


Planning Overview
Year 4 Measures – Time

Convert between different units of measure [for example, kilometre to metre; hour to minute].

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.

	Teaching and Learning
Reading and writing time on analogue clocks	<p>Revisit telling the time on the analogue clock drawing attention to the difficult aspects of this. Look back at plans from Year 2 and 3 for children who have not yet grasped this.</p> <p>Children could make Top Tips for telling the time to share with Year 3 explaining the tricky parts when learning to tell the time with pictorial examples. E.g.</p> <p>When the minute hand points at 3, 6 or 9 we consider the fraction of a whole revolution that the minute hand has made and describe these times as quarter past, half past and quarter to.</p> <p>When the minute hand points to other numbers on the righthand side of the clock we just say the number of minutes past. So 14 minutes past 3, then quarter past 3, then 16 minutes past 3.</p> <p>When the minute hand points directly to one of the numbers on the right hand side we can multiply that number by 5 to quickly work out the minutes past. So if it points to 4 we know $4 \times 5 = 20$ so it is 20 past.</p> <p>When the minute hand points to times on the left hand side of the clock we count anti-clockwise to count the number of minutes to the hour.</p> <p>It is important that the hour hand is positioned at exactly the right position as well as the minute hand. It moves from one number to another in 1 hour so at half past it would be halfway between two numerals, at 20 to it would be a bit before the halfway point.</p> <p>NRICH – Watch the clock</p> <p>During the third hour after midnight the hands on a clock pointed in the same direction (so one hand was over the top of the other).</p> <p>At what time, to the nearest second, did this happen?</p> 

Reading and writing time on digital clocks and converting time between analogue and digital 12-hour clocks

Recap how to tell the time on a 12-hour digital clock. The minutes are always shown past the hour. The hour can be a 1 or 2-digit number but it is important to always have 2 digits to represent the minutes. Zero is used as a place holder when there are fewer than 10 minutes – including 00 for o'clock.

Recap the 3 types of duration problem from Year 3.

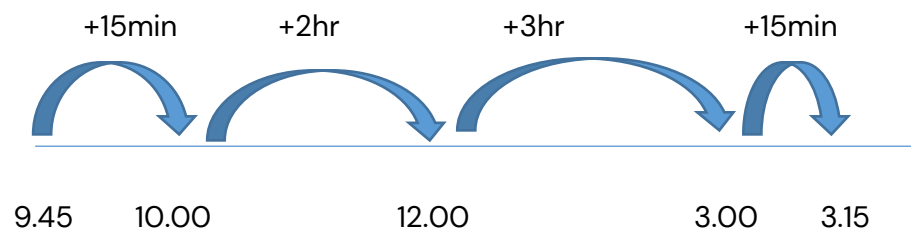
A – Given start and end time, count on to find the duration

B – Given start time and duration, count on to find the end time

C – Given end time and duration, count back to find the start time.

A blank number line can be used to support with these problems

E.g: a school day starts at 9.45 and ends at 3.15. how long is the school day?



Children to complete fluency questions involving the passing of time on digital clocks and/or converting between analogue to digital times.

Bob checks the clock as he leaves his house and it shows this time.



When he arrives at his friend's house it is 12:18, how long did it take him to get there?

A film starts at 5:20pm and lasts for 1 hour and 45 minutes. What time did it finish?

Sam's swimming lesson lasts 45 minutes and it takes him 10 minutes to get changed and ready for his lesson. What time does he need to arrive if his lesson finishes at 5:15pm?

True or False – 9:31am is closer to 10am than 9am. Explain your reasoning.

First4Maths Digging Deeper Activity – first two sections

SETTING THE SCENE

You are working at a triathlon event as the official timekeeper. Your first job is to calculate and send out the start times for the swimming event for each competitor.

The first competitor starts at 9:06 am and there is a 3 minute gap between each competitor. What time will the tenth competitor get into the water? What about the 32nd? How many competitors will have started the race by noon?

Have the children made the link between the 3 minute gap and 60 mins in 1 hour?

EXPLORE

The second event is cycling. The third competitor to start the swim is now in the lead and started the cycling at 9:32. How long did it take them to do the swimming event?

Can you fill in the missing times and durations for four more competitors?

Start time swimming	Start time cycling	Duration of swim
14:23	14:51	
17:27		28 minutes
12:54	13:26	
10:49		29 minutes

Reading and writing time on 24-hour clocks and converting from 12-hour to 24-hour digital clocks and analogue clocks

Ask children to do a timeline of their day starting from their maths lesson until the maths lesson tomorrow. Children to write the times above their timeline and list the durations of what they do within the next 24 hours.

Look at the times that the children have written on their timeline, model counting around a clock, 10 o'clock, 11 o'clock, 12 o'clock, 13 o'clock, 14 o'clock... children may question this as we do not say 13 o'clock but we are showing that the count of hours can continue past 12.

Model how to convert to 24-hour time, when we get to 1pm we write this as 13:00 because this is the 13th hour of the day. Ask the children if they can help you add 24-hour times onto your timetable and then complete their own.

Plan a whole day event to mark a special occasion or just your perfect day. What will happen and what times will things start and finish? Create a timetable with times shown in 12-hour digital and 24-hour digital times.

Spend time converting times from a 12-hour digital clock. Is the time an a.m. or a p.m. time? How do you know? On the 24-hour digital clock, what will the number representing the hour be? When is it more than 12 and when is it less than 12? Are the times ever the same on both the 12-hour and 24-hour digital clocks? (This can depend on the 12-hour digital clock you are using as it may not

have a zero place holder e.g. 3:25am and 03:25) What's the same, What's different?

What do you notice about 12 and 24-hour times after noon?

1pm – 13:00

2pm – 14:00

3pm – 15:00

Can you explain why the hours in the 24-hour time are 12 more than the 12-hour time?

Can you continue the pattern?

Complete a range of fluency questions such as matching times shown in words, on analogue clocks and as 24-hour clocks, reading times on one clock and recording the same time on a different clock, ordering times shown on different types of clock.

Can children order times given in a range of formats e.g.

Half past three in the afternoon

09.35

Ten to eight at night

23:45

NRICH – 5 on the Clock & Wonky watches

5 on the Clock



On a digital clock showing 24-hour time, over a whole day, how many times does a 5 appear?

Is it the same number for a 12-hour clock over a whole day?

nrich.maths.org

Wonky Watches

Age 7 to 11
Challenge Level ★★

Mandeep's watch loses two minutes every hour.
Adam's watch gains one minute every hour.
They both set their watches from the radio at 6:00 a.m. then start their journeys to the airport. When they arrive (at the same time) their watches are 10 minutes apart.



At what time (the real time) did they arrive at the airport?

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

Have a bank of activities. Sort them into whether the time taken to complete them would be best measured in hours, minutes or seconds.

Children to explore converting from seconds to minutes, minutes to hours, hours to days. Children to remember conversions do not operate around base 10 in these cases.

Children to work through fluency questions. E.g.

Rewrite 245 minutes in hours and minutes.

How many years and months in 64 months?


Convert 84 days into weeks and days.

Children to apply knowledge to solve word problems based on converting time. E.g. If I do a sponsored silence for $4\frac{1}{4}$ hours, how many minutes am I silent for?

If we have 5 maths lessons each week and each lesson lasts 1 hour and 15 minutes, how many hours and minutes do we have maths each week? How long will we spend learning Maths in February? Use the calendar to help you.

Lighthouses

On the coast there are three lighthouses.



The first light shines for 3 seconds, then is off for 3 seconds.
The second light shines for 4 seconds, then is off for 4 seconds.
The third light shines for 5 seconds, then is off for 5 seconds.

All three lights have just come on together.
When is the first time that all three lights will be off?
When is the next time that all three lights will come on at the same moment?

Teaching objectives
Solve mathematical problems or puzzles.
Recognise multiples of 4, 8 and 10.
Explain methods and reasoning.

51

Questions and Activities to Develop Reasoning

Another and Another
After how many seconds would the second and third lights both be shining? And another...? And another...?

Prove It
The first and second lights will both be shining after 20 seconds. Prove it.

Convince Me
Only one of the lights is shining after 36 seconds. Convince me that it cannot be the first light.

Peculiar Obvious General
The lighthouse keeper asks one of the fishermen for a time when the first light would be off. What would be a peculiar, obvious and general answer?

<https://www.first4maths.co.uk/product/maths-challenges-with-reasoning/>

First4Maths Digging Deeper – Taking it Further Section

In a real triathlon, the competitors have to have a transition between events so that they can get changed and gather the equipment that they need to complete the next event. By the end of the triathlon, the competitors will all have done 3 events and 2 transitions between them.

Can you calculate which competitor came first, second and third from the data below?

	Duration Swim	Transition 1	Duration Cycling	Transition 2	Duration Run
Ruth	4 mins 30 seconds	312 seconds	56 mins 15 seconds	134 seconds	17 mins 48 seconds
Kirsty	4 mins 51 seconds	169 seconds	1 hour 43 seconds	125 seconds	27 mins 32 seconds
Laura	3 mins 45 seconds	115 seconds	42 mins 54 seconds	26 seconds	13 mins 58 seconds
Pip	4 mins 27 seconds	156 seconds	56 mins 11 seconds	41 seconds	16 mins 23 seconds

**Making links
and
consolidation**

Play approaching Midnight game on NRICH. Adjust the settings as appropriate.

Approaching Midnight

Here's a strategy game with lots to explore. Can you find out enough to guarantee a win, no matter what the settings? This game is part of our creativity project, which you can read more about [here](#).



**Approaching Midnight
Jump Straight In** Live
Age 7 to 14

If you'd like to explore the game freely, without any nudges from us, choose this version.



**Approaching Midnight
What Next?** Live
Age 7 to 14

Want some suggestions about where to go next with the game?



**Approaching Midnight the
Ultimate** Live
Age 7 to 14

Want a serious challenge? Have a look at these ideas for changing the Approaching Midnight game.



**Approaching Midnight Get
Started** Live
Age 7 to 14

Like a bit of help getting into the game? Then have a look at this.



**Approaching Midnight
Taking it Further** Live
Age 7 to 14

Here we offer some suggestions about how you could take the Approaching Midnight game further.

Make links to timing events in PE, e.g. running events, can you improve your timings from the beginning of the half term to the end?