Objective: I can convert between different units of time .

NC: M1: solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate
NC: M 2: use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places

 For this lesson some children will need visual support and most children should be encouraged to apply written and mental calculation strategies.
Ensure children have been taught how to x and divide with 2 digit amounts before teaching this lesson.

Teacher Input Ideas: Provide the children with large pieces of paper to record all the different things they know about time. What different units of time can you record? How do they have relationships with each other? How can we use one unit of time to find out another unit of time? Encourage the children to create their own tables, time lines, bar diagrams or mind maps.

Recap with the children the relationships between time (see purple sheet 1).

Dependent on the children's gaps, you may want to split the activities and inputs across more than one lesson. There are different resources provided below such as: converting seconds to minutes; minutes to hours and hours to days.

Model strategies for converting seconds into minutes. You may want to recap the 6 and 60 times tables and display these to help the children.

Work out simple ones first such as 120 seconds = ? minutes.

Then provide more challenging ones where the children need to convert seconds to minutes and minutes to seconds.
How will I work this one out? How will my knowledge of the 60 or the 6 times table help? How many lots of 60 are in 235? How will I work out what is remaining?
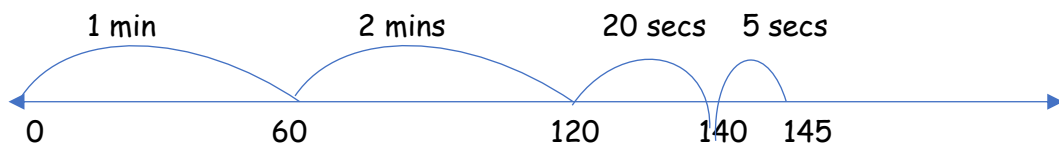
Suggested methods to support with conversions:

Bar model

145 seconds		
60 seconds 1 minute	60 seconds 1 minute	25 sec
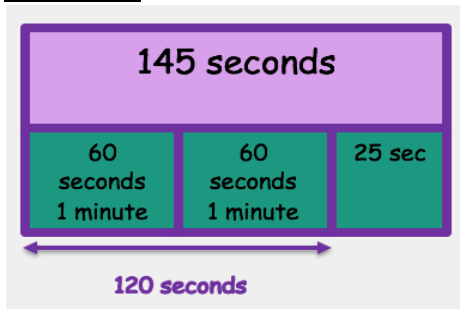
120 seconds

2 minutes and 25 seconds.

Number line

1 min   2 mins   20 secs   5 secs

0   60   120   140   145

Written and mental methods

How many hours in 6 days?

```
      2 4
  ×     6
  _____
    1  4 4
       2
```

How many minutes in 3150 seconds?

5 2 remainder 30 seconds

```
60 | 3 1 5 0
     3  1 5        (50 x 60 = 3000)
-    3  0 0
       1 5 0       ( 2 x 60 = 120)
     - 1 2 0
     _____
       r 30 seconds
```

Mental:

360 seconds into minutes

360 divide by 60

I know that 6 x 6 is 36

So 6 lots of 60 seconds = 360 seconds

= 6 minutes

<u>Repeat for other conversions such as:</u>

- Minutes to seconds
- Minutes to hours
- Hours to minutes
- Hours to days   (you may want display the 24 x table)
- Days to hours

<u>Practice Activities</u>

<u>Purple Practice:</u> Most suited for children who made errors in question 3 of the prior learning assessment and will benefit from exploring conversions of seconds and minutes using the bar model method.

For the purple activity the children are provided with visual bar models to help them to convert between seconds and minutes.

Once the children show confidence with the images provided, the children can explore drawing their own bar models, number lines or performing calculations with other amounts such as :

482 seconds to minutes   8 minutes 50 seconds to minutes

897 seconds to minutes   1200 seconds into minutes

<u>Green Practice:</u> Most suited for children who made errors in question 3 of the prior learning assessment and will benefit from exploring conversions between minutes/ hours and hours/days.

There are 4 green activity sheets to support children with the conversion of minutes/ hours and hours/days. The activities provide support through the use of the bar model and the children are encouraged to fill out their own values as each activity progresses. The children may want to explore this alongside the use of a number line or use of x and ÷ calculation methods.

Once the children show confidence with the questions provided, they can explore drawing their own bar models, number lines or performing calculations with other amounts such as :

134hours to days   258 hours to days   2875 hours to days

16 days to hours   78 days to hours   123 days to hours

Yellow Practice Most suited for children who will benefit from ordering amounts of time and applying knowledge of time conversions.

For the yellow activity the children are provided with sets of blocks that contain different units of time. The children are to look at each set and suggest which unit of time they will convert the amounts to so that the amounts can be compared and ordered. For example, in the first question the children may suggest converting each amount to days.

The children should be encouraged to use the space around the blocks to record the converted times to help to compare. Encourage the children to then order the amounts once all converted. The children may want to cut the blocks out and order them or record in the space provided. Remind the children to record the answers in the amounts and units they were given on the blocks.

Encourage the children to discuss how they are converting the amounts and the methods they use. Also encourage the children to talk about the strategies they use to help them to order and record their answers.

Mastery For this mastery task the children are asked to work out how old they are in days. They may need access to calendars to help them to work out how many days have passed since their last birthday and to work out how many leap years have passed.

Key questions

- How will you find this out? Where will you start? Why?
- How many full years have you lived? Explain how this will help you? What do you know about the relationship between years and days?
- There are 365 days in a year. When is this different? How many leap years have there been since you were born? Explain why this information helps you?
- Explain what else you need to think about. When was your last birthday? How are you going to work out how many days have passed since then? What do you know about the length of each month? How will this help you to get an accurate answer? How long has it been since your last birthday?

The children are presented with a challenge too: How old are you in hours?

- How will you calculate this? What method will you use?

Provide lots of talk time for children to share ideas and strategies and to reason their answer.

<u>Answers:</u>

Purple Activity 1:

1) 6 minutes   2) 4 minutes

3) 2 minutes 25 seconds   4) 4 minutes 10 seconds

Purple Activity 2 :

1) 200 seconds   2) 170 Seconds

3) 340 seconds   4) 425 seconds

Green Activity 1:

1) 240 minutes   2) 420 minutes

3) 195 minutes   4) 117 minutes

5) 285 minutes

Green Activity 2:

1) 8 hours   2) 4 hours 45 minutes

3) 2 hours 10 minutes   4) 3 hours 28 minutes

5) 5 hours 15 minutes

Green Activity 3:

1) 2 days   2) 3 days

3) 5 days   4) 1 1/2 days

5) 3 1/2 days

Green Activity 4:

1) 96 hours   2) 144 hours

3) 84 hours   4) 54 hours

5) 42 hours

Yellow :

1) a fortnight ,   240 hours,   9 days,   1 week.

2) 8 hours   ¼ day   300minutes   3600 seconds

3) 2 days   1 ½ days   35 hours   1200minutes

Mastery:

Encourage the children to share their answers and discuss why we will all have different answers. As a class set an approximation of a minimum and maximum answer. Discuss how you can work this out using the knowledge that they are in year 6.

Unit of time	is the same as...
seconds	1 minute
60 minutes	hour
hours	day
7 days	week
days	year
weeks	year

BRICKWORK Mathematics

360 seconds

| 60 seconds 1 minute | 60 seconds 1 minute | 60 seconds 1 minute | 60 seconds 1 minute | 60 seconds 1 minute | 60 seconds 1 minute |

minutes

240 seconds

| 60 seconds 1 minute | 60 seconds 1 minute | 60 seconds 1 minute | 60 seconds 1 minute |

minutes

145 seconds

| 60 seconds 1 minute | 60 seconds 1 minute | 25 sec |

minutes   seconds

← 120 seconds →

250 seconds

| 60 seconds 1 minute | 60 seconds 1 minute | 60 seconds 1 minute | 60 seconds 1 minute | 10 sec |

minutes seconds

← 240 seconds →

BRICKWORK Mathematics

3 minutes 20 seconds

| 1 minute 60 seconds | 1 minute 60 seconds | 1 minute 60 seconds | 20 secs |

seconds

2 minutes 50 seconds

| 1 minute 60 seconds | 1 minute 60 seconds | 50 seconds |

seconds

5 minutes 40 seconds

| 1 minute 60 seconds | 1 minute 60 seconds | 1 minute 60 seconds | 1 minute 60 seconds | 1 minute 60 seconds | 40 secs |

seconds

7 minutes and 5 seconds

| 1 minute 60 seconds | 1 minute 60 seconds | 1 minute 60 seconds | 1 minute 60 seconds | 1 minute 60 seconds | 1 minute 60 seconds | 1 minute 60 seconds | 5 se cs |

seconds

4 hours

1 hour 60 mins	1 hour 60 mins	1 hour 60 mins	1 hour 60 mins

_____ minutes

7 hours

_____ minutes

3 hours 15 minutes

1 hour 60 mins	1 hour 60 mins	1 hour 60 mins	15 mins

← 3 hours →

_____ minutes

1 hour 57 mins

_____ minutes

4 and $\frac{3}{4}$ hours

_____ minutes

BRICKWORK Mathematics

480 minutes

60 mins 1 hour	60 mins 1 hour	60 mins 1 hour	60 mins 1 hour	60 mins 1 hour	60 mins 1 hour	60 mins 1 hour	60 mins 1 hour

hours

285 minutes

60 mins 1 hour	60 mins 1 hour	60 mins 1 hour	60 mins 1 hour	45 mins

← 240 minutes →

130 minutes

←→

208 minutes

315 minutes

48 hours

| 24 hours 1 day | 24 hours 1 day |

[days]

72 hours

| 24 hours 1 day | 24 hours 1 day | 24 hours 1 day |

[days]

120 hours

[days]

36 hours

| 24 hours 1 day | 12 hrs |

[days]

84 hours

[days]

BRICKWORK Mathematics

4 days			
1 day 24 hours	1 day 24 hours	1 day 24 hours	1 day 24 hours

hours

6 days					
1 day 24 hours	1 day 24 hours	1 day 24 hours	1 day 24 hours	1 day 24 hours	1 day 24 hours

hours

3 ½ days			

hours

2 ¼ days		

hours

1 ¾ days	

hours

BRICKWORK
Mathematics

Order each of these amounts of time from the longest amount to the shortest amount of time.

1.

| 1 week | 240 hours | 9 days | a fortnight |

longest   shortest

          ,   ,   ,

2.

| $\frac{1}{4}$ of a day | 8 hours | 300 minutes | 3600 seconds |

longest   shortest

          ,   ,   ,

3.

| $1\frac{1}{2}$ days | 1200 minutes | 35 hours | $\frac{1}{7}$ of a fortnight |

longest   shortest

          ,   ,   ,

Challenge:
Pick your own units of time and order them.

BRICKWORK
Mathematics

How old are you in days?

How old are you in hours?