Reasoning in the classroom

Trip to the park

Support materials for teachers

Year 3

Llywodraeth Cymru
Welsh Government

Year 3 Reasoning in the classroom – Trip to the park

These Year 3 activities relate to time.

Activity 1

Trip to the park
Learners work out how long a family can stay in a park before they must return home.

Includes:

- Trip to the park question
- Markscheme

Activity 2

Ship's time
They use the historical way that sailors communicated to extend their understanding of time.

Includes:

- Explain and question – instructions for teachers
- Whiteboard – Ship's bell
- Resource sheet – Ring the bell
- Teachers' sheet – Ship's times

Activity 3

One-minute ball
They investigate how to complete a task in a precisely defined time interval.

Includes:

- Explain and question – instructions for teachers

Reasoning skills required

Identify	Communicate	Review
Learners choose methods and agree ways of approaching problems.	They explain what they have done and why.	They consider their findings and how they might adapt their methods for future challenges.

Procedural skills

- **Times of the day**
- **Time intervals**

Numerical language

- **Even/odd**
- **Accurate**

Activity 1

Trip to the park

Activity 1 – Trip to the park

Outline

This Year 3 activity involves time. Learners reason how long a family can remain in a park before they must return home.

You will need

Trip to the park question
One page for each learner

Markscheme

Can we go to the park please?

Yes.

It's **4 o'clock** now.

We must be back home by **5 o'clock**.

The park is **10 minutes** away.

How long can they spend at the park?

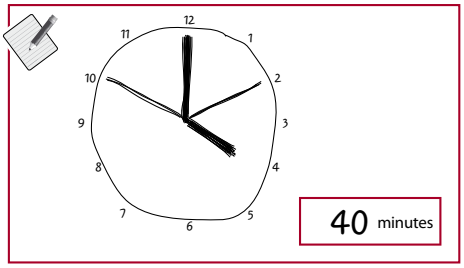
minutes

3m

Activity 1 – Trip to the park – Markscheme

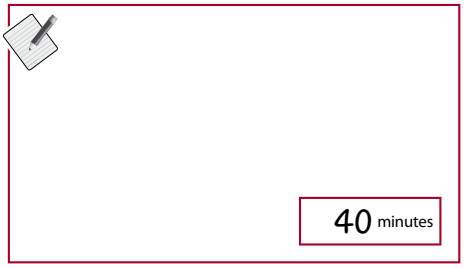
Marks	Answer	
3m	**40** minutes	
Or 2m	Shows 10 to 5, or equivalent time	◀ **The time to leave the park**
	Or	
	Gives the answer 50 minutes	◀ **Has not realised there are two journeys, not one** (Common error)
Or 1m	Shows 10 past 4, or equivalent time	◀ **Time of arrival at the park**
	Or	
	Shows 60	◀ **Number of minutes in one hour**
	Or	
	Gives the answer 80 minutes	◀ **Has taken one hour to be 100 minutes** (Common error)

Activity 1 – Trip to the park – Exemplars



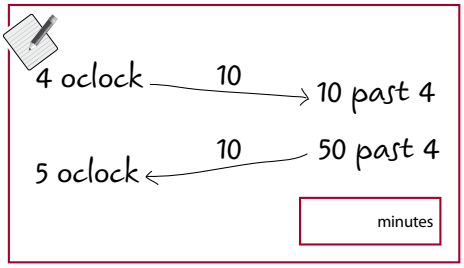
Correct; **3 marks**

- This learner shows different times on a clock to support their thinking.



Correct; **3 marks**

- In contrast, this learner shows no evidence of their approach and needs support to understand the importance of showing working.

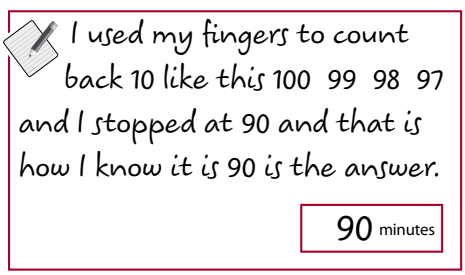


Shows 10 to 5; **2 marks**

- This learner shows their method clearly and effectively. Although '50 past 4' is unconventional, it is a correct representation of 10 to 5.

Shows 60; **1 mark**

Common error Engaging with only the total time is a common error.



Incorrect; **0 marks**

- This learner has made two errors – they have allowed for only one journey to or from the park and assumed that one hour is 100 minutes.

Activity 2

Ship's time

Activity 2 – Ship's time

or

Outline

This activity focuses on how, historically, sailors used bells to communicate the time of day.

Learners consider the number of bells rung at different times throughout the day, then create questions of their own for the class to answer.

You will need

- **Whiteboard – Ship's bell**
- **Resource sheet – Ring the bell**
- **Teachers' sheet – Ship's times**
- **A 30-minute timer** (optional)
- **A bell** (optional)

Activity 2 – Ship's time

Explain

Ask learners if they know why a watch *(timepiece)* is called by that name. *(Historically sailors took turns in 'watching' the seas and making sure the ship was on course, and each of those turns was called a 'watch' which lasted exactly four hours.)* Before watches were invented, how did the sailors know what time to start work?

Explain that they used a timer, like a sand timer, to measure off each half hour. At the end of each half hour, a bell was rung so that everyone on the ship knew what the time was.

At the start of every watch, the bell was rung eight times. Half an hour later, the bell would be rung once. Half an hour after that, it would be rung twice, and so on throughout the four-hour watch. *(Check understanding by asking volunteers to play the part of ringing the ship's bells throughout a watch, illustrating how the number of rings increases from one, half an hour after the start of a watch, to eight at the end of that watch and the beginning of the next one.)*

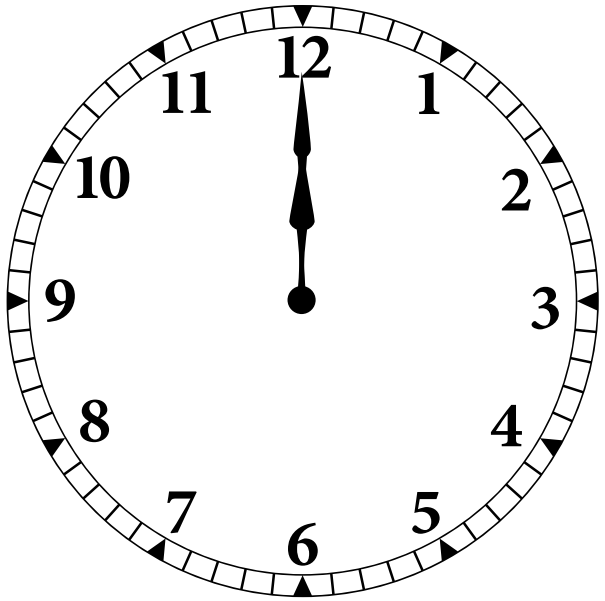
Ask what time it is when one day ends and another starts. Then say that it is midnight on board the ship, and the ship's bell rings eight times. Some poor sailors have to start work. What time will their watch end? *(4 o'clock in the morning)* Show **Ship's bell** on the whiteboard and discuss. Then give each group/pair a copy of **Ring the bell**, and ask them to fill in the gaps. *(There is more than one possible answer for the time in the final question.)*

Ask learners to imagine having a bell like this at home and at school. Eight bells would ring at midnight. When else would eight bells ring? *(4am, 8am, noon, 4pm and 8pm)* Each group takes it in turn to choose a time *(secretly)*. They tell the class something about the time of day and ring the bell the correct number of times. The rest of the class work out what time it is. *(For ease of reference, the different bells are shown on the teachers' sheet* **Ship's times***.)*

Question

- Why would it have been important to have a bell on the ship? *(So everyone could hear the time.)*
- Is measuring time like this completely accurate? Why/why not?
- Could you use this method to tell someone when it was quarter-past an hour?
- How many watches were there in a full day? *(6)* So how many times would eight bells be rung?
- If you hear an even number of bells, what does that tell you about the time? (*It is something o'clock.)* What about an odd number of bells? *(It is half past.)*
- Have you made sure that your question(s) for the rest of the class have only one answer? How?

WB

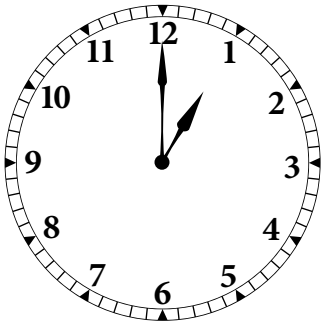
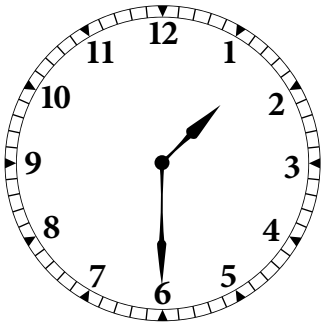
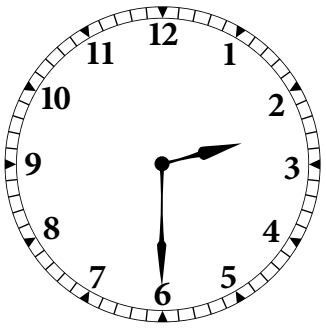
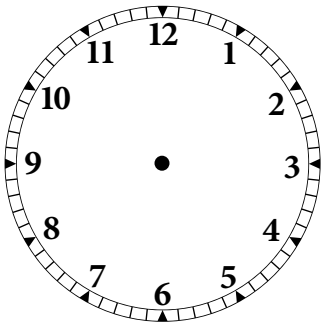


It is **midnight**.

There are **8** bells.

Some sailors finish their watch.

Some sailors start their watch.

	 The time is **1 o'clock**. There are _____ bells. The sailors have been working for _____ hour.
	 The time is _____. There are _____ bells. The sailors have been working for _____ hours.
	 The time is _____. There are _____ bells. The sailors must work for another _____ hours.
	 The time is _____. There are **7** bells. The sailors have been working for _____ hours. They must work for another _____ hours.

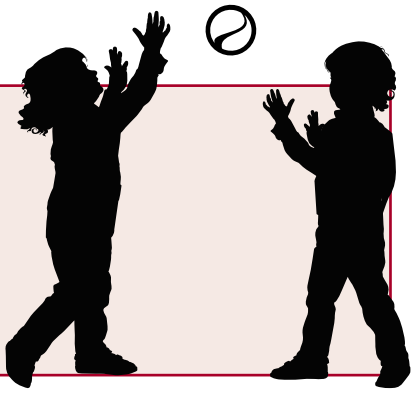
Ship's times

8 bells	1 bell	2 bells	3 bells	4 bells	5 bells	6 bells	7 bells
midnight	12.30am	1am	1.30am	2am	2.30am	3am	3.30am
4am	4.30am	5am	5.30am	6am	6.30am	7am	7.30am
8am	8.30am	9am	9.30am	10am	10.30am	11am	11.30am
noon	12.30pm	1pm	1.30pm	2pm	2.30pm	3pm	3.30pm
4pm	4.30pm	5pm	5.30pm	6pm	6.30pm	7pm	7.30pm
8pm	8.30pm	9pm	9.30pm	10pm	10.30pm	11pm	11.30pm

Activity 3

One-minute ball

Activity 3 – One-minute ball



Outline

This Year 3 activity continues the theme of time.

One-minute ball is a physical activity that requires learners to complete a task in precisely one minute. It offers opportunities for planning and working cooperatively as a team.

You will need

For each pair

A ball (ideally the same size for each pair)

A one-minute timer

Activity 3 – One-minute ball

Explain

Ask learners if they know how long a minute is. Ask them to stand up exactly one minute after you say 'Go!' – but they are not allowed to use a clock or watch to help! Give feedback, then try again. Discuss possible ways of counting in seconds *(e.g. one elephant, two elephant, etc.)*.

Tell learners they are going to have a competition to see which pair can pass a ball from one to the other 20 times, finishing exactly one minute after the start. They will have time to practise, and how they do it is up to them, but in the competition they will not have anything to use as a timer and will have only one go.

Give each pair a ball and a one-minute timer. Give them time to discuss their strategy, and plenty of time for practice. Support them, using the questions below, then when they are ready, run the competition.

Discuss the outcome as a large group, again using the questions as a guide, if necessary.

Then tell them you are increasing the challenge. This time you want two pairs to join together but you still want them to pass the ball 20 times, finishing exactly one minute after the start – and every person has to be involved. What do they need to do/change?

Run the competition again, then double up again, and so on.

Question

- What do you need to plan? *(Rolling or throwing, distance apart – a general strategy)*
- In what ways could you pass the ball to each other? What is good about each and what might be risky? *(Throwing might result in dropping the ball and losing time, etc.)*
- How many seconds are there in a minute? So how many seconds will you have for each pass? Does that help you to plan?
- In the competition you won't be able to rely on the minute timer. So how can you make sure you know how long one minute is? (*During practice, devise a way of counting to one minute.)*

After the competition

- Now you have taken part in the competition, what would you change about your method? Why?
- How are you going to work together with another pair/group? Does it make it easier or harder? Do you need to change your approach now there are four/eight of you? Why/why not?
- Dentists say you should brush your teeth for at least two minutes. Now you know how long one minute is, do you brush for that length of time? Check next time, using the same method as you used in this game.