double 10 = 20
Double 15 = 30
Double 20 = 40
Double 25 = 50
Double 30 = 60
Double 35 = 70
Double 40 = 80
Double 45 = 90
Double 50 = 100

❖ Derive quickly doubles and halves of multiples of 10 to 100

Double 10 = 20	20 halved = 10
2 × 20 = 40	40 divided by 2 = 20
30 doubled = 60	half of 60 = 30
40 multiplied by 2 = 80	80 shared between 2 = 40
twice 50 = 100	100 halved = 50
double 60 = 120	120 divided between 2 = 60
70 $2 coins = £1 . 40	$1.40 divided between 2 people = 70c each
80 doubled = 160	there will be 80 bicycles if there are 160 wheels
$90 doubled = $180	180 halved = 90
100 × 2 = 200 200	stamps shared between 2 equals 100 each

Hints to parents

Think of as many real life examples of using doubling and halving to solve problems as well as asking for rapid response to questioning. Practise halving at least as often as doubling, this will help children with subtraction at a later date.

Introducing repeated addition for 2, 3, 5, and 10, through skip counting orally.
Develop the ability to count on orally in two, three, fives and tens, from any starting point. E.g.

Count in 2's from 33……	33, 35, 37, etc.
Count in 3's from 117……	117, 120, 123, etc.
Count in 5's from 77…..	77, 82, 87, etc.
Count in 10's from 219….	219, 229, 239, etc.

GRADE 2

- **Know by heart…..all addition and subtraction facts for each number to 20.**

e.g.

0..+ 7 = 7	7 - 7 = 0
1 + 6 = 7	7 - 6 = 1
2 + 5 = 7	7 - 5 = 2
3 + 4 = 7	7 - 4 = 3
4 + 3 = 7	7 - 3 = 4
5 + 2 = 7	7 - 2 = 5
6 + 1 = 7	7 - 1 = 6
7 + 0 = 7	7 - 0 = 7

Know by heart……all pairs of multiples of 100 with a total of 1000

100 + 900 = 1000	900 + 100 = 1000
200 + 800 = 1000	800 + 200 = 1000
300 + 700 = 1000	700 + 300 = 1000
400 + 600 = 1000	600 + 400 = 1000
500 + 500 = 1000	

Derive quickly…..all pairs of multiples of 5 with a total of 100

5 + 95 = 100	95 + 5 = 100
10 + 90 = 100	90 + 10 = 100
15 + 85 = 100	85 + 15 = 100
20 + 80 = 100	80 + 20 = 100
25 + 75 = 100	75 + 25 = 100
30 + 70 = 100	70 + 30 = 100
35 + 65 = 100	65 + 35 = 100
40 + 60 = 100	60 + 40 = 100
45 + 55 = 100	55 + 45 = 100
50 + 50 = 100	

GRADE 2

Hints to parents

It would be really helpful to link the pairs that make 100 to money, children do not always readily transfer these skills. E.g $1 = 40c + ? 80c + ? = $1
If I have 60c how much more money do I need to make it up to $1?
If I had $1 and spent 20c how much would I have left?

0 × 2 = 0	2 × 0 = 0
1 × 2 = 2	2 × 1 = 2
2 × 2 = 4	2 × 2 = 4
3 × 2 = 6	2 × 3 = 6
4 × 2 = 8	2 × 4 = 8
5 × 2 = 10	2 × 5 = 10

Key Vocabulary

Lots of
groups of
times
product
multiply
multiplied by
multiple of

Corresponding division facts

2 ÷ 2 = 1	2 ÷ 1 = 2
4 ÷ 2 = 2	4 ÷ 2 = 2
6 ÷ 2 = 3	6 ÷ 3 = 2
8 ÷ 2 = 4	8 ÷ 4 = 2
10 ÷ 2 = 5	10 ÷ 5 = 2
12 ÷ 2 = 6	12 ÷ 6 = 2
14 ÷ 2 = 7	14 ÷ 7 = 2
16 ÷ 2 = 8	16 ÷ 8 = 2
18 ÷ 2 = 9	18 ÷ 9 = 2
20 ÷ 2 = 10	20 ÷ 10 = 2

Hints to parents

It is really important that children are as confident with division facts as they are with multiplication facts. Division is a much more difficult concept for most children partly because they do not have these facts instantly at their fingertips.
Practise using the 'If I know, what else do I know?

Rule eg: If I know that 2 × 6 = 12
I also know that 6 × 2 = 12,
That 12÷ 2 = 6 and that 12÷ 6 = 2

Chanting tables/rapid response to questions/playing games and applying knowledge of tables to shopping problems are all good ways of reinforcing children's understanding.
There are several audio tapes of musical tables / rap tables which help some children to learn. Many children who insist it is impossible to learn multiplication tables know every word of the latest pop songs in no time at all!

GRADE 2

❖ Know by heart the 3 times tables and derive quickly the corresponding division facts

0 × 3 = 0	3 × 0 = 0
1 × 3 = 3	3 × 1 = 3
2 × 3 = 6	3 × 2 = 6
3 × 3 = 9	3 × 3 = 9
4 × 3 = 12	3 × 4 = 12
5 × 3 = 15	3 × 5 = 15
6 × 3 = 18	3 × 6 = 18
7 × 3 = 21	3 × 7 = 21
8 × 3 = 24	3 × 8 = 24
9 × 3 = 27	3 × 9 = 27
10 × 3 = 30	3 × 10 = 30

❖ Know by heart multiplication facts for the 5 times table and derive quickly corresponding division facts.

		Corresponding division facts	
0 × 5 = 0	5 × 0 = 0		
1 × 5 = 5	5 × 1 = 5		
2 × 5 = 10	5 × 2 = 10	5 ÷ 5 = 1	5 ÷ 1 = 5
3 × 5 = 1	5 × 3 = 15	10 ÷ 5 = 2	10 ÷ 2 = 5
4 × 5 = 2	5 × 4 = 20	15 ÷ 5 = 3	15 ÷ 3 = 5
5 × 5 = 2	5 × 5 = 25	20 ÷ 5 = 4	20 ÷ 4 = 5
6 × 5 = 30	5 × 6 = 30	25 ÷ 5 = 5	30 ÷ 5 = 6
7 × 5 = 35	5 × 7 = 35	30 ÷ 6 = 5	35 ÷ 7 = 5
8 × 5 = 40	5 × 8 = 40	35 ÷ 5 = 7	40 ÷ 5 = 8
9 × 5 = 45	5 × 9 = 45	40 ÷ 8 = 5	45 ÷ 5 = 9
10 × 5 = 50	5 × 10 = 50	45 ÷ 9 = 5	50 ÷ 10 = 5
		50 ÷ 5 = 10	

GRADE 2

Hints for parents

Encourage children to talk about the patterns and to notice that all the answers end in either 0 or 5. Look at a range of larger numbers together and decide if they would be multiples of 5.

Key Vocabulary

Lots of
groups of
times
product
multiply
multiplied by
multiple of

❖ Know by heart multiplication facts and derive quickly corresponding division facts for the 10 times table

0 × 10 = 0
1 × 10 = 10
2 × 10 = 20
3 × 10 = 30
4 × 10 = 40
5 × 10 = 50
6 × 10 = 60
7 × 10 = 70
8 × 10 = 80
9 × 10 = 90
10 × 10 = 100

10 × 0 = 0
10 × 1 = 10
10 × 2 = 20
10 × 3 = 30
10 × 4 = 40
10 × 5 = 50
10 × 6 = 60
10 × 7 = 70
10 × 8 = 80
10 × 9 = 90
10 × 10 = 100

Corresponding division facts

10 ÷ 1 = 10
20 ÷ 2 = 10
30 ÷ 3 = 10
40 ÷ 4 = 10
50 ÷ 5 = 10
60 ÷ 6 = 10
70 ÷ 7 = 10
80 ÷ 8 = 10
90 ÷ 9 = 10
100 ÷ 10 = 10

10 ÷ 10 = 1
20 ÷ 10 = 2
30 ÷ 10 = 3
40 ÷ 10 = 4
50 ÷ 10 = 5
60 ÷ 10 = 6
70 ÷ 10 = 7
80 ÷ 10 = 8
90 ÷ 10 = 9
100 ÷ 10 = 10

GRADE 2

Hints for parents

Children will be beginning to see some patterns in the tables eg when a number is multiplied by itself in the first column it appears in the same way in the opposite column. Although there is no expectation that they will understand square numbers at this stage they will be looking out for this pattern as they learn new tables.

Looking at tables on a multiplication grid is a good way to explore patterns and consolidate learning.

Some children find listening to musical tables on tapes etc really helpful.....also a good way keep children occupied on a journey! Frequent short practices would really help children to consolidate their learning……it's worth it; they will have these skills for life.

Key Vocabulary

Lots of
groups of
times
product
multiply
multiplied by
multiple of

✥ Derive quickly doubles of all whole numbers to at least 20 and all the corresponding halves

All RGSV telephones are for conducting the business of the organization. RGSV recognizes that staff members may have an occasional need to make or receive a personal call. These calls shall be held to a minimum.

Mobile telephone use in the work place must be minimal. Personal business must be conducted during breaks or lunch. Ringers must be set on vibrate or silence during the work-day, as a professional courtesy.

Mobile telephones must not be used in classrooms.

GRADE 2

❖ Derive quickly doubles of all whole numbers to at least 20 and all the corresponding halves

1 + 1 = 2
2 x 2 = 4
3 doubled is 6
double 4 is 8
2 lots of 5 are 10
6 + 6 = 12
2 x 7 = 14
double 8 is 16
2 lots of 9 are 18
10 doubled is 20
11 times 2 is 22
12 multiplied by 2 is 24
13 doubled is 26
14 x 2 = 28
twice 15 is 30
16 + 16 makes 32
17 times 2 is 34
2 x 18 = 36
19 doubled is 38
double 20 is 40

half of 2 is 1
4 halved is 2
6 ÷ 2 = 3
8 shared between 2 is 4 each
10 ÷ 2 = 5
12 - 6 = 6
14 halved makes 7
half of 16 is 8
18 halved is 9
20 ÷ 2 = 10
22 shared equally between 2 is 11 each
half of 24 is 12
26 halved makes 13
28 - 14 = 14
half of 30 is 15
32 split into 2 makes 16 twice
34 halved is 17
18 is half of 36
38 ÷ 2 = 19
half of 40 is 20

❖ Know by heart multiplication facts for the 2 times table and derive quickly the corresponding division facts.

6 x 2 = 12
7 x 2 = 14
8 x 2 = 16
9 x 2 = 18
10 x 2 = 20

2 x 6 = 12
22 x 7 = 14
22 x 8 = 16
22 x 9 = 18
22 x 10 = 20

GRADE 2

❖ Derive quickly doubles of multiples of 5 to 100 and all the corresponding halves

Double 5 is 10
Double 15 is 30
Double 25 is 50
Double 35 is 70
Double 45 is 90
Double 55 is 110
Double 65 is 130
Double 75 is 150
Double 85 is 170
Double 95 is 190

double 10 is 20
double 20 is 40
double 30 is 60
double 40 is 80
double 50 is 100
double 60 is 120
double 70 is 140
double 80 is 160
double 90 is 180
double 100 is 200

10 ÷ 2 = 5
30 ÷ 2 = 15
50 ÷ 2 = 25
70 ÷ 2 = 35
90 ÷ 2 = 45
110 ÷ 2 = 55
130 ÷ 2 = 65
150 ÷ 2 = 75
170 ÷ 2 = 85
190 ÷ 2 = 95

20 halved is 10
40 halved is 20
60 halved is 30
80 halved is 40
100 halved is 50
120 halved is 60
140 halved is 70
160 halved is 80
180 halved is 90
200 halved is 100

Derive quickly doubles of multiples of 5 to 100 and all the corresponding halves

It is really important to use the full range of vocabulary when practising with children so that they more readily link their skills to a wider range of situations. Also try to create problem solving situations with eg money in which they can use doubling and halving strategies to calulate answers.

GRADE 2

❖ Derive quickly doubles of multiples of 50 to 500 and all the corresponding halves.

50 × 2 = 100	100 ÷ 2 = 50
100 × 2 = 200	200 ÷ 2 = 100
150 × 2 = 300	300 ÷ 2 = 150
200 × 2 = 400	400 ÷ 2 = 200
250 × 2 = 500	500 ÷ 2 = 250
300 × 2 = 600	600 ÷ 2 = 300
350 × 2 = 700	700 ÷ 2 = 350
400 × 2 = 800	800 ÷ 2 = 400
450 × 2 = 900	900 ÷ 2 = 450
500 × 2 = 1000	1000 ÷ 2 = 500

Key vocabulary

Double
Halve
Share equally
Two each
Grouped in pairs
Equal groups of
Halved multiplied by 2
Divided by 2
Twice
Split into 2
Shared between 2
Divided equally

GRADE 3

❖ Consolidate knowing by heart addition and subtraction facts for all numbers to 20

Eg

0 + 7 = 7	7 - 7 = 0
1 + 6 = 7	7 - 6 = 1
2 + 5 = 7	7 - 5 = 2
3 + 4 = 7	7 - 4 = 3
4 + 3 = 7	7 - 3 = 4
5 + 2 = 7	7 - 2 = 5
6 + 1 = 7	7 - 1 = 6
7 + 0 = 7	7 - 0 = 7

Derive quickly all number pairs that total 100

Eg
62 + 38
75 + 25
40 + 60

Derive quickly all pairs of multiples of 50 with a total of 1000

50 + 950	100 + 900
150 + 850	200 + 800
250 + 750	300 + 700
350 + 650	400 + 600
450 + 550	500 + 500
550 + 450	600 + 400
650 + 350	700 + 300
750 + 250	800 + 200
850 + 150	900 + 100
950 + 50	

Hints to parents

Practise instant recall of these facts in order at first, looking out for any patterns that arise. When children are secure practise the facts out of order, mixing doubling with halving.

GRADE 3

❖ Know by heart multiplication facts for the 2, 3, 4, 5 and 10 times tables and derive quickly the corresponding division facts.

2 times table

0 × 2 = 0	2 × 0 = 0
1 × 2 = 2	2 × 1 = 2
2 × 2 = 4	2 × 2 = 4
3 × 2 = 6	2 × 3 = 6
4 × 2 = 8	2 × 4 = 8
5 × 2 = 10	2 × 5 = 10
6 × 2 = 12	2 × 6 = 12
7 × 2 = 14	2 × 7 = 14
8 × 2 = 16	2 × 8 = 16
9 × 2 = 18	2 × 9 = 18
10 × 2 = 20	2 × 10 = 20

Corresponding division facts

2 ÷ 2 = 1	2 ÷ 1 = 2
4 ÷ 2 = 2	4 ÷ 2 = 2
6 ÷ 2 = 3	6 ÷ 3 = 2
8 ÷ 2 = 4	8 ÷ 4 = 2
10 ÷ 2 = 5	10 ÷ 5 = 2
12 ÷ 2 = 6	12 ÷ 6 = 2
14 ÷ 2 = 7	14 ÷ 7 = 2
16 ÷ 2 = 8	16 ÷ 8 = 2
18 ÷ 2 = 9	18 ÷ 9 = 2
20 ÷ 2 = 10	20 ÷ 10 = 2

5 times table

0 × 5 = 0	5 × 0 = 0
1 × 5 = 5	5 × 1 = 5
2 × 5 = 10	5 × 2 = 10
3 × 5 = 15	5 × 3 = 15
4 × 5 = 20	5 × 4 = 20
5 × 5 = 25	5 × 5 = 25
6 × 5 = 30	5 × 6 = 30
7 × 5 = 35	5 × 7 = 35
8 × 5 = 40	5 × 8 = 40
9 × 5 = 45	5 × 9 = 45
10 × 5 = 50	5 × 10 = 50

Corresponding division facts

5 ÷ 5 = 1	5 ÷ 1 = 5
10 ÷ 5 = 2	10 ÷ 2 = 5
15 ÷ 5 = 3	15 ÷ 3 = 5
20 ÷ 5 = 4	20 ÷ 4 = 5
25 ÷ 5 = 5	
30 ÷ 5 = 6	30 ÷ 6 = 5
35 ÷ 5 = 7	35 ÷ 7 = 5
40 ÷ 5 = 8	40 ÷ 8 = 5
45 ÷ 5 = 9	45 ÷ 9 = 5
50 ÷ 10 = 5	50 ÷ 5 = 10

Looking at tables on a multiplication grid is a good way to explore patterns and consolidate learning

Hints to parents

Children will be beginning to see some patterns in the tables eg when a number is multiplied by itself in the first column it appears in the same way in the opposite column. Although there is no expectation that they will understand square numbers at this stage they will be looking out for this pattern as they learn new tables.

GRADE 3

10 times table

0 × 10 = 0	10 × 0 = 0
1 × 10 = 10	10 × 1 = 10
2 × 10 = 20	10 × 2 = 20
3 × 10 = 30	10 × 3 = 30
4 × 10 = 40	10 × 4 = 40
5 × 10 = 50	10 × 5 = 50
6 × 10 = 60	10 × 6 = 60
7 × 10 = 70	10 × 7 = 70
8 × 10 = 80	10 × 8 = 80
9 × 10 = 90	10 × 9 = 90
10 × 10 = 100	10 × 10 = 100

Corresponding division facts

10 ÷ 1 = 10	10 ÷ 10 = 1
20 ÷ 2 = 10	20 ÷ 10 = 2
30 ÷ 3 = 10	30 ÷ 10 = 3
40 ÷ 4 = 10	40 ÷ 10 = 4
50 ÷ 5 = 10	50 ÷ 10 = 5
60 ÷ 6 = 10	60 ÷ 10 = 6
70 ÷ 7 = 10	70 ÷ 10 = 7
80 ÷ 8 = 10	80 ÷ 10 = 8
90 ÷ 9 = 10	90 ÷ 10 = 9
100 ÷10 = 10	100 ÷ 10 = 10

3 times table

0 × 3 = 0	3 × 0 = 0
1 × 3 = 3	3 × 1 = 3
2 × 3 = 6	3 × 2 = 6
3 × 3 = 9	3 × 3 = 9
4 × 3 = 12	3 × 4 = 12
5 × 3 = 15	3 × 5 = 15
6 × 3 = 18	3 × 6 = 18
7 × 3 = 21	3 × 7 = 21
8 × 3 = 24	3 × 8 = 24
9 × 3 = 27	3 × 9 = 27
10 × 3 = 30	3 × 10 = 30

Corresponding division facts

3 ÷ 1 = 3	3 ÷ 3 = 1
6 ÷ 2 = 3	6 ÷ 3 = 2
9 ÷ 3 = 3	12 ÷ 4 = 3
12 ÷ 3 = 4	15 ÷ 5 =
15 ÷ 3 = 5	18 ÷ 6 = 3
18 ÷ 3 = 6	21 ÷ 7 = 3
21 ÷ 3 = 7	24 ÷ 8 = 3
24 ÷ 3 = 8	27 ÷ 9 = 3
27 ÷ 3 = 9	30 ÷ 10 = 3
30 ÷ 3 = 10	

4 times table

0 × 4 = 0	4 × 0 = 0
1 × 4 = 4	4 × 1 = 4
2 × 4 = 8	4 × 2 = 8
3 × 4 = 12	4 × 3 = 12
4 × 4 = 16	4 × 4 = 16
5 × 4 = 20	4 × 5 = 20
6 × 4 = 24	4 × 6 = 24
7 × 4 = 28	4 × 7 = 28
8 × 4 = 32	4 × 8 = 32
9 × 4 = 36	4 × 9 = 36
10 × 4 = 40	4 × 10 = 40

Corresponding division facts

4 ÷ 1 = 4	4 ÷ 4 = 1
8 ÷ 2 = 4	8 ÷ 4 = 2
12 ÷ 3 = 4	12 ÷ 4 = 3
16 ÷ 4 = 4	16 ÷ 4 = 4
20 ÷ 5 = 4	20 ÷ 4 = 5
24 ÷ 6 = 4	24 ÷ 4 = 6
28 ÷ 7 = 4	28 ÷ 4 = 7
32 ÷ 8 = 4	32 ÷ 4 = 8
36 ÷ 9 = 4	36 ÷ 4 = 9
40 ÷ 10 = 4	40 ÷ 4 = 10

GRADE 3

Begin to know multiplication facts for the 6 times tables.

0 × 6 = 0	6 × 0 = 0
1 × 6 = 6	6 × 1 = 6
2 × 6 = 12	6 × 2 = 12
3 × 6 = 18	6 × 3 = 18
4 × 6 = 24	6 × 4 = 24
5 × 6 = 30	6 × 5 = 30
6 × 6 = 36	
7 × 6 = 42	6 × 7 = 42
8 × 6 = 48	6 × 8 = 48
9 × 6 = 54	6 × 9 = 54
10 × 6 = 60	6 × 10 = 60

Begin to know multiplication facts for the 7 times table

0 × 7 = 0	7 × 0 = 0
1 × 7 = 7	7 × 1 = 7
2 × 7 = 14	7 × 2 = 14
3 × 7 = 21	7 × 3 = 21
4 × 7 = 28	7 × 4 = 28
5 × 7 = 35	7 × 5 = 35
6 × 7 = 42	7 × 6 = 42
7 × 7 = 49	
8 × 7 = 56	7 × 8 = 56
9 × 7 = 63	7 × 9 = 63
10 × 7 = 70	7 × 10 = 70

Hints to parents

If children struggle with some of these facts encourage them to use their favourite tables to calculate these more difficult ones.

They could recall the 5 times facts and add one more to work out the 6 times table and use the 5 times combined with doubles to calculate the 7 times tables.

Some children would enjoy doubling and doubling again to work out 4 times and then add a double to calculate 6 times.

GRADE 3

Begin to know multiplication facts for the 8 times table

0 × 8 = 0	8 × 0 = 0
1 × 8 = 8	8 × 1 = 8
2 × 8 = 16	8 × 2 = 16
3 × 8 = 24	8 × 3 = 24
4 × 8 = 32	8 × 4 = 32
5 × 8 = 40	8 × 5 = 40
6 × 8 = 48	8 × 6 = 48
7 × 8 = 56	8 × 7 = 56
8 × 8 = 64	8 × 8 = 64
9 × 8 = 72	8 × 9 = 72
10 × 8 = 80	8 × 10 = 80

Begin to know multiplication facts for the 9 times table

0 × 9 = 0	9 × 0 = 0
1 × 9 = 9	9 × 1 = 9
2 × 9 = 18	9 × 2 = 18
3 × 9 = 27	9 × 3 = 27
4 × 9 = 36	9 × 4 = 36
5 × 9 = 45	9 × 5 = 45
6 × 9 = 54	9 × 6 = 54
7 × 9 = 63	9 × 7 = 63
8 × 9 = 72	9 × 8 = 72

Key vocabulary

Add	And	Sum
Total	Join	
How many more to make?	Combine	
Altogether	Plus	

Hints to parents

Encourage children to use doubling to work out their 8 times tables if they are experiencing difficulty Learning the straight table facts. Double and double again gives the 4 times table and if you double again then you have the 8 times table.

There are some interesting patterns in the 9 times table. Look at the answers to the multiplications in the 9 times table. The digit sum is always 9

Eg 36……3 + 6 = 972……7 + 2 = 9

The tens digit increases by 1 each time whilst the unit digit decreases by 1
Some children enjoy multiplying by 10 and then subtracting one multiple.

GRADE 3

✥ Derive quickly doubles of all whole numbers up to and including 50 and the corresponding halves.

Eg 38 + 38 = 76 — 29 doubled is 58
84 ÷ 2 = 42 — half of 96 is 48

Derive quickly doubles of multiples of 10 to 500 and the corresponding halves.

Eg 460 × 2 = 920 — 270 doubled makes 540
870 ÷ 2 = 435 — 520 halved will be 260

Derive quickly doubles of multiples of 100 to 5000 and the corresponding halves.

Eg 3400 × 2 = 6800 — 2900 doubled is 5800
7500 ÷ 2 = 3750 — half of $4600.00 is $2300.00

Hints to parents

Children really enjoy these doubling strategies especially when it enables them to work confidently with large numbers.

If they start to struggle, encourage them to partition the numbers into friendlier chunks.

Eg 3400 × 2 is (3000 × 2) plus (400 × 2)
4600 ÷ 2 is the same as (4000 ÷ 2) + (600 ÷ 2)

Some children may find it helpful to make jottings to support their thinking when they first work with these larger numbers so make sure they have pencil and paper available. As their confidence grows they will rely less and less on these jottings but it is important that they never feel over faced.

GRADE 4

Derive quickly pairs of decimals that total 1

0.1 + 0.9 = 1
0.2 + 0.8 = 1
0.3 + 0.7 = 1
0.4 + 0.6 = 1
0.5 + 0.5 = 1

0.9 + 0.1 = 1
0.8 + 0.2 = 1
0.7 + 0.3 = 1
0.6 + 0.4 = 1

Derive quickly pairs of decimals that total 10

Eg 6.2 + 3.8 = 10
3.7 + 6.3 = 10

4.9 + 5.1 = 10
1.5 + 8.5 = 10

Derive quickly all 2 digit pairs that total 100

Eg 43 + 57 = 100 69 + 31 = 100

Derive quickly all pairs of multiples of 50 with a total of 1000

Eg 350 + 650 = 1000 750 + 250 = 1000

Key vocabulary
Add And Sum
Total Join
How many more to make? Combine
Altogether Plus

Hints to parents

Ask children to make lists of these pairs. They can vary the way in which they set the list out to try and complete all the options more quickly. For example if they know that 350 + 650 = 1000 then then immediately know that 650 + 350 = 1000. By recording that opposite their first statement they will complete all options in half the thinking time. As they become more confident challenge them to 'beat the clock' as they record the patterns.

make up problems involving money or measures in which children can apply their skills.

Eg if I have $27 how much more do I need to make $100?
If I start with $100 and spend $56 how much will I have left?
If I roll out 85cm of string how much more do I need to roll out to have a full metre?

GRADE 5

- **Consolidate knowing by heart all multiplication facts for all tables up to and including 10 x 10**

  Derive quickly the corresponding division facts for the same tables.

Derive quickly squares of multiples of 10 to 100

10 × 10 = 100	20 × 20 = 400
30 × 30 = 900	40 × 40 = 1600
50 × 50 = 2500	60 × 60 = 3600
70 × 70 = 4900	80 × 80 = 6400
90 × 90 = 8100	100 × 100 = 10000

Derive quickly doubles of all 2 digit numbers including decimals and the corresponding halves

Eg	3.8 × 2 = 7.6	0.76 × 2 = 1.52
	7.6 ÷ 2 = 3.8	half of 1.52 is 0.76

Derive quickly doubles of multiples of 10 to 1000 and the corresponding halves

Eg	670 × 2 = 1340	1340 halved is 670

Derive quickly doubles of multiples of 100 to 10000 and the corresponding halves.

Eg	6500 × 2 = 13000	1300 ÷ 2 = 650

GRADE 5

- **Know by heart all multiplication facts for all tables up to and including 10 x 10**

  Derive quickly all the corresponding division facts for these tables (see Y4 examples).

Derive quickly doubles of all whole numbers 1 to 100 and the corresponding halves

Eg 78 x 2 = 156 double 93 is 186
156 ÷ 2 = 78 186 halved is 93

Derive quickly doubles of multiples of 10 to 1000 and the corresponding halves

Eg 670 x 2 = 1340 560 doubled is1120
1340 ÷ 2 = 670 1120 halved is 560

Derive quickly doubles of multiples of 100 10000 and the corresponding halves

Eg 6500 x 2 = 13000 8500 doubled makes 17000
13000 ÷ 2 = 6500 half of 17000 is 8500

Hints to parents

When children are confident with halving and doubling to this level makes as many links as possible to measures.

Eg 13000g is 13 kg so half of 13kg will be 6500g or 6.5kg or 6kg 500g.

Children need as much practice as possible to see how they can use skills they have learned in the context of number to aspects of measure.

Remember
1kg = 1000g
1km = 1000m
1l = 1000ml