White Rose Maths

**Summer - Block 3**

# Time

Year 4

# Overview

## Small Steps

- Hours, minutes and seconds
- Years, months, weeks and days
- Analogue to digital – 12 hour
- Analogue to digital – 24 hour

## NC Objectives

Read, write and convert time between analogue and digital 12- and 24-hour clocks.

Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.

# Hours, Minutes & Seconds

## Notes and Guidance

Children recap the number of minutes in an hour and seconds in a minute from Year 3

They use this knowledge, along with their knowledge of multiplication and division to convert between different units of time.

## Mathematical Talk

What activity might last one hour/minute/second?

How many minutes are there in an hour?

How can we use a clock face to check? How could we count the minutes?

How many seconds are there in one minute? What could we use to check?

How many minutes in _____ hours? How many seconds in _____ minutes?

## Varied Fluency

Sort the activities under the headings depending on the approximate length of time they take to complete.

| One hour | One minute | One second |
|----------|------------|------------|
| Clap | Run around the playground | Blink |
| Swimming lesson | PE lesson | Tie your shoe laces |

One hour = ____ minutes        One minute = ____ seconds.

Two hours = ____ minutes        Three minutes = ____ seconds.

Half an hour = ____ minutes        ____ minutes = 240 seconds

Josh reads a chapter of his book in 5 minutes and 28 seconds.
Tom reads a chapter of his book in 300 seconds.
Who reads their chapter the quickest?

# Hours, Minutes & Seconds

## Reasoning and Problem Solving

Jack takes part in a sponsored silence.

He says,

> If I am silent for five hours at 10p per minute, I will raise £50

Do you agree with Jack?
Explain why you agree or disagree.

Jack is incorrect.
There are 60 minutes in an hour so
$60 × 10p = 600p$ or £6
$£6 × 5 = £30$

Dora says,

> To convert hours to minutes, I multiply the number of hours by 60

Is she correct? Can you explain why?

Dora is correct. For example
1 hour = 60 minutes
$1 × 60 = 60$
2 hours = 120 minutes
$2 × 60 = 120$

Five friends run a race.
Their times are shown in the table.

| Name | Time |
|------|------|
| Eva | 114 seconds |
| Dexter | 199 seconds |
| Teddy | 100 seconds |
| Whitney | 202 seconds |
| Ron | 119 seconds |

Which child finished the race the closest to two minutes?

What was the difference between the fastest time and the slowest time?
Give your answer in minutes and seconds.

Ron was the closest to two minutes, as he is one second quicker than 2 minutes (120 seconds).

Fastest time 100 seconds, slowest time 202 seconds.

The difference between the fastest and slowest time is 1 minute and 42 seconds.

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# Years, Months, Weeks & Days

## Notes and Guidance

Children recap the concept of a year, month, week and day from Year 3

They use this knowledge, along with their knowledge of addition, subtraction, multiplication and division to convert between the different units of time.

## Mathematical Talk

How many days are there in a week? How many days are there in each month?
How many weeks in a year?
How many days are there in ____ weeks? What calculation do we need to do to convert days to weeks/weeks to days?
How many months/weeks/days are there in ____ years?

## Varied Fluency

Use a calendar to help you complete the sentences.

There are ____ months in a year.

There are ____ days in February.

____ months have 30 days, and ____ months have 31 days.

There are ____ days in a year and ____ days in a leap year.

Complete the table.

| Number of days | Number of weeks |
| --- | --- |
| | 5 |
| 49 | |
| | 12 |

Sally is 7 years and 2 months old.
Macey is 85 months old.
Who is the oldest?
Explain your answer.

# Years, Months, Weeks & Days

# Reasoning and Problem Solving

Amir, Rosie and Jack describe when their birthdays are.

Amir says,

> My birthday is in exactly two weeks.

Rosie says,

> My birthday is in exactly 2 months.

Jack says,

> My birthday is in 35 days.

Use the clues to work out when their birthdays are if today is the 8th June.

Amir – 2 weeks is equal to 14 days so his birthday is 22nd June.

Rosie – 8th August

Jack – there are another 22 days left in June plus 13 in July, so his birthday is 13th July.

## Always, sometimes, never?

There are 730 days in two years.

Sometimes – if both of the years are not leap years this is true. If one is a leap year then there will be 731 days in the 2 years.

## True or false?

- 3 days $>$ 72 hours.

- $2\frac{1}{2}$ years $=$ 29 months

- 11 weeks 4 days $<$ 10 weeks 14 days

False – 3 days is equal to 72 hours

False - $2\frac{1}{2}$ years is greater than 29 months

True

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# Analogue to Digital – 12 hour

## Notes and Guidance

Children convert between analogue and digital times using a format up to 12 hours. They use a.m. and p.m. to distinguish between times in the morning and afternoon.

They understand that how many minutes past the hour determines the digital time.

It is important for children to recognise that digital time need to be written in 4-digit format. For example, 09:30 a.m. not 9:30

## Mathematical Talk

What time is the analogue clock showing?

How many minutes is it past the hour? How can you count the minutes efficiently?

How do we record each time in digital format?

What does a.m./p.m. mean?

Can you order the activities starting with the earliest?

What would the time look like on Alfie's digital watch when he left home?

## Varied Fluency

The time is _____ past 10

This can also be written as ____ minutes past 10

The digital time is ____ : ____

Write each of these times in the digital format.

Record the time of each activity in digital format.

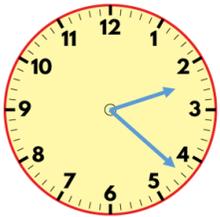| | | | |
|---|---|---|---|
| Netball | | p.m. | |
| Football | | a.m. | |
| Rock climbing | | p.m. | |
| Roller disco | | a.m. | |

Alfie looks at his digital watch and sees this time. What could he be doing at this time?

01:00 p.m.

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## Analogue to Digital – 12 hour

## Reasoning and Problem Solving

Annie converts the analogue time to digital format.
Here is her answer.



22 : 02

Explain what Annie has done wrong.
What should the digital time be?

Annie has recorded the minutes past the hour first instead of the hour.
The time should be 02 : 22

12 : 21

On a 12 hour digital clock, how many times will the time be read the same forwards and backwards?

Children can work systematically to work this out. For example, 12:21, 01:10, 02:20, 03:30 etc.

Jack arrives at the train station at the time shown in the morning.
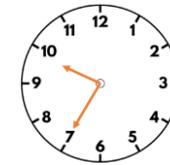
Which trains could he catch?



| Destination | Departs |
|-------------|---------|
| York | 07 : 10 a.m. |
| New Pudsey | 09 : 25 a.m. |
| Bramley | 09 : 42 a.m. |
| Leeds | 10 : 03 a.m. |

How long will Jack have to wait for each train?

Jack could catch the train to Bramley or Leeds.

He would have to wait 7 minutes to go to Bramley and 28 minutes to go to Leeds.

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## Analogue to Digital – 24 hour

### Notes and Guidance

Children now move on to convert between analogue and digital times using a 24 hour clock

They use 12 and 24 hour digital clocks, and a number line, to explore what happens after midday.

### Mathematical Talk

What do you notice about the time 1 o'clock in the afternoon on a 24 hour digital clock?

How will the time be shown for 3 o'clock in the morning/afternoon? How do you know?

What time is the analogue clock showing?

Why is it important to know if it is a.m. or p.m.?

What time does she leave school on a 24 digital clock?

### Varied Fluency

Explore an interactive 12 and 24 hour digital clock with the children. Compare what happens when the time reaches 1 o'clock in the afternoon. Move the 24 hour clock on to 2 o'clock.
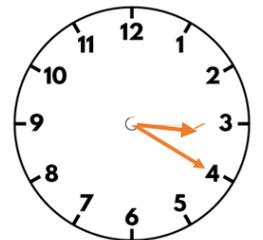Plot the times above a 0-24 number line.
What do you notice?
Record these times using 24 hour digital format.
4 pm          8 pm          11 pm

Match the analogue and digital times.

a.m          p.m          p.m.          a.m.

13 : 10          07 : 10          00 : 45          21 : 20

Sally leaves school at the time shown.
She arrives home 1 hour later.
What will the time be on a 24 hour digital clock?

## Analogue to Digital – 24 hour

## Reasoning and Problem Solving

Three children are meeting in the park.

Rosie says,

> We are meeting at 14:10.

Teddy says,

> We are meeting at 02:10 p.m.

Eva says,
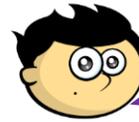
> We are meeting at ten to two.

Will all the children meet at the same time?
Explain your answer.

Annie has recorded the minutes past the hour first instead of the hour.
The time should be 02 : 22 a.m.

Children can work systematically to work this out. For example, 12:21, 01:10, 02:20, 03:30 etc.

Jack says,

> To change any time after midday from 12 hours to 24 hours digital time just add 12 to the hours

Will this always be true? Are there any examples where this isn't the case?

Sometimes true

You need to add 12 to the hour, but not if it is 12 in the hours e.g. 12:04 p.m.

Can you match the time dominoes together so that the touching times are the same?

| 20:55 | 13:50 | 09:55 |
| --- | --- | --- |
| Ten to two | Five to ten | Ten to three |

| 15:05 | 02:50 | 16:10 |
| --- | --- | --- |
| Ten past 4 | Five past 3 | Five to nine |

Can you create your own version for your partner?

Children may find more than one way to solve this.