Measuring time

Instrument: Stopwatch

Common lab experiments include:

- **Measuring period of a simple pendulum.**
- **Measuring the time for gathering data for creating motion time graphs**

While recording the time of a simple pendulum, note the time for 20 oscillations and divide the total time by 20 to get the average time for one oscillation.

Example:

MCQ:

1 Two digital stopwatches X and Y, which record in minutes and seconds, are used to time a race

The readings of the two stopwatches, at the start and at the end of the race, are shown.

0625/01/O/N/08

	start	end
stopwatch X	00:00	00:40

	start	end
stopwatch Y	01:30	02:20

Which statement about the time of the race is correct?

A Both stopwatches record the same time interval.

B Stopwatch X recorded 10 s longer than stopwatch Y.

C Stopwatch Y recorded 10 s longer than stopwatch X.

D Stopwatch Y recorded 50 s longer than stopwatch X.

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1 A pendulum is set in motion and timed. The time measured for 20 complete swings is 30 s.

What is the time for one complete swing of the pendulum? 0625/13/O/N/12

A 0.67 s **B** 0.75 s **C** 1.5 s **D** 3.0 s

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1 A cook wants to prepare some food to be cooked by 1.15 p.m. He uses an oven with an automatic timer that can be set to switch on and off at certain times. The oven needs to be switched on for 2 hours 10 minutes.

0625/13/M/J/15

At which time does the oven need to switch on?

A 11.05 a.m. **B** 11.25 a.m. **C** 3.05 p.m. **D** 3.25 p.m.

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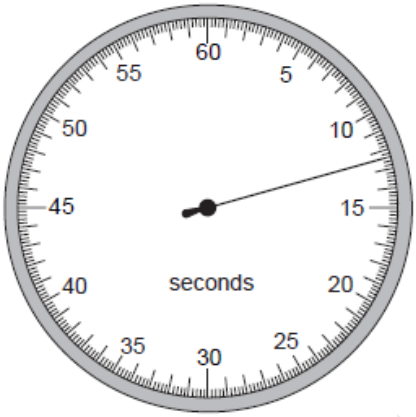
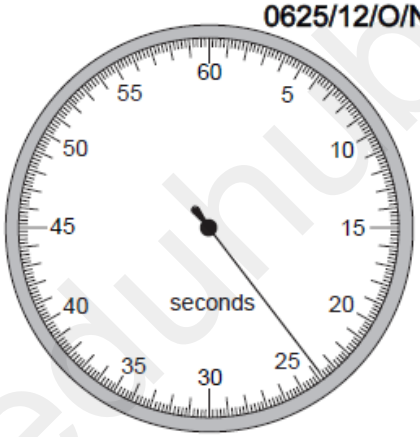
3 A stopwatch is used to time an athlete running 100 m. The timekeeper forgets to reset the watch to zero before using it to time another athlete running 100 m.

0625/12/O/N/09



stopwatch at end of first athlete's run



stopwatch at end of second athlete's run

How long does the second athlete take to run 100 m?

A 11.2 s **B** 11.4 s **C** 12.4 s **D** 23.8 s

EXTENDED THEORY:

2 Fig. 2.1 shows a simple pendulum that swings backwards and forwards between P and Q.

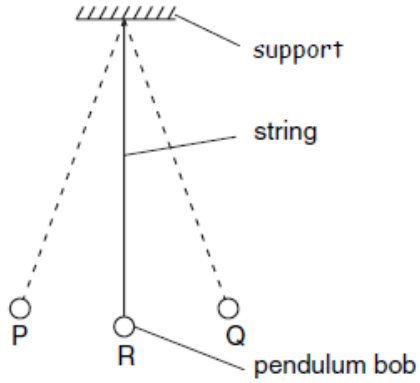


Fig. 2.1

(a) The time taken for the pendulum to swing from P to Q is approximately 0.5 s.

Describe how you would determine this time as accurately as possible.

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1 Fig 1.1 shows part of a measuring instrument. O/N/09-P31

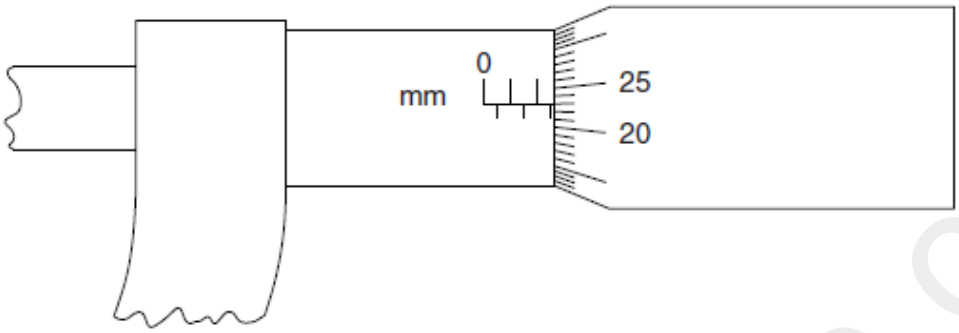

Fig. 1.1

(a) State the name of this instrument.

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(b) Record the reading shown in Fig. 1.1.

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(c) Describe how you would find the thickness of a sheet of paper used in a magazine.

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[Total: 5]