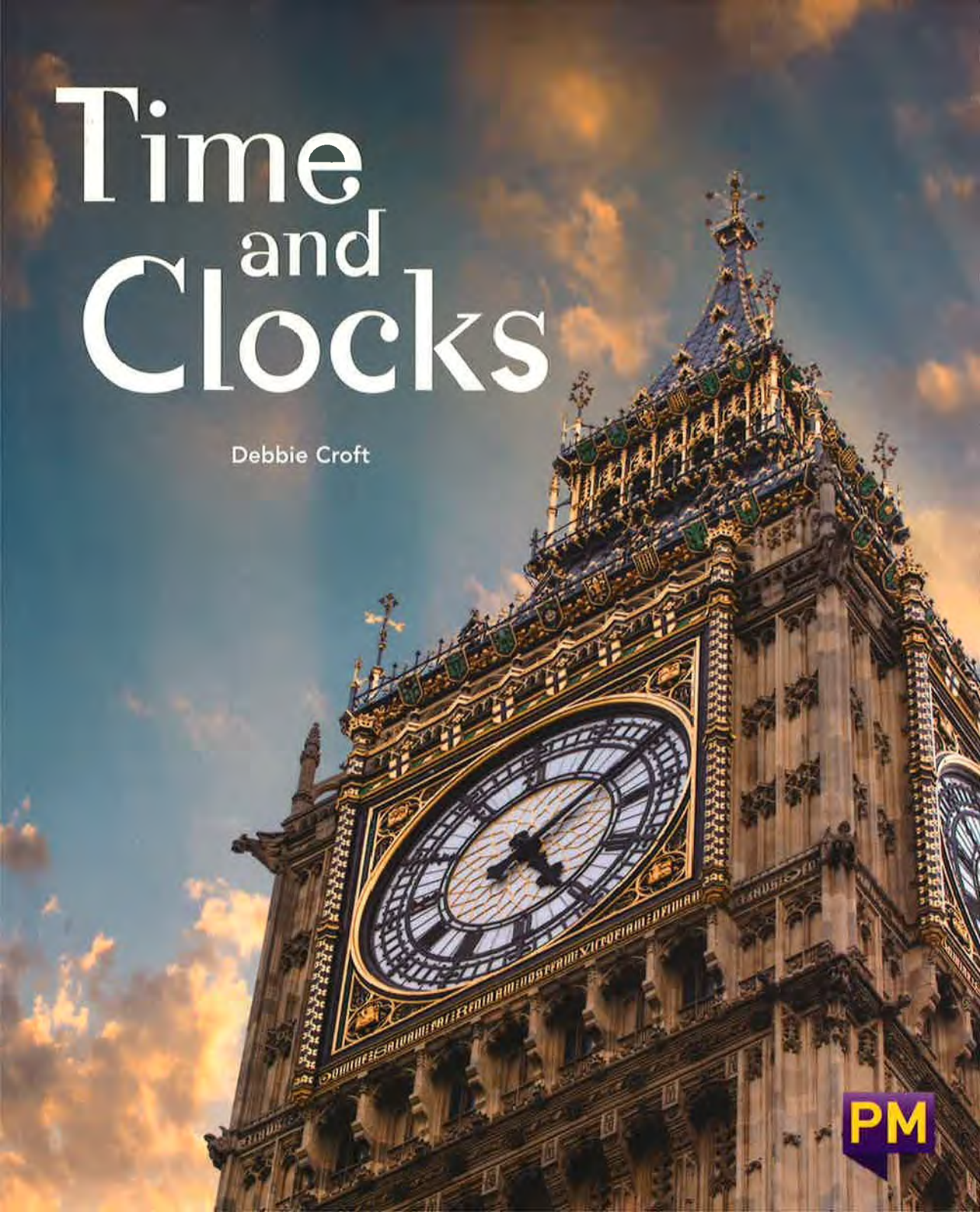
Time and Clocks

Debbie Croft



PM

For teachers' inspection ONLY

Time and Clocks

Level 28 **Curriculum Areas** Humanities – Geography; Science
Running Words 2001 **Text Types** Procedure (Informative) pages 2–17
Description (Informative) pages 18–30

Retelling to encourage critical thinking about the content

Ask each student to retell the procedures and description in his or her own words. Record the retellings for further discussion and reflection.

Think and Talk About …

Fact boxes in the book encourage each student to explore the statements further and to share the information with others.

Questions to reinforce meaning and stimulate discussion

Literal

1 How did people tell the time thousands of years ago?

Inferential

2 What changes could be made to the sand clock to make it measure a longer period of time?
3 Why is it important to burn the candle for exactly 15 minutes?
4 Why is the word *approximately* used in the candle clock experiment?

Applied Knowledge

5 Which clock would measure a specific period of time more accurately: the sand clock or the candle clock? Why?

Vocabulary

Replace the verb 'determine' in this sentence: *An experiment was conducted to determine whether a candle can be used to measure a specific interval of time*

Famous Clocks

Literal

1 Why are many people throughout the world familiar with Big Ben?
2 What is displayed at the centre of each of the clock faces of the Mecca Clock?

Inferential

3 Why is the pendulum of Big Ben located in a wind-proof box?
4 Which garden tools would be needed to maintain the Floral Clock?
5 Why is a full-colour sketch made for each new design on the Floral Clock?
6 Why do people visit the observation deck of the Mecca Clock?

Applied Knowledge

7 Why is stainless steel a suitable material for the hands on the Floral Clock?
8 Why are people who live in outlying areas able to see the lights on the Mecca Clock?

Links with other PM Guided Reading Books and Cards

Level 28 Book Information Report/Description *Special Effects: Bringing Movies to Life*

For teachers' inspection ONLY

Time and Clocks

Debbie Croft



Contents

Measuring Time 2
- Experiment 1: A Sand Clock 4
- Experiment 2: A Candle Clock 10

Famous Clocks 18
- Big Ben 19
- Floral Clock 23
- Mecca Clock 27
- Taking Care of Famous Clocks 30

Glossary 31

Index 32

For teachers' inspection ONLY

Measuring Time

Clocks were among the earliest human inventions. People have used different kinds of clocks to tell the time for thousands of years.

Originally, people told the time by observing the natural world. The most important periods of time to measure were the seasons: when plants grew **profusely** and animals were born, it was spring, and when there was ice and snow on the ground, or cold winds blew, it was winter. The Sun was used to tell the time of day. People watched the position of the Sun to know when it was time to start work for the day, or when night was drawing near.



Moose calves are born in spring, like many other animals.

For teachers' inspection ONLY



an hourglass,
or sand clock

As human societies changed, in many places it became necessary to be able to **consistently** measure periods of time that were much shorter than those offered by nature. Many different kinds of clocks were invented around the world. Some of the first ones were simple clocks that used sand or candles to measure the passing of time.



a candle clock

For teachers' inspection ONLY

Experiment 1

A Sand Clock

Hypothesis

That sand can be used to measure consistent intervals of time



Materials

- 2 clean glass jars, of the same size
- some fine, dry sand



- a piece of card



- scissors



- masking tape



- a stopwatch



- a pen and paper



For teachers' inspection ONLY

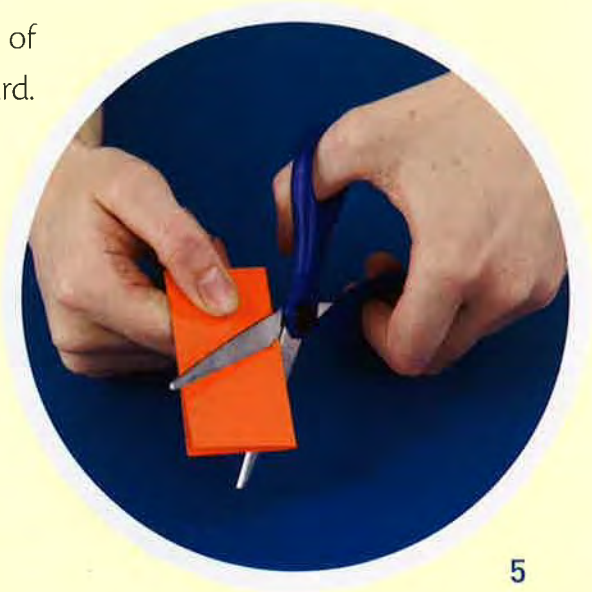
Steps

1. Pour the sand into one of the glass jars.



2. Use the scissors to cut a piece of card large enough to cover the opening of the jar.

3. Fold the card in half. Then, cut a small semicircle in the middle of the folded side. Unfold the card. There will now be a hole in the centre.



For teachers' inspection ONLY

4. **Invert** the second jar and place it on top of the first jar, with the card in between the two jars.

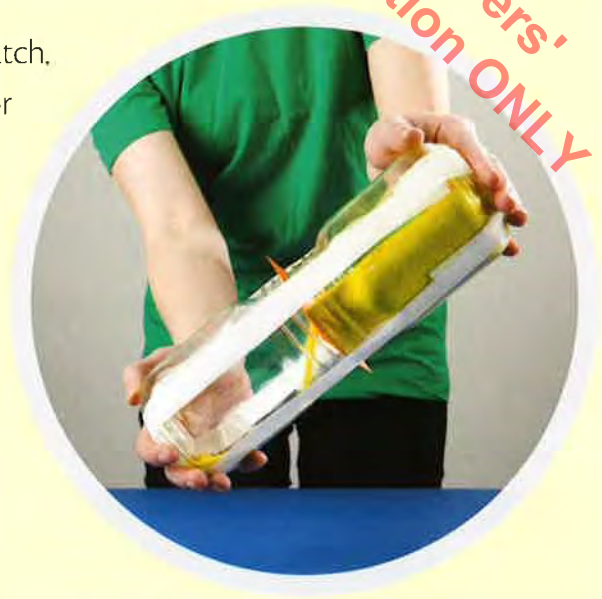


5. Tape the jars together firmly, ensuring the card remains securely in place between them.



For teachers' inspection ONLY

6. Turn the jars over so that the jar full of sand is at the top. Immediately start the stopwatch. Measure how long it takes for all the sand to filter from the top jar into the bottom jar, through the small hole.



7. Repeat the process twice more to check if the time interval is the same each time. Record the results.



15
16
17
18
19
20
21
22
23
24
25
26
27
PM Level 28
29
30

PM

For teachers' inspection ONLY

People have always needed ways to measure the passing of time. Some of the earliest clocks used sand or candles to measure time. By performing experiments with sand and candles, it is still possible to create simple clocks today.

Many cities have big clocks in public places. Some of these clocks have become so famous that people go to see them when they are visiting the city.



NELSON CENGAGE Learning
For learning solutions, visit **cengage.com.au**

Text Types:
Procedure (Informative)
Description (Informative)

ISBN: 978-0170373104
9 780170 373104