

# Reasoning and Problem Solving

## Step 3: Analogue to Digital – 12 Hour

### National Curriculum Objectives:

Mathematics Year 4: (4M4b) [Read, write and convert time between analogue and digital 12- and 24-hour clocks](#)

### Differentiation:

Questions 1, 4 and 7 (Reasoning)

**Developing** Convert between analogue and digital to compare times in order to explain whether a person is late or not. Includes reading and recording time to the nearest 5 minutes.

**Expected** Convert between analogue and digital to compare times in order to explain whether a person is late or not. Includes reading and recording time to the nearest minute.

**Greater Depth** Convert between analogue and digital to compare times in order to explain whether a person is late or not. Includes reading and recording time to the nearest minute using a numberless clock face.

Questions 2, 5 and 8 (Problem Solving)

**Developing** Calculate the earliest and latest times using understanding of am/pm and being able to compare analogue and digital times. Includes reading and recording time to the nearest 5 minutes.

**Expected** Calculate the earliest and latest times using understanding of am/pm and being able to compare analogue and digital times. Includes reading and recording time to the nearest minute.

**Greater Depth** Calculate the earliest and latest times using understanding of am/pm and being able to compare analogue and digital times. Includes reading and recording time to the nearest minute using a numberless clock face.

Questions 3, 6 and 9 (Problem Solving)

**Developing** Use understanding of converting analogue and digital times to calculate the missing hands or digits. Includes reading and recording time to the nearest 5 minutes.

**Expected** Use understanding of converting analogue and digital times to calculate the missing hands or digits. Includes reading and recording time to the nearest minute.

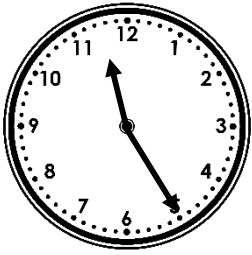
**Greater Depth** Use understanding of converting analogue and digital times to calculate the missing hands or digits. Includes reading and recording time to the nearest minute using a numberless clock face.

More [Year 4 Time](#) Resources.

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## Analogue to Digital – 12 Hour

1a. Carter arrives at the zoo at the time shown on the analogue clock. He thinks he's on time to watch the sealion show.



Event	Start Time
Petting zoo	10:45am
Lion feeding	11:10am
Sealion show	11:30am

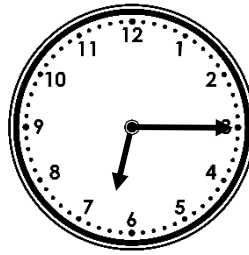
Is he correct? Explain why.



PS

## Analogue to Digital – 12 Hour

1b. Maya arrives at the circus at the time shown on the analogue clock. She thinks she's on time to see the acrobats.



Performers	Start Time
Clowns	05:50pm
Acrobats	06:05pm
Trapeze	06:30pm

Is she correct? Explain why.



PS

2a. Which is the earliest and latest time?

am pm

05:10am

05:05am 10:40pm

10:35pm

pm am



PS

2b. Which is the earliest and latest time?

pm

03:05am 09:04pm

am pm

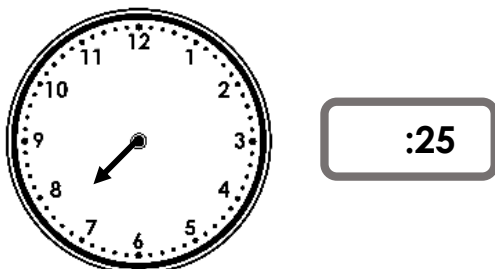
02:55am 09:35pm

am



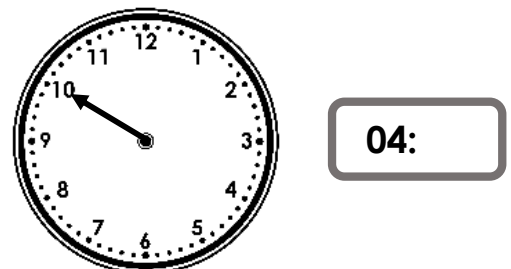
PS

3a. These clocks both show the same time. What could the missing minute hand and hour be?



R

3b. These clocks both show the same time. What could the missing hour hand and minutes be?



R

## Analogue to Digital – 12 Hour

4a. Ryan arrives at the cinema at the time shown on the analogue clock. He thinks he's on time to watch Space Wars.



Film	Start Time
Captain Britain	11:30am
Space Wars	11:46am
Spider Boy	12:07pm

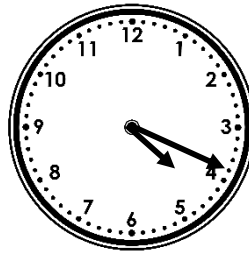
Is he correct? Explain why.



PS

## Analogue to Digital – 12 Hour

4b. Martha arrives at the Leisure Centre at the time shown on the analogue clock. She thinks she's on time for yoga.



Activity	Start Time
Gymnastics	04:17pm
Trampolining	04:12pm
Yoga	04:22pm

Is she correct? Explain why.



PS

5a. Which is the earliest and latest time?

am pm

03:19am

11:18am

11:12pm

03:18pm

01:27am

pm am



PS

5b. Which is the earliest and latest time?

pm

10:09am

11:14pm

am

01:27am

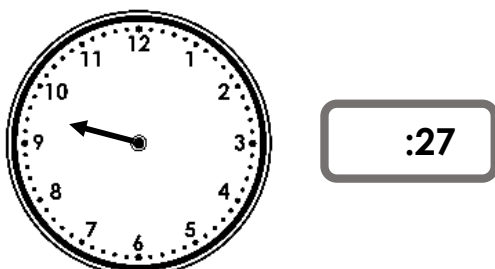
10:01pm

am



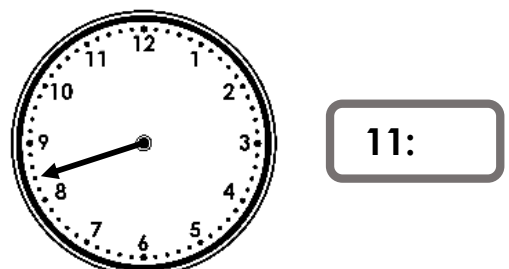
PS

6a. These clocks both show the same time. What could the missing minute hand and hour be?



R

6b. These clocks both show the same time. What could the missing hour hand and minutes be?



R

## Analogue to Digital – 12 Hour

7a. Louis arrives at the theatre at the time shown on the analogue clock. He thinks he's on time to watch the play.



Act	Start Time
Warm-up act	07:12pm
Play	07:28pm
Interval	08:47pm

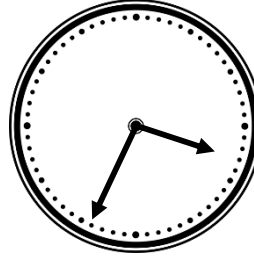
Is he correct? Explain why.



PS

## Analogue to Digital – 12 Hour

7b. Lin arrives at the horse show at the time shown on the analogue clock. She thinks she's on time to watch eventing.



Activity	Start Time
Dressage	09:38am
Show jumping	12:22pm
Eventing	03:46pm

Is she correct? Explain why.



PS

8a. Which is the earliest and latest time?

AM PM

01:04am

01:02am 09:29pm

09:31pm

PM AM



PS

8b. Which is the earliest and latest time?

PM

02:17am 11:27pm

AM PM

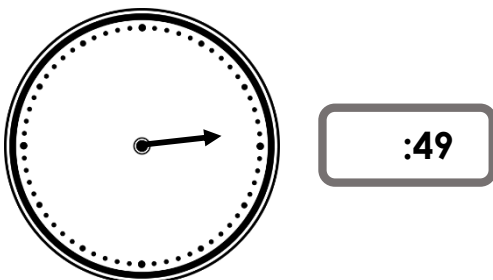
02:03am 10:59pm

AM



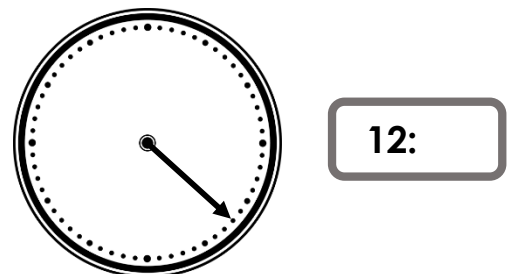
PS

9a. These clocks both show the same time. What could the missing minute hand and hour be?



R

9b. These clocks both show the same time. What could the missing hour hand and minutes be?



R

## Reasoning and Problem Solving Analogue to Digital – 12 Hour

### Developing

- 1a. Carter is on time to watch the sealion show, as he is 5 minutes early.  
2a. 05:05am is the earliest time. 10:45pm is the latest time.  
3a.



07:25

### Expected

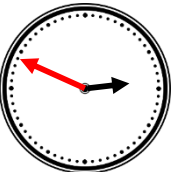
- 4a. Ryan is not on time to watch Space Wars as he is 4 minutes late.  
5a. 02:45am is the earliest time. 11:50pm is the latest time.  
6a.



09:27

### Greater Depth

- 7a. Louis is not in time for the play as he is 5 minutes late.  
8a. 01:01am is the earliest time. 09:36pm is the latest time.  
9a.



02:49

## Reasoning and Problem Solving Analogue to Digital – 12 Hour

### Developing

- 1b. Maya is not on time for the acrobats as she is 10 minutes late.  
2b. 02:55am is the earliest time. 09:55pm is the latest time.  
3b.



04:50

### Expected

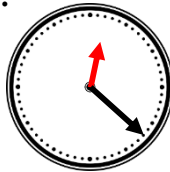
- 4b. Martha is on time for yoga as she is 3 minutes early.  
5b. 01:20am is the earliest time. 11:15pm is the latest time.  
6b.



11:42

### Greater Depth

- 7b. Lin is on time for the eventing as she is 12 minutes early.  
8b. 02:03am is the earliest time. 11:54pm is the latest time.  
9b.



12:22