

White

**Rose
Maths**

Summer - Block 1

Multiplication & Division

Overview

Small Steps

Notes for 2020/21

- Count in 2s 
- Count in 5s 
- Count in 10s
- Make equal groups
- Add equal groups
- Make arrays
- Make doubles
- Make equal groups – grouping
- Make equal groups - sharing

We have chosen to revisit counting in 2s and 5s from the spring term before children move on to look at counting in 10s. Practical equipment is encouraged throughout this block to help cement these essential mathematical concepts with children.

Count in 2s

Notes and Guidance

Children build on their previous knowledge of counting in multiples of 2 and go beyond 20 up to 50

They will apply previous learning of one more and one less to counting forwards and backwards in twos. For example, two more than and two less than. The 1-50 grid can be used to spot and discuss patterns that emerge when counting in 2s.

Mathematical Talk

How can we count the pairs?
What does it mean to count in pairs?

Can we use tens frames to help us count in 2s?
Can you see any patterns when you count in 2s?

Varied Fluency



How many socks are there?



There are ___ socks in total.

How many gloves are there?



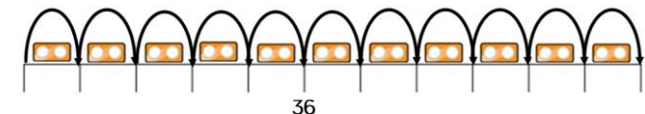
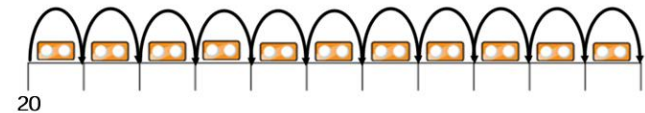
There are ___ gloves in total.

Represent the gloves using ten frames.

Continue colouring in 2s on the grid. What do you notice?

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

Complete the number lines by counting in 2s.

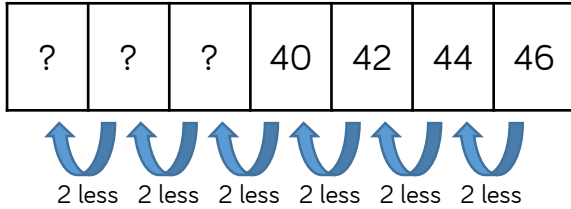


Count in 2s

Reasoning and Problem Solving



Count in 2s backwards to complete the number track.



If you continue counting, will you say the number 25?

Always, sometimes, never...



When you count in twos, your digits will be 0, 2, 4, 6, 8

Prove it!

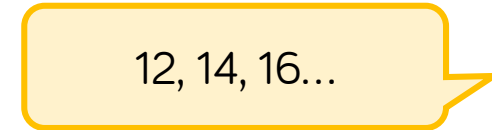
38, 36, 34
Possible answer:
Children will not say 25 because it is not a multiple of 2, they will say 28, 26, 24 and 22

Sometimes. It depends on your starting number. For example 1, 3, 5...
Also for 12, 14, 16, the tens digit is 1

Rosie counts back from 50 in 2s.
Amir counts up from 12 in 2s.



50, 48, 46, 44...



12, 14, 16...

They say their numbers together.
Who will say 30 first.

Rosie says 11 numbers to reach 30
Amir says 10 numbers to reach 30
So Amir will get there first.

Count in 5s

Notes and Guidance

Children build on previous learning of counting in fives to go beyond 20 and up to 50

The 1-50 grid can be used to spot and discuss patterns that emerge when counting in 5s.

Mathematical Talk

How can we count the groups of 5?

Can you describe the pattern when you count in 5s?

Will ____ appear on our number line? Why/why not?

Varied Fluency



How many fish are there?



There are ___ fish in each tank.

There are ___ tanks.

There are ___ fish altogether.

How many grapes are there?



There are ___ grapes in each bunch.

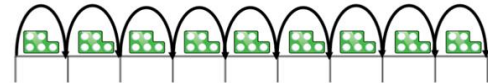
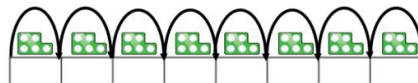
There are ___ bunches.

There are ___ grapes altogether.

Continue counting in 5s on the grid.

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

Complete the number lines by counting in 5s.

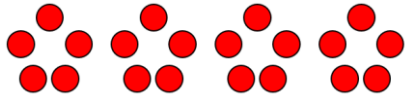


Count in 5s

Reasoning and Problem Solving



Amir is making this flower pattern with counters.



Annie says,



If you make 9 flowers, you will use 43 counters.

Do you agree with Annie?
Explain your answer.

Annie is wrong because 43 does not end in a 5 or a 0

If she makes 9 flowers she will use 45 counters.

Odd One Out

25

27

30

45

Which is the odd one out? Explain your answer.

27 because you would not count it if you were counting in 5s. Children also may give other responses.

Work in groups.
Create a circle with your hands. You can choose to put in one hand or both hands.



Count how many fingers and thumbs you can see altogether.

Can you predict how many? Count to check.

Children can practise counting in 5s and recognise one hand is worth 5. They may start to spot patterns and reason about how many there will be.

Count in 10s

Notes and Guidance

Children count in groups of tens for the first time. Previously they have counted in 2s and 5s. They use pictures, bead strings and number lines to support their counting.

Counting in 10s on a hundred square will also support children to see the similarities between the numbers when we count in tens.

Mathematical Talk

How many birds/flowers are there in total?

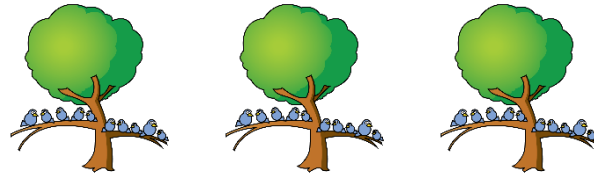
How can we use our number lines to help us count them?

Will _____ appear on our number line? Why?

What is the same about all the numbers we say when we are counting in tens?

Varied Fluency

How many birds are there altogether?



There are ____ birds in each tree.

There are ____ trees.

There are ____ birds altogether.

How many flowers are there altogether?



There are ____ flowers in each bunch.

There are ____ bunches.

There are ____ flowers altogether.

Use a 0-100 bead string to count in tens.

Can we count forwards and backwards in tens?



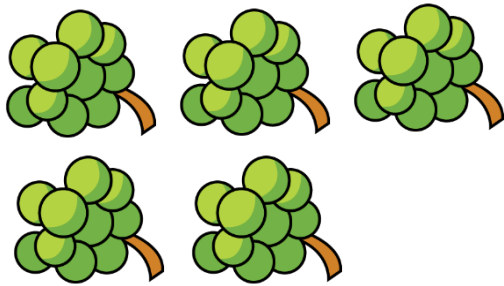
Can we count in tens on a number track as well?

How does this match counting on a bead string?

Count in 10s

Reasoning and Problem Solving

In a shop, grapes come in bunches of 10



Max wants to buy forty grapes.

Are there enough grapes?

Yes there are enough grapes. There are fifty grapes and Max only needs forty.

Jemima is counting in 10s on part of a hundred 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

She starts at 10

Shade in all the numbers Jemima will say.

What is the same about the numbers she says?

What is different about the numbers?

Jemima will say 10, 20, 30, 40 and 50

All the numbers have the same ones digit (0)

They all have different tens digit.

The tens digit goes up by 1 for each new number she says.

Making Equal Groups

Notes and Guidance

Children begin by using stories which link to pictures and concrete manipulatives to explore making equal groups and write statements such as ‘there are ___ groups of ___.’ They will recognise and explain how they know when they are equal or not. Children see equal groups that are arranged differently so they understand that the groups look different but can still be equal in number.

At this stage children do not explore multiplication formally.

Mathematical Talk

How do I know that the groups are equal? What does equal mean?

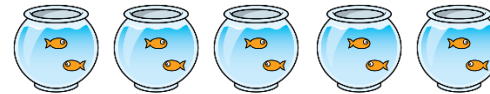
How many pencils are there in each pot? How can I complete the sentence to describe the groups?

What’s the same and what’s different?

Are Josh’s groups equal or unequal? How can we make them equal?

Varied Fluency

Are the groups equal or unequal? Write a label for each.





Complete the sentences



There are ___ groups of ___ pencils.



There are ___ groups of ___ flowers.

Josh is drawing equal groups of 3



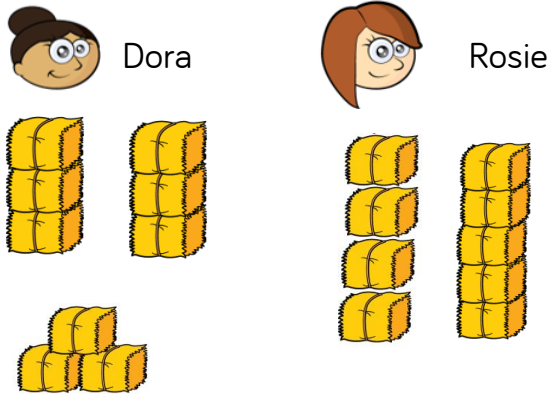
Complete his drawing.

Making Equal Groups

Reasoning and Problem Solving

Dora and Rosie are making hay bundles.

Who has made equal groups?



Explain how you know.

Possible answer:
Dora has made equal groups because she has 3 groups of 3 hay bundles.

Rosie has two unequal groups.

Use concrete materials or pictures to complete the questions.

Alex has 4 equal groups.
Show me what Alex's groups could look like.

Whitney has 3 unequal groups.
Show me what Whitney's groups could look like.

Children will show 4 groups where there are the same amount in each group for Alex and 3 groups that are unequal for Whitney.

Encourage children to do this in more than one way.

Add Equal Groups

Notes and Guidance

Children use equal groups to find a total. They focus on counting equal groups of 2, 5 and 10 and explore this within 50.

Children could begin by linking this to real life, for example animal legs, wheels, flowers in vases etc.

Stem sentences alongside number sentences can help children link the calculation with the situation. Ensure children have the opportunity to say their sentences aloud.

Mathematical Talk

How many apples are there in each bag?

Do all of the bags have an equal number of apples?

How many equal groups can you see?

How can we represent this with counters/cubes/on a number line/in a number sentence etc?

What other equipment could you use to represent your pattern? What's the same? What's different?

Which is more, 3 groups of 10 or 4 groups of 5? Prove why.

Varied Fluency

How many wheels altogether?



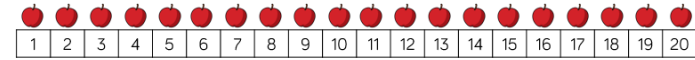
$$2 + 2 + 2 + 2 + 2 =$$

How many fingers altogether?



$$5 + 5 + 5 =$$

How many apples are there? Complete the sentences.



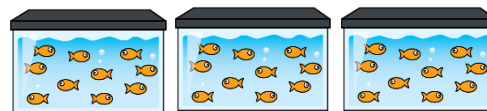
$$5 + 5 + 5 + 5 = \underline{\quad}$$

There are apples.

There are groups of apples which is equal to

How many fish are there?

Complete the sentences.



$$\underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$$

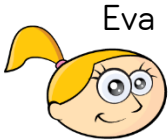
There are fish.

Can you show this using ten frames?

Add Equal Groups

Reasoning and Problem Solving

Eva and Whitney are making equal groups of bread rolls.



Eva

We need one more group to make 40

We need 10 more rolls to make 40



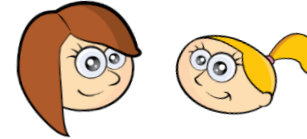
Whitney

Who do you agree with? Explain why.

Possible answer:
I agree with both.

They are counting in groups of 10 so they need one more group of 10

Rosie and Eva have equal groups of either 2, 5 or 10



Each of their totals is less than 40

Rosie has 5 equal groups.
Eva has 3 equal groups.

Eva's total is more than Rosie's total.

What could they be counting in?

Use equipment to help you.

Possible answers:

Rosie: $2 + 2 + 2 + 2 + 2 = 10$

Eva: $5 + 5 + 5 = 15$

Rosie: $5 + 5 + 5 + 5 + 5 = 25$

Eva: $10 + 10 + 10 = 30$

Rosie: $2 + 2 + 2 + 2 + 2 = 10$

Eva: $10 + 10 + 10 = 30$

Make Arrays

Notes and Guidance

Children begin to make arrays by making equal groups and building them up in columns or rows.

They use a range of concrete and pictorial representations alongside sentence stems to support their understanding.

Children also explore arrays built incorrectly and recognise the importance of columns and rows.

Mathematical Talk

How many equal groups do I have? How many in each group?
Can I represent my apples with counters?

What is the difference between columns and rows?
How many counters in each row? How many counters in each column?

How can I record my array with a number sentence?

Varied Fluency

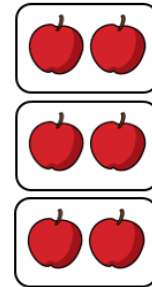
Build an array with counters to represent the apples.
Complete the sentences.

There are ___ apples in each row.

There are ___ rows.

___ + ___ + ___ = ___

There are ___ apples altogether.



Complete the table.

Array	Description - columns	Description - rows	Totals
	5 columns 2 cookies in each column	2 rows 5 cookies in each row	$2 + 2 + 2 + 2 + 2 = 10$ $5 + 5 = 10$
	___ columns ___ donuts in each column	___ rows ___ donuts in each row	
	___ columns ___ fish in each column	___ rows ___ fish in each row	
	3 columns 5 cupcakes in each column	5 rows 3 cupcakes in each row	

Make Arrays

Reasoning and Problem Solving

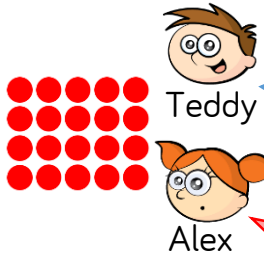
Amir and Whitney are making arrays.



Who has made a mistake? Explain why.

Possible answer:
Whitney has made a mistake because her array is not in columns. There are an unequal amount of squares in each row.

Teddy and Alex are writing number sentences to describe the array.



$$4 + 4 + 4 + 4 + 4 = 20$$



$$5 + 5 + 5 + 5 = 20$$

Who do you agree with? Explain why.

Possible answer:
They are both right. Teddy has counted the columns. Alex has counted the rows.

Eva begins to make an array with 40 counters. She has finished her first row and her first column. Complete her array.



Write two different number sentences to describe the finished array.

Possible answer:
Array showing $10 + 10 + 10 + 10 = 40$

Or

$$4 + 4 + 4 + 4 + 4 + 4 + 4 + 4 + 4 + 4 = 40$$

Making Doubles

Notes and Guidance

Children explore doubling with numbers up to 20. Reinforce understanding that 'double' is two groups of a number or an amount. Children show and explain what doubling means using concrete and pictorial representations.

They record doubling using the sentence, 'Double ___ is ___' and use repeated addition to represent doubles in the abstract. They look at representations to decide whether that shows doubling or not.

Mathematical Talk

Can you sort these representations in to doubles and not doubles? How do you know they've been doubled?

What comes next in my table, why?

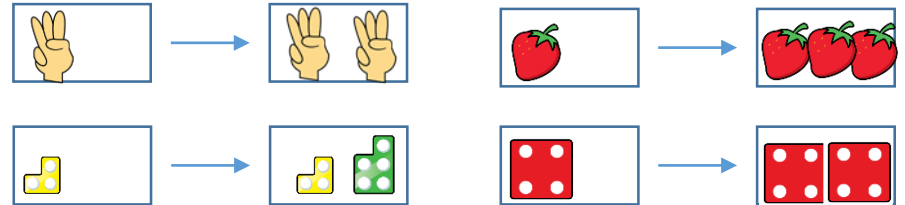
How can we show the double differently?

If double 2 is 4, what is double 20?

What is the largest double we can roll on a normal dice?

Varied Fluency

Circle the representations which have been doubled:



Take a number piece and double it. Complete the sentence.



Double ___ is ___



Double ___ is ___

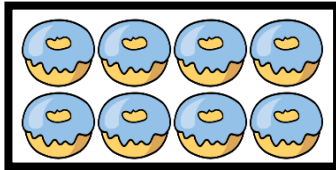
Complete and continue the table.

Build	Represent	Add	Double
		$1 + 1 = 2$	Double 1 is 2
		$2 + 2 = \underline{\quad}$	Double 2 is $\underline{\quad}$
		$3 + 3 = \underline{\quad}$	Double 3 is $\underline{\quad}$
		$\underline{\quad} + \underline{\quad} = \underline{\quad}$	Double 4 is $\underline{\quad}$

Making Doubles

Reasoning and Problem Solving

Louise doubles her donuts. The picture shows what she had after she doubled her donuts.

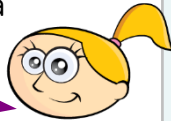


Whitney



Louise started with 4 and ended with 8 donuts.

Eva



Louise started with 8 and ended with 16 donuts.

Mo



Louise started with 2 and ended with 4 donuts.

Who do you agree with? Explain why.

Possible answer:
Whitney is correct because the image shows what she was left with. She had 8 after she doubled and double 4 is 8

Complete the table by doubling each number.

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

What patterns do you notice?

Possible answer:

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

The doubles increase by 2 each time.
The doubles are all even.
The doubles end in 2,4,6,8 or 0

Make Equal Groups - Grouping

Notes and Guidance

Children start with a given total and make groups of an equal amount. They record their understanding in sentences, not through formal division at this stage.

Children can develop their understanding of equal groups by also being exposed to numbers which do not group equally.

Mathematical Talk

How can you tell if the groups are equal? How can you represent the equal groups? Do all numbers divide into equal groups of 2?

How do you sort the cubes into equal groups?

What would happen if there were 21 cubes?

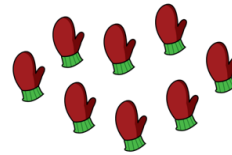
Have I got equal groups?

How do you know?

Does each group need to be arranged in the same way for it to be equal?

Varied Fluency

How many equal groups of 2 can you make with the mittens?



There are ___ groups of 2 mittens.
If you had 10 mittens, how many equal groups of 2 mittens could you make?

Take 20 cubes. Complete the sentences.

I can make ___ equal groups of 2

I can make ___ equal groups of 5

I can make ___ equal groups of 10

Complete the table. Use equipment to help you.

Representation	Description
	There are ___ altogether. There are ___ equal groups of ___
	There are ___ altogether. There are ___ equal groups of ___
	15 has been sorted into 3 equal groups of 5
	___ has been sorted into ___ equal groups of ___

Make Equal Groups - Grouping

Reasoning and Problem Solving

Tommy and Jack each have the same number of sweets.



Tommy has 5 equal groups of 2
Jack has 1 equal group.
How many sweets are in Jack's group?

Jack has 10 sweets in his group.

I am thinking of a number between 20 and 30

I can only make equal groups of 5

What must my number be?

What happens when I try to make groups of 2 with it?

What happens when I try to make groups of 10 with it?

Answer: 25
Children can use practical equipment to solve this and discover what happens.
If you make equal groups of 2 with it there will be 1 left over.
If you make equal groups of 10 with it there will be 5 left over.

Sharing Equally

Notes and Guidance

Children explore sharing as a model of division. They use 1 : 1 correspondence to share concrete objects into equal groups.

Children also need to be given the opportunity to see when a number of objects cannot be shared equally into equal groups.

Mathematical Talk

How can I share the muffins equally?

How many muffins on this plate? How many on this plate? Are they equal? If I had 9 muffins what would happen?

How can I share the objects equally? How many equal groups am I sharing the objects into? Are the groups equal? Are there any left over?

Varied Fluency

- Share the muffins equally between the two plates. Complete the sentence.
 ___ cakes shared equally between 2 is ___



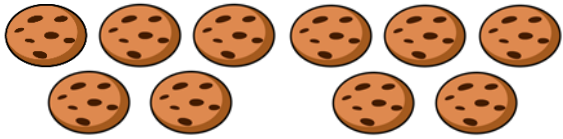
- Collect 20 cubes. Use hoops to represent your friends. Can you share the cubes between 5 friends?
 20 shared between 5 equals ___
 Can you share the cubes between 2 friends?
 20 shared between 2 equals ___
 Can you share the cubes between 10 friends?
 20 shared between 10 equals ___

- Tim has 16 bananas. He shares them equally between two boxes. How many bananas are in each box? Represent and solve the problem.

Sharing Equally

Reasoning and Problem Solving

Dora has 10 biscuits.



She wants to share them equally at her party.

How many people could be at the party?

Possible answers:

- There could be:
- 10 people
- 5 people
- 2 people
- 1 person (Dora)

There are 10 cakes and 2 boxes.

An equal amount needs to be put into each box.



Jack

Put them into groups of 2



Eva

Share them into 2 groups.

Who is correct?
Explain your answer.

Possible answer:

Eva is correct. She has shared the cakes equally and put 5 into each box.