Objective: I can calculate with units of time and intervals of time.

I can solve problems involving time.

NC: M1: solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate

Using questions 4 b, d and e, assess if any children display errors when calculating with time . The activities provided below support the children with adding, subtracting and calculating differences in time. Assess whether the children need to further secure these strategies before understanding how timetables work. This lesson can be taught before the timetables lesson and activities.

Teacher Input Ideas:
Collect ideas from the children of different activities they do and at different times of the day. Discuss how long some of these activities may last or a what time of day they take place.

Depending on the children's gaps and needs, you may want to split the input into sections to focus on these different skills:

1) **Adding amounts of time to calculate the finishing time of something:**
   Pick an activity and a starting time. How long will this activity last? Ask the children to calculate when it will finish. Vary the difficulty by presenting times in analogue and digital with 12 hour and 24 hour times. Also the difficulty can be increased when children have to cross hours of time.
2) **Subtracting time to calculate the starting time of something:**
   As above but this time for the children to have finishing times. If this activity was 1 hour and 23 mins long, what time did it start?
3) **Calculating the difference in time to work out how long something has lasted:**
   Give the children a starting time and a finishing time for one of their activities. Encourage the children to work out how much time has passed between the 2 times.

   Suggested strategies for calculating with time:
   Practical
   Children to have clocks to move the hands. Model adding and subtracting hours and minutes of time using this.
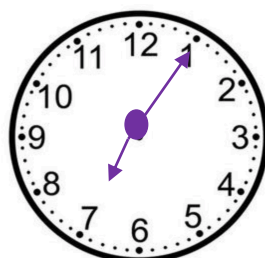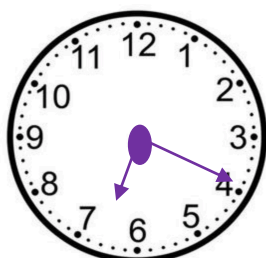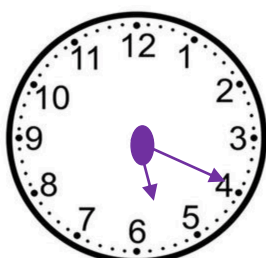
Model adding 1 hr , then 45 mins by counting along in 5s or adding 40mins to 7 o' clock and then 5 mins. Clocks can also be used to model difference in time.

Using a number line
A football game starts at 5:20 and lasts 1 hour and 45 mins

| Add 1 hour | | Add 40 mins | Add 5 mins |
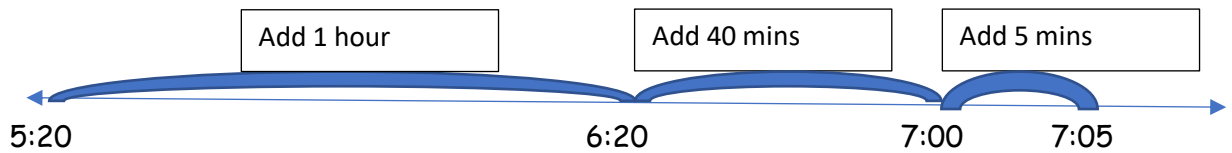
5:20   6:20   7:00   7:05

Also can be used with finding the difference.

Jottings

5:20
6:20
7:00 (I know its 40 mins to 7 from 6:20. So I will add 40 mins and then 5mins)
7:05

Practice Activities

Purple Practice: Most suited for children who are unable to calculate with units of time and will benefit from using practical equipment such as clocks and visual support.

The activity consists of 2 sheets that can be used in a variety of ways depending on the children's gaps in learning.

The visual analogue clocks can be used with the time cards on the second sheet. The children can select an analogue time and then select an activity card with how long it lasts. The children should then explore adding this amount of time using a practical clock.

Additionally, this activity can be amended so that children can work out what time an activity started and use the analogue clocks as the finishing time. The children can explore different combinations of clocks with activities. The children are also provided with the same times on the second sheet but in digital format. The children may want to use these alongside practical clocks to work out the starting or ending times for each activity.

If the children show confidence with adding intervals of time and subtracting these, then the children can be given 2 digital clocks or analogue pictures and to work out the difference in time. In pairs the children can create own word / story problems such as I went to the cinema at 16:32 and left at 18:37. How long was I there for?

Green Practice: Most suited for children who demonstrate understanding of calculating time intervals and are ready to solve word problems.

For the green activity the children are provided with a variety of word problems. Encourage the children to read each problem and understand what is being asked. They may want to underline key information and make jottings to help them. Each question encourages the children to either add hours/minutes or calculate an interval of time. The last question applies knowledge of using a formula and knowledge of weight to calculate how long the chicken needs cooking for.

Yellow Practice Most suited for children who show some accuracy in Question 4 and are ready to explore timetables with 24 hour times and gaps in the timetable.

The children are provided with the departure and arrival times for trains from Leicester to London. All trains are delayed by 12 minutes. The children are to complete the table, working out the new departure and arrival times. This encourages the children to add times crossing hours in some examples and to begin to understand how tables with times can be constructed before the time table lesson. The children are also provided with word problems that require the children to add time beyond the ones in the time table provided. The children are to calculate the length of journeys and original departure times.

Mastery For this mastery the children are required to work out how long James is waiting in a queue for at a theme park . The children are provided with information about how many people are in the queue, how long it takes to get on/off a ride and how many times it goes around the track. The children need to pick out the information which is important and which information to use first.

Key questions:

What information have you got? Which amounts are needed to help you to calculate? What are you going to work out first? How many groups of people are in the queue? How many rides will take place before James can have a go?

Establish that 3 lots of 20 is 60 so 3 lots of people and rides will take place. Each group will take 2mins to get on and off and then 3 lots of 40 seconds. Encourage the children to suggest this. Ask the children how they are going to record their working out, some children may want to create a table to show each groups times, some children may want to great a time line for each group. Establish that each group takes 4 minutes to get on to the ride and to travel around 3 times therefore he will be in the queue for 12 minutes The answers also demonstrate working out that may take place,

Using this information then establish that James will be in the 4th group to get on to the ride . so we already have worked out 12 minutes for 3 groups so James will then spend 2 mins getting on and off the ride and 2 minutes travelling around 3 times. So this will be 16 minutes in total . The children then need to think about adding 16 mins to 13: 57.

This mastery takes encourage the children to cross intervals of time, add amounts of time, use knowledge of grouping and calculating seconds to minutes.

Answers:

Green:

1) 20: 12   2) 1 hour 27 mins

3) 4 hours 48mins   4) 2:25 pm

	Train 1	Train 2	Train 3	Train 4
Leicester departure	08:12	08:34	08:45	09:03
New departure time	08:24	08:46	08:57	09: 15
London Arrival	9:27	09:52	09: 58	10:29
New arrival time	09:39	10:04	10: 10	10:41

a) complete the missing information in the timetable.

b) Train 5's new departure time from Leicester is 9: 29. What time was it due to leave Leicester?

09:17

c) Train 6 takes 69 mins to get to London from Leicester. It arrives in London at 11:04 for its new arrival time. What time was it due to leave Leicester originally?

9:43

d) Train 5 arrives in London at 10:47. How long is the journey?

1 hour 18 mins

Yellow:

Mastery

Part 1

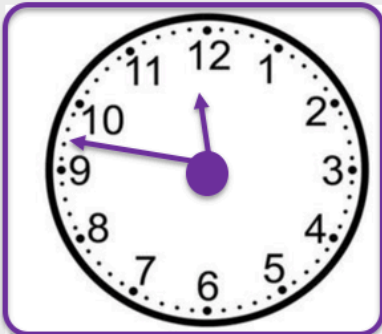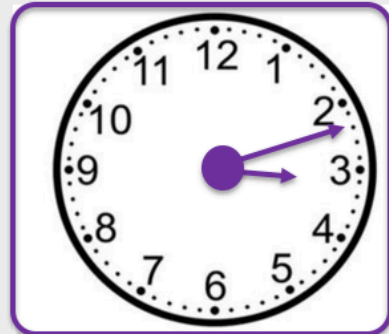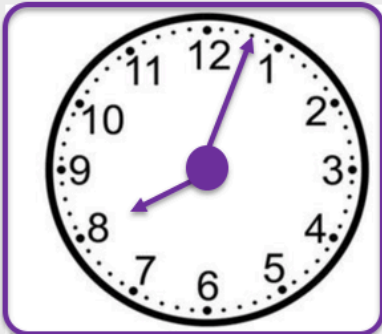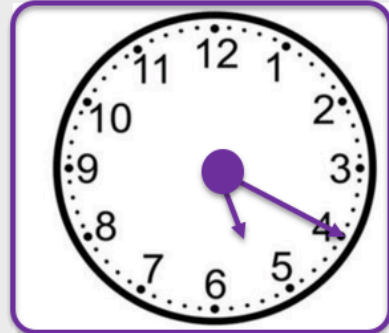| Ride 1 (20 people)	Ride 2 (40 People)	Ride 3 (60 people)
2 mins on/off	2 mins on/off	2 mins on/off
40 secs x 3 = 2 mins	40 secs x 3 = 2 mins	40 secs x 3 = 2 mins

Answer 12minutes

Part 2

Add another 4 mins for James to get on /off ride and travel around the ride.

So 16 minutes in total

 13:57 add 16 mins =

Answer : 14:13

BRICKWORK
Mathematics

BRICKWORK
Mathematics

Purple Activity

LO: I can calculate with units of time practically.
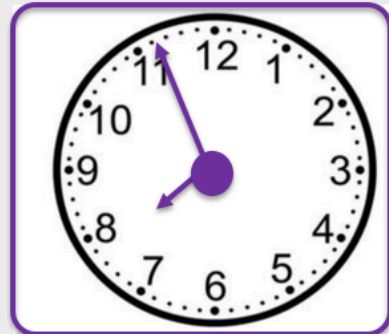
swimming lesson 45 mins	film 1 hour and 27 mins	walk to school 33 mins
football game 1 hour 45 mins	car journey 3 hours 7 minutes	family meal 2 hours 10 mins
eating breakfast 12 mins	after school club 2 ½ hours	a family day out 5 hours 20 mins
13:50	17:20	08:03
15:12	16:32	18:37
11:47	07:56	20:03

1) A film starts at 18:45 at the cinema. It lasts 1 hour and 27 minutes. What time will it finish?

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2) Sanjay's family arrive at the football pitch to watch him play in a match. They arrive at 2:50 pm and leave at 4:17pm. How long are they there for?

3) Year 3 go to the zoo for a school visit. The bus arrives at the zoo for 9:27 . The bus will collect the children at 14:15. How long will the children have to explore the zoo?

4) A chicken weighs 1.5kg. Sophie reads this on the packaging:

Cook for 50mins per KG plus 20 mins

She wants it to be cooked for 4pm. What time will she need to put it in the oven?

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BRICKWORK Mathematics

Below are the departure and arrival times for trains leaving Leicester to London. All trains are delayed by 12 minutes.

	Train 1	Train 2	Train 3	Train 4
Leicester departure	08:12	08:34	08:45	09:03
New departure time	:	:	:	:
London Arrival	9:27	09:52	09: 58	10:29
New arrival time	:	:	:	:

a) complete the missing information in the timetable.

b) Train 5's new departure time from Leicester is 9: 29. What time was it due to leave Leicester?

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c) Train 6 takes 69 mins to get to London from Leicester. It arrives in London at 11:04 for its new arrival time. What time was it due to leave Leicester originally?

:

d) Train 5 arrives in London at 10:47. How long is the journey?

BRICKWORK Mathematics

James is at a theme park. He wants to ride on the dragon roller coaster.

He counts how many people are in the queue to work out how long he will have to queue for. He is the 63rd person.

The ride fits 20 people on at a time and takes 2 minutes to get people on and off every time. The ride goes around the track 3 times taking 40 seconds each time.

How long will James be in the queue for until it is his turn?

If James starts queueing at 13:57, what time will he get off the ride?