Summer Scheme of Learning

Year 2/3

#MathsEveryoneCan

2019-20
In this document, you will find suggestions of how you may structure a progression in learning for a mixed-age class.

Firstly, we have created a yearly overview. Each term has 12 weeks of learning. We are aware that some terms are longer and shorter than others, so teachers may adapt the overview to fit their term dates. The overview shows how the content has been matched up over the year to support teachers in teaching similar concepts to both year groups. Where this is not possible, it is clearly indicated on the overview with 2 separate blocks.

For each block of learning, we have grouped the small steps into themes that have similar content. Within these themes, we list the corresponding small steps from one or both year groups. Teachers can then use the single-age schemes to access the guidance on each small step listed within each theme.

The themes are organised into common content (above the line) and year specific content (below the line). Moving from left to right, the arrows on the line suggest the order to teach the themes.
Notes and Guidance

How to use the mixed-age SOL

Here is an example of one of the themes from the Year 1/2 mixed-age guidance.

**Subtraction**

<table>
<thead>
<tr>
<th>Year 1 (Aut B2, Spr B1)</th>
<th>Year 2 (Aut B2, B3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• How many left? (1)</td>
<td>• Subtract 1-digit from 2-digits</td>
</tr>
<tr>
<td>• How many left? (2)</td>
<td>• Subtract with 2-digits (1)</td>
</tr>
<tr>
<td>• Counting back</td>
<td>• Subtract with 2-digits (2)</td>
</tr>
<tr>
<td>• Subtraction - not crossing 10</td>
<td>• Find change - money</td>
</tr>
<tr>
<td>• Subtraction - crossing 10 (1)</td>
<td></td>
</tr>
<tr>
<td>• Subtraction - crossing 10 (2)</td>
<td></td>
</tr>
</tbody>
</table>

In order to create a more coherent journey for mixed-age classes, we have re-ordered some of the single-age steps and combined some blocks of learning e.g. Money is covered within Addition and Subtraction.

The bullet points are the names of the small steps from the single-age SOL. We have referenced where the steps are from at the top of each theme e.g. Aut B2 means Autumn term, Block 2. Teachers will need to access both of the single-age SOLs from our website together with this mixed-age guidance in order to plan their learning.

**Points to consider**

- Use the mixed-age schemes to see where similar skills from both year groups can be taught together. Learning can then be differentiated through the questions on the single-age small steps so both year groups are focusing on their year group content.
- When there is year group specific content, consider teaching in split inputs to classes. This will depend on support in class and may need to be done through focus groups.
- On each of the block overview pages, we have described the key learning in each block and have given suggestions as to how the themes could be approached for each year group.
- We are fully aware that every class is different and the logistics of mixed-age classes can be tricky. We hope that our mixed-age SOL can help teachers to start to draw learning together.
<table>
<thead>
<tr>
<th>Week 1</th>
<th>Week 2</th>
<th>Week 3</th>
<th>Week 4</th>
<th>Week 5</th>
<th>Week 6</th>
<th>Week 7</th>
<th>Week 8</th>
<th>Week 9</th>
<th>Week 10</th>
<th>Week 11</th>
<th>Week 12</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Autumn</strong></td>
<td></td>
<td></td>
<td>Number: Place Value Y2 – Numbers to 100</td>
<td></td>
<td></td>
<td>Number: Addition and Subtraction Year 2- Numbers within 100 (including money)</td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Y3 – Numbers to 1,000</td>
<td></td>
<td></td>
<td>Year 3- Numbers within 1,000 (including money)</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Spring</strong></td>
<td></td>
<td>Number: Division</td>
<td>Statistics</td>
<td>Measurement: Length and Height</td>
<td>Geometry: Year 2: Shape, Position and Direction Year 3: Shape and Perimeter</td>
<td></td>
<td></td>
<td>Number: Year 2: Fractions &amp; Consolidation Year 3: Fractions</td>
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</tr>
<tr>
<td><strong>Summer</strong></td>
<td>Measurement: Time</td>
<td></td>
<td>Year 3: Four Operations</td>
<td></td>
<td>Measurement: Year 2: Mass, Capacity and Temperature Year 3: Mass and Capacity</td>
<td></td>
<td></td>
<td>Year 3: Fractions recap</td>
<td>Year 3: SSM consolidation</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Consolidation and Investigations</td>
</tr>
</tbody>
</table>
In this section, content from single-age blocks are matched together to show teachers where there are clear links across the year groups. Teachers may decide to teach the lower year’s content to the whole class before moving the higher year on to their age-related expectations. The lower year group is not expected to cover the higher year group’s content as they should focus on their own age-related expectations.

In this section, content that is discrete to one year group is outlined. Teachers may need to consider a split input with lessons or working with children in focus groups to ensure they have full coverage of their year’s curriculum. Guidance is given on each page to support the planning of each block. The themes should be taught in order from left to right.

Year Specific

Year 2 content

Year 3 content
Time

Common Content

Converting Time
Year 2 (Sum B3)
- Hours and Days
Year 3 (Sum B2)
- Months and years
- Hours in a day

Telling the time
Year 2 (Sum B3)
- O’clock and half past
- Quarter past and quarter to
- Telling time to 5 minutes
Year 3 (Sum B2)
- Telling the time to 5 minutes
- Telling the time to the minute

Finding and comparing durations
Year 2 (Sum B3)
- Find durations of time
- Compare durations of time
Year 3 (Sum B2)
- Finding the duration
- Comparing durations
- Start and end times
- Measuring time in seconds

Digital time
Year 3 (Sum B2)
- Using a.m. and p.m.
- 24-hour clock

Both year groups tell the time to the nearest 5 minutes, with Year 3 moving on to tell the time to the nearest minute.

Year 2 focus on converting time between days and hours. Year 3 revisit this as well as looking at how many days in each month and within a year.

Both year groups measure time and compare durations.

Year 3 begin to look at digital time and consider the use of a.m. and p.m.
Block 1 - Time

Theme 1 - Converting time
Children learn that there are 24 hours in a day and 60 minutes in an hour. Children use clocks to convert minutes to hours and minutes. Children should be encouraged to use their knowledge of counting in fives to help them convert.

How many hours are there in a full day? How many minutes are in an hour and a half? How could we calculate this?

Could we count in half an hours? How many half an hours are in one hour?

How many half an hours will there be in two hours?

Starting from midnight show every hour on the clocks for a full day.

There are ___ hours in a day.

Using the clock, show how many minutes there are in 1 hour.
1 hour = _____ minutes
How many minutes would there be in 2 hours?

Match the bars to the times.

- 60 minutes
- 60 minutes
- 60 minutes
- 60 minutes 10
- 60 minutes 60 minutes
- 60 minutes
- 10

90 minutes
- 70 minutes
- 120 minutes
- 2 hours
- 1 hour
I disagree because there are 12 hours am and 12 hours pm therefore equaling 24 hours in a day.

I agree. The hour hand will change but the minutes will stay the same.

Do you agree with Tommy? Explain why.

If you add three hours onto the current time, the amount of minutes to/past the hour do not change.

Do you agree with Rosie? Prove it.

Here are Eva’s calculations for working out how many hours there are in a day.

<table>
<thead>
<tr>
<th>12</th>
<th>6</th>
<th>12</th>
<th>6</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7</td>
<td>1</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>8</td>
<td>2</td>
<td>8</td>
<td></td>
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<tr>
<td>3</td>
<td>9</td>
<td>3</td>
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<td></td>
</tr>
<tr>
<td>4</td>
<td>10</td>
<td>4</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>11</td>
<td>5</td>
<td>11</td>
<td></td>
</tr>
</tbody>
</table>

I counted them up, and there are 25 hours in a day.

What mistake has Eva made?

The day starts at 12 o’clock and ends at 12 o’clock.

Eva has counted 12 o’clock three times.

The final twelve on her list is the start of the next day.

Year 2 | Summer Term | Week 1 to 3 – Measurement: Time
Months and Years

Notes and Guidance

Children look at the concept of years and months. They are introduced to leap years and how they are different from a non-leap year.

Children should explore years using calendars to investigate the number of days in each month. Rhymes and songs are helpful for children to remember the number of days in each month.

Mathematical Talk

When is your birthday? What other significant dates are there during the year? Are they the same every year?

Which month comes before _____?
Which month comes after _____?

Which month changes when there is a leap year? Are there any other months that change length? Is this year a leap year? When will the next one be? When was the last one?

Varied Fluency

Children should spend time exploring a real calendar. They sort the months into groups, by the number of days in each month, for both a year and a leap year. Children can use the groups to compare - what is the same and what is different?

Use the numbers to fill in the gaps in the sentences.

There are _____ days in a year.
There are _____ months in a year.
There are _____ days in a leap year.
There are _____ days in a week.
Leap years happen every _____ years.

Put these dates in order from earliest to latest in a year.

3rd March  2nd March  January 31st  1st December

Earliest  Latest
Months and Years

Reasoning and Problem Solving

4 children describe their birthdays.

**Mo**
My birthday is the first day of the second month.

**Eva**
I was born on the last day of the year!

**Teddy**
I was born on the 15th of June.

**Dora**
I was born two days before Mo.

Can you work out their birthdays and order them from earliest to latest in the year?

**Dora** – 30th Jan
**Mo** – 1st Feb
Teddy - 15th June
Eva - 31st Dec

**Whitney asks Rosie and Jack a question.**

**Rosie**
Some months have 31 days, some months have 30 days. How many months have 28 days?

**Jack**
Only February has 28 days.

**Whitney**
Who do you agree with? Explain your thinking.

They are correct for different reasons. Rosie is correct because only February has exactly 28 days, but Jack is correct because every month has at least 28 days.
Children recap the number of hours in a day and are introduced to language such as ‘noon’, ‘midday’, ‘midnight’. They do not need to know the difference between a.m. or p.m. at this point.

Other facts such as days in a week/month are also reviewed. Attention should be drawn to the difference between a school week and a calendar week and between day-time and a day.

**Mathematical Talk**

What time does the day start? How many hours are there in a day?

How many hours do you spend at school in a day? When does school start and finish?

Why does a clock show 11 o’clock twice in a day?

Does the weekend and the school week split a whole week in half?

**Varied Fluency**

Fill in the gaps in the sentence stems.
There are ____ days in a whole week.
There are ____ days in a school week.
There are ____ hours in a day.
There are ____ hours in a school day.

Put the times/events into the correct place on the diagram.

<table>
<thead>
<tr>
<th>Morning</th>
<th>Afternoon</th>
<th>Evening</th>
<th>Night</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakfast</td>
<td>Midnight</td>
<td>Midday</td>
<td>Go to school</td>
</tr>
<tr>
<td>Supper</td>
<td>Bedtime</td>
<td>Assembly</td>
<td>Brushing teeth</td>
</tr>
</tbody>
</table>

Complete the statements.

1 day = 24 hours  
2 days = ____ hours  
___ days = 120 hours  
___ days = 60 hours  
___ days = 240 hours  
20 days = ____ hours
Mo

I get up at 7 o'clock in the morning and go to bed at 7 o'clock at night. This means I have been awake for a full day.

Do you agree with Mo? Explain your answer.

Children should state that they do not agree with Mo because there are 24 hours in a full day. Mo has only been up for 12 hours which is half a day. A full day would be 7am to 7am.

Teddy

Teddy is not correct, as the children only have to come to school for 23 days if there are no holidays. Children should discuss the fact they do not come to school on a Saturday or Sunday. It is most likely to be March if there are no holidays at all. It is a good opportunity to look at your school calendar with the children.

In this month, there are no school holidays.

In this month we have to come to school for 31 days.
Children recap the Year one objective of telling the time to the hour and half past the hour.

Children should be given the opportunity to create times using individual clocks with moveable hands.

Children read and write times from clocks.

**Mathematical Talk**

What do the numbers represent on the clock face? Which is the hour hand? Which is the minute hand?

Where will the hour hand be at ____?
Where will the minute hand be at ____?
What do you notice about the minute hand at half past?

Can you show me ______?

**Match the events to the approximate times they happen.**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 o'clock</td>
<td>Lunchtime</td>
</tr>
<tr>
<td>Half past 10</td>
<td>Go to school</td>
</tr>
<tr>
<td>12 o'clock</td>
<td>Home time</td>
</tr>
<tr>
<td>Half past 3</td>
<td>Playtime</td>
</tr>
</tbody>
</table>

**What time is it?**

It is ______ past ______

**Complete the tables.**

<table>
<thead>
<tr>
<th>Time</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5 o'clock</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 o'clock</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Half past 4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Who is telling the time correctly?

Alex is correct. Dora has confused the minute hand with the hour hand. Amir has not noticed that the hour hand has not gone past 3 yet.

Alex is incorrect. If the time is half past 11 the hour hand should be halfway between the 11 and 12.

Is Alex correct? Explain your reasoning.

Oh no! The minute hand has fallen off the classroom clock!

Lunchtime is at 12:00

Have the children missed their lunchtime?

Unfortunately, the children have missed their lunch. The hour hand is halfway between 12 and 1 so the time is 12:30.
Children read and draw the times ‘quarter to’ and ‘quarter past’. They use their knowledge of fractions and turns to identify quarter past and quarter to.

Children should recognise that the hour hand moves along with the minute hand. Therefore when the time is quarter past the hour, the hour hand will be just past the hour and when the time is quarter to, the hour hand will be just before the hour.

Where are the hands pointing to?
Can we divide the clock face into four equal parts? Can we link this to fractions?
If the minute hand is pointing at 3, how many minutes have passed the hour?
If the minute hand is pointing at 9, how many minutes until the next hour?
Show me quarter past/to...

Look at the clocks.
Discuss how the minute hand has travelled. Identify when the time is quarter past the hour and quarter to the hour. Give the children individual clocks with moveable hands and ask them to make quarter to/past times.

Match the clocks to the correct time.

Complete the table.

<table>
<thead>
<tr>
<th>The minute hand is pointing to</th>
<th>The hour hand is just after</th>
<th>The time is quarter</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>The minute hand is pointing to</td>
<td>The hour hand is just after</td>
<td>The time is quarter</td>
<td>Quarter to four</td>
</tr>
<tr>
<td>The minute hand is pointing to</td>
<td>The hour hand is just before</td>
<td>The time is quarter</td>
<td>Quarter past four</td>
</tr>
<tr>
<td>The minute hand is pointing to</td>
<td>The hour hand is just before</td>
<td>The time is quarter</td>
<td>Quarter to three</td>
</tr>
<tr>
<td>The minute hand is pointing to</td>
<td>The hour hand is just before</td>
<td>The time is quarter</td>
<td>Quarter past three</td>
</tr>
</tbody>
</table>

The minute hand is pointing to three.
The hour hand is just after six.
The time is quarter past six.
The minute hand is pointing to nine.
The hour hand is just before twelve.
The time is quarter to twelve.
### Quarter Past & Quarter To

#### Reasoning and Problem Solving

**Quarter past is always later than quarter to.**

Do you agree with Teddy? Explain why.

How many quarters of an hour are between 7 o’clock and 9 o’clock. Explain how you found the answer.

It depends on the hour of the times given. For example: quarter to 12 is later than quarter past 11 If the hour remains the same than Teddy is correct.

There are 8 quarters of an hour between 7 o’clock and 9 o’clock.

The train to Blackpool leaves at quarter past and quarter to every hour.

Make a list of the times of the trains Oliver can catch if he gets to the train station between 2 o’clock and half past 4

Oliver could catch the following trains:
- Quarter past 2
- Quarter to 3
- Quarter past 3
- Quarter to 4
- Quarter past 4
Telling Time to 5 Minutes

Notes and Guidance

Children read and show analogue time to 5-minute intervals. Children should be confident at counting from 0 to 60 in steps of 5 so they can then apply this to counting around the clock in fives and use this method to work out what time is shown.

Children need to recognise that once the minute hand gets past 6 the time is described as ‘to’ the next hour, rather than ‘past’ the hour.

Mathematical Talk

How many minutes are there between each pair of numbers on a clock?
How many different ways can you count round the clock?
Where will the minute hand be at _____? Where will the hour hand be at _____?
How do we know whether it is a ‘past’ or a ‘to’ time?
Can you show _____ past/to _____?

Varied Fluency

Using a demonstration clock, ask the children to count round in minutes. When the minute-hand is pointing to a number, record how many minutes have passed the hour in a table. What do they notice? Will this pattern continue?

Show the children times to 5-minute intervals on a large clock. Ask the children to identify what time is being shown. Give the children individual clocks with moveable hands. Ask the children to make times to 5 minute intervals.

Match the times to the correct clock.
Alex is correct. Dora has said the hour before not the next hour. Amir has confused his minute and hour hands.

Sophia starts her Maths questions at 10 past 11
Each question takes her 5 minutes to complete. She completes 7 questions.
What time does Sophia finish her Maths questions? Explain how you found the answer.

Rosie is incorrect. Four 5 minutes are the same as 20 minutes.

Four lots of 5 minutes is the same as quarter of an hour.

Who is correct? Explain your answer.
Do you agree with Rosie? Explain why.

Sophia finishes her Maths questions at quarter to 12
Children may use a clock to count round seven lots of 5 minutes.
Children may do $5 \times 7 = 35$ and count 35 minutes round the clock.
Children tell the time to the nearest 5 minutes on an analogue clock. They focus on the language of “past” and “to”, and will recognise and use Roman numerals on a clock face.

Attention should be drawn to the differences between the minute hand and the hour hand. This is especially important for times that are close to the next hour, for example, 5 minutes to 12.

Which of the hands is the minute hand and which is the hour hand?
Is the minute hand past or to the hour?
How many minutes past/to the hour is the minute hand?
If the minute hand is pointing at the 6, how many minutes have passed in this hour?
What do you notice about the clocks?
Which Roman numeral represents the number ____?
Do we ever say “45 minutes to” the hour?

Give each child a clock with moveable hands. Children represent different times to the nearest 5 minutes on their own clock. Discuss whether the minute hand is past or to the hour in different times.

What time is shown on each clock?

_____ minutes past _____       _____ minutes to _____

Draw the hands on the clock to show the time:

25 minutes to 6
Who do you agree with? Explain your thinking.

Dora is correct because it is not 3 o’clock yet, the hour hand will not be exactly on the 3.

The clock shows ten minutes to 3
Dora

The hour hand is not quite pointing to the 3, so it must be ten to 2
Amir

The time is around half past six. Children may suggest it could be between twenty five to and quarter to seven.

This clock has lost its minute hand.
What time could it be? Justify your answer.
Telling the Time (2)

Notes and Guidance

Children tell time to the nearest minute using an analogue clock. They use the terms ‘past’ and ‘to’.

When telling time ‘to’ the next hour, children may need to count on to find how many minutes are left in the hour.

Mathematical Talk

Which hand is the minute hand? Which hand is the hour hand?

How many minutes is it past the hour?

How many minutes is it to the next hour?

When are the minutes to an hour and the minutes past an hour the same?

If the hour hand is between ___ and ___, which hour is the time referring to?

Varied Fluency

Show children various times to the nearest minute for them to read.
Give each child a clock with moveable hands.
Children represent different times to the nearest minute on their own clock.
Discuss whether the minute hand is past or to the hour in different times.

Draw the hands on the clock from the following times.

Four minutes to 4 24 minutes to 8 24 minutes past 8

Dora is telling the time from an analogue clock.

The hour hand is pointing to XI the minute hand is pointing to XII

What time is it?
This clock has lost its hour hand. What time could it be?

The minute hand is at about 12 minutes to the hour. The time could be 12 minutes to any hour.

This clock has lost its minute hand. What time could it be?

The hour hand is past the 3 and has not yet reached the 4. The hand is closer to the three and therefore the children should recognise that the time has not passed half past 3. You could accept any answers between quarter past to half past 3.
Children use ‘morning’, ‘afternoon’, ‘a.m.’ and ‘p.m.’ to describe the time of day.

Children continue using analogue clocks and will be introduced to digital time for the first time.

Using a.m. and p.m.

Notes and Guidance

What time of the day does ____ happen? Is _____ earlier or later than ______? How do you know whether a time is in the morning or afternoon? What times could be a.m.? What times could be p.m.? What is the difference between analogue and digital? What would the time look like on an analogue clock? How can we change analogue to digital?

Varied Fluency

Using a visual timetable, sort the events into morning and afternoon. Create sentences to describe when events take place. For example: Maths is in the morning. Guided Reading is in the afternoon.

Sort the times from latest to earliest.

- 10:23 a.m.
- 9:45 a.m.
- 9:45 p.m.
- 5:30 p.m.
- 7:31 a.m.
- 10:13 p.m.
- 8:30 a.m.
- 6:32 a.m.
- 12:24 a.m.
- 8:55 p.m.
- 2:11 a.m.
- 7:40 a.m.

Show the times on both analogue and digital clocks.

- Guided reading at 10:00 a.m.
- Home time at 3:30 p.m.
- Lunchtime at 12:00 p.m.
The board shows the times of trains arriving and leaving the train station.

<table>
<thead>
<tr>
<th></th>
<th>Arrives</th>
<th>Leaves</th>
</tr>
</thead>
<tbody>
<tr>
<td>London</td>
<td>5:50 a.m.</td>
<td>6:00 a.m.</td>
</tr>
<tr>
<td>Edinburgh</td>
<td>8:00 a.m.</td>
<td>8:20 a.m.</td>
</tr>
<tr>
<td>Manchester</td>
<td>2:33 p.m.</td>
<td>2:45 p.m.</td>
</tr>
<tr>
<td>Leeds</td>
<td>7:31 p.m.</td>
<td>7:35 p.m.</td>
</tr>
</tbody>
</table>

Ron’s watch shows the time he arrives at the station.

Ron could be catching the train to Edinburgh or Leeds. Children should explain that analogue clocks give no indication to a.m. or p.m. and since it is 20 past 7, Ron could be catching the 8:20 a.m. train or the 7:35 p.m. train.

Which train could he be catching? Explain how you know.

I slept from 8 p.m. to 8 a.m.

Dora is more likely to be correct, because if she sleeps 8 p.m. to 8 a.m., she would be sleeping through the night, and wake up in the morning.

I slept from 8 a.m. to 8 p.m.

Teddy is likely to be incorrect, because he would be sleeping all day and waking up at 8 p.m. (in the evening)
24-hour Clock

Notes and Guidance

Children are introduced to telling the time on a 24-hour digital clock for the first time.

Children spend time looking at analogue and digital clocks at various times throughout the day, in order to compare what is the same and what is different.

Mathematical Talk

Using the 12-hour clock, is the time an a.m. or a p.m. time?

What will the number representing the hour be in 24-hour clock time? How do you know if it will be less than 12 or more than 12?

What will the minutes be in 24-hour time? Where can you count from? When does the number of minutes become 0 again on a 24-hour clock display?

Varied Fluency

Create a diary using pictures to show your day from waking up to going to bed. Label these events using both 12-hour clock and 24-hour clock times.

Match the times to the clocks showing the same time.

Complete the times.

- 13:45 Quarter to two in the ________  17:__ Quarter past three in the afternoon
- 11:20 Twenty past eleven in the ________  16:__ Twenty-five to six in the evening
- 15:50 Ten to four in the ________  09:15 Ten to 9 in the morning
Eva says the clocks are showing the same time of day.

Is she correct? Explain how you know.

Eva could be correct. The clocks are both showing twenty past 8. However, children should recognise that the analogue clock does not show whether the time is a.m. or p.m., so this could be showing 8.20 a.m. or 8.20 p.m.

Teddy says the time has an 8 in it, it has to be 8 o’clock.

Teddy is not correct. Children should give examples to show this is incorrect. For example: 18:00, 8:30, 10:38 etc.
Block 1 - Time

Theme 4 - Finding and comparing durations
Find Durations of Time

Notes and Guidance

Children identify the start and end time of an event. They use these times to work out how long an event lasted. Children should understand this is the duration of an event. Children use individual clocks and number lines to help them work out the duration of an event. They can count in steps of 5 minutes to help them.

Mathematical Talk

What is the start time? What is the end time? How can we show this on the clock? How long did the event last?

How did you work out the duration? Are there any other methods for working out duration?

Varied Fluency

How much time has passed from the start to end time?

Complete the table.

<table>
<thead>
<tr>
<th>Start</th>
<th>End</th>
<th>Time passed</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 past 2</td>
<td>5 to 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Jack leaves school at quarter past 3
He arrives home at five to 4
How long was Iqbal’s journey?
### Find Durations of Time

#### Reasoning and Problem Solving

<table>
<thead>
<tr>
<th>Oh no! The hour hand has fallen off the class clock!</th>
</tr>
</thead>
<tbody>
<tr>
<td>The film could have lasted 40 minutes, but children may reason that most films last more than an hour, so it is more likely to be an hour and 40 minutes or two hours and 40 minutes.</td>
</tr>
<tr>
<td>Aimee is planning her birthday. She wants to plan something to do from 9am to 5pm.</td>
</tr>
<tr>
<td>There are 8 hours in Aimee’s day so children could create different combinations for Aimee’s day.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Start</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>The clock shows the start and end time of a film.</td>
<td></td>
</tr>
</tbody>
</table>

How long do you think the film lasted?

Aimee 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 Palace (1 hour and a half)
- Have breakfast (half an hour)
- Play party games (1 hour)
- Watch a film (2 hours)

Create a timetable for Aimee’s day. Compare it to your friends – is it the same?
Children compare times using ‘longer’ and ‘shorter’. They order times from longest to shortest and vice versa. Children then compare durations of time taken by particular events. They could explore ways to work out durations of time most efficiently, including using empty number lines and using their knowledge that there are 60 minutes in an hour.

Which is longer 2 minutes or 1 hour? How can you order the times? How many minutes does each TV show last? How can we count the minutes efficiently? How much longer is …………. than ………………? How can we efficiently work out the length of time each person works?

Can you order the times from longest to shortest?

Use the table to complete the sentences.

<table>
<thead>
<tr>
<th>TV Show</th>
<th>Starts</th>
<th>Ends</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pop World</td>
<td>3 o’ clock</td>
<td>Twenty to 4</td>
</tr>
<tr>
<td>Animal Patrol</td>
<td>Half past 6</td>
<td>Five to 7</td>
</tr>
<tr>
<td>Super Cars</td>
<td>Quarter past 8</td>
<td>Five past 9</td>
</tr>
</tbody>
</table>

______________ is the shortest TV show.
______________ is longer than ___________ and ___________

Joe works from half past 10 until 3 o’ clock.
Emma works from 9 o’ clock until half past 12
Who works the longest amount of time?
I do not agree with Teddy, because both films last exactly the same length of time – 1 hour and 30 minutes.

Rosie has an hour for her lunch break. If she takes 10 minutes to eat her lunch, does she have enough time to complete all of the playground activities?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skipping</td>
<td>7 minutes</td>
</tr>
<tr>
<td>Ball skills</td>
<td>10 minutes</td>
</tr>
<tr>
<td>Treasure hunt</td>
<td>21 minutes</td>
</tr>
<tr>
<td>Trim trail</td>
<td>19 minutes</td>
</tr>
</tbody>
</table>

How do you know?
Children find the durations of events using both analogue and digital clocks. They should be given opportunities to practically work out durations of time using clocks with moveable hands. Number lines are also a useful model.

Children explore the most efficient ways of breaking the time down in order to work out the duration. For example: half hours, quarter of an hour and five minutes.

When did ____ start, and when did it finish?

How many hours/minutes is a full turn of the minute hand around the clock?

Do we need to count each individual minute?

How else could you break down the duration to make it easier to count?

### Varied Fluency

#### Calculate the duration of the TV programmes.

<table>
<thead>
<tr>
<th>TV Programme</th>
<th>Start Time</th>
<th>Finish Time</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pals</td>
<td>06:30</td>
<td>07:30</td>
<td></td>
</tr>
<tr>
<td>Dennis the explorer</td>
<td>15:15</td>
<td>18:15</td>
<td></td>
</tr>
<tr>
<td>The football show</td>
<td>12:00</td>
<td>14:00</td>
<td></td>
</tr>
<tr>
<td>An adventure</td>
<td>10:40</td>
<td>12:40</td>
<td></td>
</tr>
</tbody>
</table>

#### Use an individual clock to work out the time spent running then complete the sentences.

Rosie started running at 7:20 a.m. and stopped at 8:45 a.m. Rosie ran for _____ minutes.

Tommy started running at 09:10 and stopped at 09:55. Tommy ran for _____ minutes.

Amir gets on a bus at 15:23. It arrives at 16:22. How long was the bus journey? How many ways can you find to work out the answer?
### Finding the Duration

#### Reasoning and Problem Solving

<table>
<thead>
<tr>
<th>Eva starts playing her piano at 11:30</th>
</tr>
</thead>
<tbody>
<tr>
<td>She plays for 45 minutes before having a half an hour break.</td>
</tr>
<tr>
<td>She then plays for another 15 minutes.</td>
</tr>
<tr>
<td>What time did she finish?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lunchtime begins at:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lunchtime ends at:</td>
</tr>
<tr>
<td><strong>1:10</strong></td>
</tr>
<tr>
<td><strong>1:10</strong></td>
</tr>
</tbody>
</table>

Teddy and Rosie are working out how long lunchtime lasts for.

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<table>
<thead>
<tr>
<th>Lunchtime begins at:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lunchtime ends at:</td>
</tr>
<tr>
<td><strong>1:10</strong></td>
</tr>
</tbody>
</table>

- **Teddy**
  - I did three quarters of an hour then added 10

- **Rosie**
  - I did 1 hour take away 5 minutes

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Both children’s methods are correct.

- Teddy has found the duration by $15 + 15 + 15 + 10 = 55$ minutes.
- Rosie has found the duration by noticing that one hour after the start of lunch it will be 1:15, so she needs to take 5 minutes from 1 hour to also give 55 minutes.
Comparing the Duration

**Notes and Guidance**

Children compare durations of time using analogue and digital clocks. They could use empty number lines to model the situations as these will assist with bridging over hours.

They use their knowledge of addition and subtraction, and that there are 60 minutes in an hour, to compare the length of time taken by particular events or tasks.

**Mathematical Talk**

Which is the longest amount of time?

Which is the shortest amount of time?

Is ______ longer or shorter than _____?

How much longer was _____?

How much shorter was _____?

**Varied Fluency**

Use your class daily timetable to answer these questions.

Which is the longest lesson?

Which is the shortest lesson?

How much longer is ______ than _____?

Use the symbols <, > and = to compare the following durations.

- 2:00 p.m. – 6:00 p.m.
- 07:30 a.m. – 09:30 a.m.
- 03:30 a.m. – 05:00 p.m.

Complete the sentence about the duration of the train journeys.

<table>
<thead>
<tr>
<th>Destination</th>
<th>Train departs</th>
<th>Train arrives</th>
</tr>
</thead>
<tbody>
<tr>
<td>London</td>
<td>08:45</td>
<td>11:35</td>
</tr>
<tr>
<td>Leeds</td>
<td>10:05</td>
<td>10:33</td>
</tr>
<tr>
<td>Manchester</td>
<td>13:10</td>
<td>14:20</td>
</tr>
</tbody>
</table>

The journey to London is ___________ than the journey to Manchester.

Which journey takes the least amount of time?
Comparing the Duration

Reasoning and Problem Solving

Eva and Mo are having a race. It takes Eva 3 and a half minutes to complete the race. It takes Mo 3 minutes and 15 seconds.

Is Eva correct? Explain how you know.

Eva is incorrect. Eva took longer to finish the race therefore she finished after Mo. The winner of a race is the person who finishes in the shortest amount of time.

I won because I got a higher time.

Jack’s school starts at ten to 9 and finishes at quarter past 3.

He uses the number line to calculate how long the school day is.

Jack works out the school day is 5 hours and 35 minutes long. Jack is incorrect.

Explain his mistake.

Jack has worked out the time from 3:15 p.m. until ten to 9 in the evening. He should start at 8:50 a.m. and work through noon to 3:15 p.m.
Children find start and end times to the nearest minute using both analogue and digital times.

They could use real clocks with moveable hands whilst learning how to add and subtract times, and then move to number lines to help calculate start and end times.

Part-whole models could also be used to split longer intervals.

Which hand do you need to move?

Do you need to move the hand clockwise or anti-clockwise?

What time should the number line start at?

Will you jump forwards or backwards?

How many intervals will you break the duration into?

Would a part-whole model help?

Notes and Guidance

Varied Fluency

Practice finding start/end times by moving hands on a clock. For example, if playtime starts at five past ten and lasts for 20 minutes, what time will playtime end?

A fifty minute maths lesson finishes at 10.15. What time does the lesson start?

A 40 minute TV programme starts at the time shown. What time does it finish?

We can use a number line to work out the end time. Use this method to work out:

- The end time of a 25 minute lesson starting at 2.15 p.m.
- The start time if a 1 hour 10 minute journey ended at 4 o’clock.

Which activity ends the latest?

Gymnastics starts at 15:30 and lasts 1 hour 15 minutes.

Football starts at 16:05 and lasts 45 minutes.
Tommy is halfway through watching his favourite TV programme. He looks at his watch and it shows this time.

The show is less than 1 hour long.

What could the start and end time be?

How many different start and end times can you find?

Amir says,

School ends in 45 minutes. What time will it be?

It's 20 minutes to 3 o'clock, so school finishes at 3:25 p.m.

Whitney says,

School ends at 2:85

I agree with Amir, because Whitney has not remembered that there are 60 minutes in an hour and has added 45 minutes to 2:40

Children may use a number line to prove Amir is correct.

Possible answers include:

Start at 15.20 and end at 16.10
Start at 15.25 and end at 16.05
Start at 15.30 and end at 16.00
Start at 15.35 and end at 15.55
Start at 15.40 and end at 15.50
Children measure and compare durations of time in seconds. It is important for children to have a realistic sense of what time in seconds feels like, as they often count in seconds too quickly. They could use a stopwatch to compare, for example, counting to 10 seconds in their heads with the actual timed duration. They recognise that there are 60 seconds in one minute and use this to write durations of time in different ways e.g. 80 seconds is the same as 1 minute and 20 seconds.

Mathematical Talk

What can we use to measure time in seconds accurately? Can you suggest a task that lasts ____ seconds? Which task took the longest/shortest time to complete? How many seconds are there in 1 minute? If a task takes longer than 60 seconds, how else could we record the duration of time? How could we work out how many seconds there are in ____ minutes?

Varied Fluency

Children use a stopwatch to find the length of time it takes, in seconds, to complete different tasks. For example, run across the hall/playground, do 10 star jumps, write their name. How long did each task take? Order the tasks based on the time they took to complete.

Match the times in words to the times shown on the stopwatches.

- Two minutes five seconds
- 10 seconds less than 2 minutes
- Two minutes 50 seconds
- 150 seconds

Complete the table.

<table>
<thead>
<tr>
<th>Time in minutes</th>
<th>Time in seconds</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 minutes</td>
<td></td>
</tr>
<tr>
<td>3 minutes 20 seconds</td>
<td>100 seconds</td>
</tr>
</tbody>
</table>
Dora works out how many seconds there are in 4 minutes 15 seconds. She says,

Dexter uses a bar model to help him.

Dora thinks there are 100 seconds in 1 minute, but there are 60. Dexter is correct $60 \times 4 = 240 \quad 240 + 15 = 255$ seconds.

That’s easy, it is 415 seconds.

Each minute has 60 seconds. So it’s 4 lots of 60 plus 15.

Who is correct?

Alex takes 153 seconds to skip around the playground.

Jack is quickest. If we convert 2 minutes 23 seconds into seconds it is $120 + 23 = 143$ seconds. So Jack was 10 seconds quicker than Alex.

Who is the quickest? Explain how you know.

True or False?

• 3 minutes 5 seconds $< 190$ seconds
• 4 minutes $= 204$ seconds
• 170 seconds $> 2$ minutes 50 seconds

Dora thinks there are 100 seconds in 1 minute, but there are 60. Dexter is correct $60 \times 4 = 240 \quad 240 + 15 = 255$ seconds.

4 minutes 15 seconds

$60 \quad 60 \quad 60 \quad 60 \quad 15$

Each minute has 60 seconds. So it’s 4 lots of 60 plus 15.