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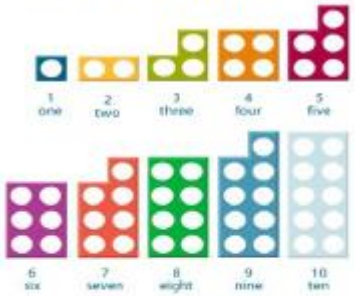
Lead • Empower • Achieve • Drive

Resources	**Links to prior learning/ objectives**	**Vocabulary:**
Base 10, number lines, cubes/ counters, 100 squares, stop watches, clocks	Counting in 2s, 5s and 10s Reading and writing o' clock and half past times **Mastery:** (where to find some resources) • Teaching for Mastery • White Rose **New and old documents** • Mastery maths stickers • Nrich (curriculum mapping)	Multiply, times, groups of, lots of, multiple, odd, even, divide, left, left over, share, group, equals, equal to, commutative, array, row, column, repeated addition, time, intervals, clock, second, minute, hour, day, hands, half past, quarter to/ past, o' clock, Five, ten, fifteen minutes past/to, digital/analogue

Objectives and Teaching

Week 1	Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers
Barriers to ARE (misconceptions) Knowledge of times tables, understanding of symbols	• To know how to recall multiplication facts for the 2, 5 and 10 times tables • To understand what odd and even numbers are • To know how to use multiplication facts to find division facts • To develop the skill of solving problems involving multiplication and division facts

Fluency	**Problem Solving**	**Reasoning**
Use towers of cubes to calculate: 4 x 5= 20 ÷ 2 = 6 x 10= 25 ÷ 5 = A flower has 5 petals. How many petals do 5 flowers have? Circle the odd numbers. 12 13 17 18 21	Tubes of bubbles come in packs of 2 and 5. Holly has 22 tubes of bubbles. How many of each pack could she have? How many ways can you do it? Sally and Katie want to share sweets out equally between them. They can buy bags of 17, 18 or 21 sweets. Which bag should they buy? What other packs of sweets could they buy?	Which has more? 4 bags of sweets with 5 in each or 3 bags of sweets with 10 in each? Explain your reasoning. 20 = ☐ x ☐ What numbers could go in the boxes? Prove it. I have 35p in my pocket in 5p coins. How many coins do I have? Draw a picture to prove your answer.

Look at Numicon up to 10  Which numbers are odd? Which are even? What's the same about the even numbers? What's the same about the odd numbers?	Fran and Lily had a tub of lollies. When they shared them between them they had one left over. Just as they had finished sorting, three of their friends came and wanted some lollies so they shared the same lollies again. This time they had 2 left over. How many lollies might have been in the tub?	
Week 2 **Barriers to ARE (misconceptions)** Understanding of symbols, use of resources to support, knowledge of times tables	Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs • To know how to writing multiplication calculations • To know how to write division calculations	
Fluency 5 x 3= 15 Write a division sentence using the same numbers. Write these addition sentences as multiplication sentences. One has been done for you. 5 + 5 + 5+ 5= 5 x 4 2 + 2 + 2 = 10 + 10 =	**Problem Solving**	**Reasoning** Use the number cards to make multiplication and division sentences. How many numbers up to 20 can you make? 1 2 3 4 5

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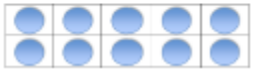
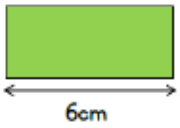
Can you write 4 number sentences to describe the array?

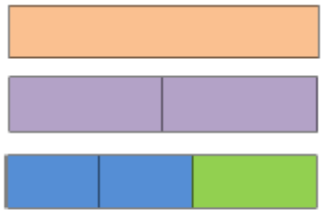


- Each purple block is 8cm long.

Each green block is 6cm long.



How long is a blue block?



Can you write a multiplication or division sentence for each step of working out you do?

Use the picture below to think of multiplication and division sentences using x , ÷ and =

Week 3

Barriers to ARE (misconceptions)

Knowledge of times tables, understanding of sharing and division

Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot

- To know that multiplication of 2 numbers can be done in any order
- To know that division of one number by another cannot be done in any order

Fluency

- Write multiplication sentences for the bars below.
  What do you notice?

4	4	4	4	4
5	5	5	5	

- Fill in the gaps:
  ☐ x 3 = 15
  3 x ☐ = 15

Problem Solving

Use the number cards to make multiplication and division sentences.
How many can you make?

20 2 5 10 4

Reasoning

True or False?
2 x 5 = 5 x 2
2 x 5 = 10 x 1
2 x 5 = 1 x 10
What do you notice?

- Here are some number cards. Use them to fill in each number sentence below.

2	10	20

___ x ___ = ___
___ = ___ x ___
___ ÷ ___ = ___
___ = ___ ÷ ___

Cassie has 4 bags with 5 sweets in each.
Rachel has 5 bags with 4 sweets in each.
How many do they have each?

Can you split the sweets into different numbers of bags so they both still have the same number?

Circle the incorrect number sentence.
Explain your reasons.

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

The rectangle is made of 2 rows of 4 and 4 columns of 2.
Can you write 2 multiplication sentences to show this?
What do you notice about the numbers?

Week 4

Barriers to ARE (misconceptions)

Understanding of addition
Array skills
Understanding how to find the calculation to solve a problem

Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

- To know how to use arrays to show multiplication and division
- To know how to use repeated addition to solve multiplication and division
- To know how to solve multiplication and division problems

Fluency

- Use the pictures to fill in the missing numbers.

☐ groups of ☐ = ☐

Addition sentence:

Multiplication sentence:

Problem Solving

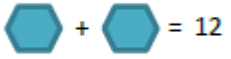
Reasoning

- Compare the number sentences using < > or =

3 + 3 + 3 + 4 ☐ 3 x 4 + 4

5 x 4 + 2 + 2 ☐ 5 + 5 + 5 + 5 + 2 + 2

-  = 12

 = 12

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- I have five 10p coins, exactly enough to buy a chocolate bar.

I need 1 more 10p to buy bottle of pop.
How much is a bottle of pop?

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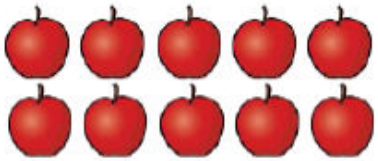
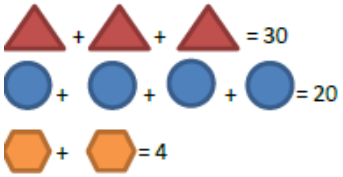
- Here are some apples.



Class 2 are asked work out the total.
Here are four different ways they do it.
Fill in the missing blanks.
..... + ... = 10
..... + ... + ... + ... + ... = 10
..... × ..... = 10
..... × ..... = 10

- If



Complete the addition

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Erik bakes 5 trays of muffins.
Each tray contains 6 muffins.

He sells 16 muffins and eats 5
How many muffins does he have left?

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<td>Week 5
Barriers to ARE (misconceptions)
Counting in 5s, understanding quarter past/ quarter to, understanding of clocks faces</td>
<td colspan="2">Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times
Know the number of minutes in an hour and the number of hours in a day.
• To develop the skill of telling the quarter past and quarter to time
• To develop the skill of telling the time to five minutes
• To develop the skill of writing and drawing the time
• To know the number of minutes in an hour and the number of hours in a day.</td>
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<td>Problem Solving</td>
<td>Reasoning</td>
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Lily starts school at 8:45am. She arrives 10 minutes early. Show what time she arrived on the clock.

What time is the clock showing?

Complete the missing times.
James wakes up at 6:50am. 15 minutes later, he eats his cereal. This takes him 5 minutes. It is now _____. Half an hour later the time is _____. This is when he arrives at work.

Put these clocks in order

- Look at these 3 clocks. What might you be doing at these times in the day?

Sammy starts her questions at 11:10
It takes her 5 minutes per question.
She finishes at 11:55
How many questions did she complete?

Show all the different ways you can calculate how many hours are in 2 days.

- Play pairs – create a set of cards with time facts. When two cards are turned over that equal the same length of time then that person wins those cards e.g.

24 hours

1 day

Half a day

12 hours

At a supermarket, the workers take turns to have a break. All breaks start at either quarter past and quarter to and end at either quarter past or quarter to.
What are the two lengths of break times? How do you know?

The big hand on the clock is pointing to the 8 and small hand is pointing to the 8. What time is it? How do you know?

Which clock is showing 10 past 5?
Explain why.

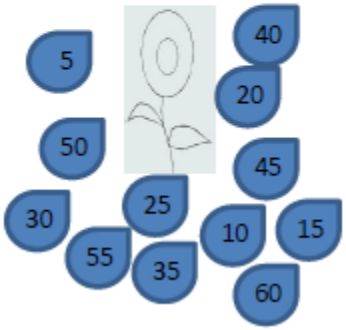
Nick is looking at the amount of minutes in one hour and two hours.

1 hour = 60 minutes
2 hours = 120 minutes

He says, "The amount of minutes are doubling each time. To find how many minutes are in 3 hours I will double 120 minutes."

Is he correct?

- The petals of the flower that shows how many minutes have passed the hour have fallen off. Can you put them back in the right order?



Amie arrives to a party at 4:30pm. She leaves at 5:30pm. How long did she stay?
Tell me in hours and then in minutes.

Tell me:
The number of minutes in an hour.
The number of hours in a day.

True or false?
There are more minutes in the day than there are hours.
Explain why.

Kim says "If you are looking at a clock and adding 3 hours on, the minutes do not change".
Is she correct? Prove it!

Autumn 2 Year 2

Week 6

Barriers to ARE (misconceptions)

Understanding of time aspects (minutes in an hour) Telling the time knowledge and skills

Compare and sequence intervals of time

- To develop the skill of comparing intervals of time
- To develop the skill of sequencing intervals of time

Fluency

- Which is greater?

Half an hour	45 minutes
60 minutes	1 hour

Order these from the earliest time to the latest time:

Half past 2

3 o'clock

1 o'clock

Quarter to 3

Andy worked from half past 10 until 2 o'clock.
Kat worked from 3 o'clock till 6 o'clock.
Who worked the shortest amount of time?

Problem Solving

Amee is planning her birthday. She wants to plan something to do from 9am to 5pm.
Here are the things she wants to do:

- visit the zoo (3 hours)
- go to Pizza Hut (1 hour and a half)
- Have breakfast (half an hour)
- Play party games (1 hour)
- Watch a film (2 hours)

Create a timetable for Amee's day.
Share and compare with a friend.

A football match kicks off at 1pm.
Half time is 45 minutes later.
Full time is 2:50pm.
The first and second half are equal in length.
How long was half time?

Reasoning

Beth needs to be in Leeds for a film showing that starts at 4 o'clock. She can either:

- Get the 3:20 bus that takes half an hour
  or
- Get the 3:30 train that takes 30 minutes.

Which should she take and why?

Kassie records the time every half an hour. Her sequence looks like this
11:15, 11:45, 12:15, 12:45, 1:15, 1:45
What do you notice?
Can you explain why this happens?

Which is time is longer?
43 minutes or 10 minutes less than an hour.
Explain how you know.

Week 7

Fluency

Problem Solving

Reasoning