

Gnomon Sundials - Student Worksheet



GNOMON
(shadow maker)

Time read at point of shadow

Arab philosophers of 9th and 10th centuries were amongst the first advanced scientists and mathematicians in Europe. They discovered that using a gnomon, a triangular shadow maker, would indicate hours of exactly the same length of standard time, no matter what time of year it was.

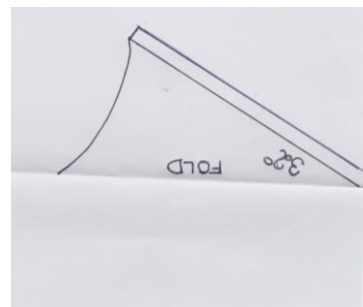
Sundials were often ornate and had mottos such as:

- Tempus fugit (Time flies - Latin)
- Let others tell of storms and showers. I only tell of sunny hours (Anon)

To prepare your gnomon

Fold a sheet of paper in half. The fold will be the top of the gnomon and will be used to reinforce it.

With the protractor, measure your school's latitude (in this case 32°S) away from the fold then draw that line



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about 9cm long.

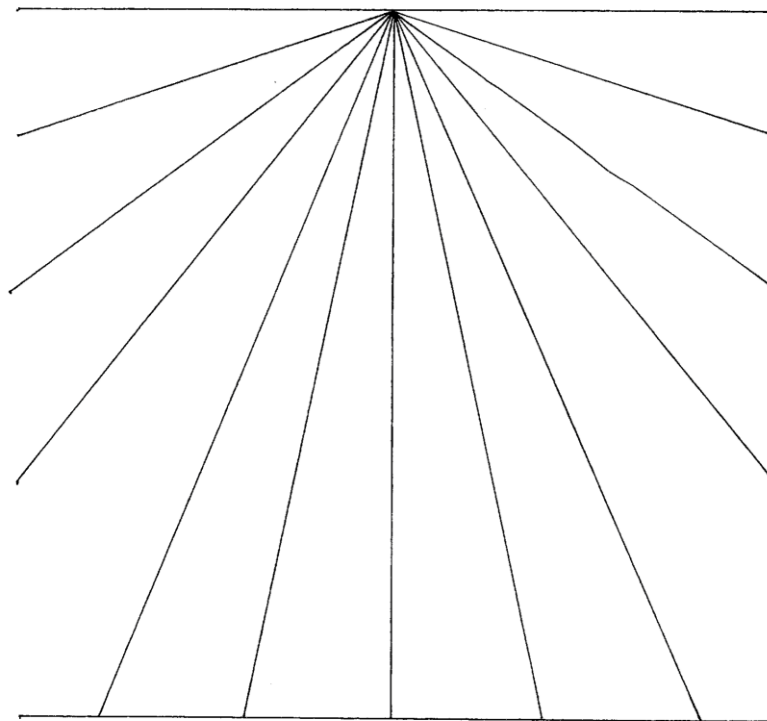
Draw another line about 1cm below this to make the flaps that will stick onto the base in the worksheet.

Leaving the paper folded cut round the outside of the gnomon.

Fold out the flaps to attach to the prepared base below.

The gnomon should be attached with the fold running down to the north or origin of the rays on the base.

The base of the sundial



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Observations

What time did your sundial read? _____

What time is it according to your watch, clock or mobile?

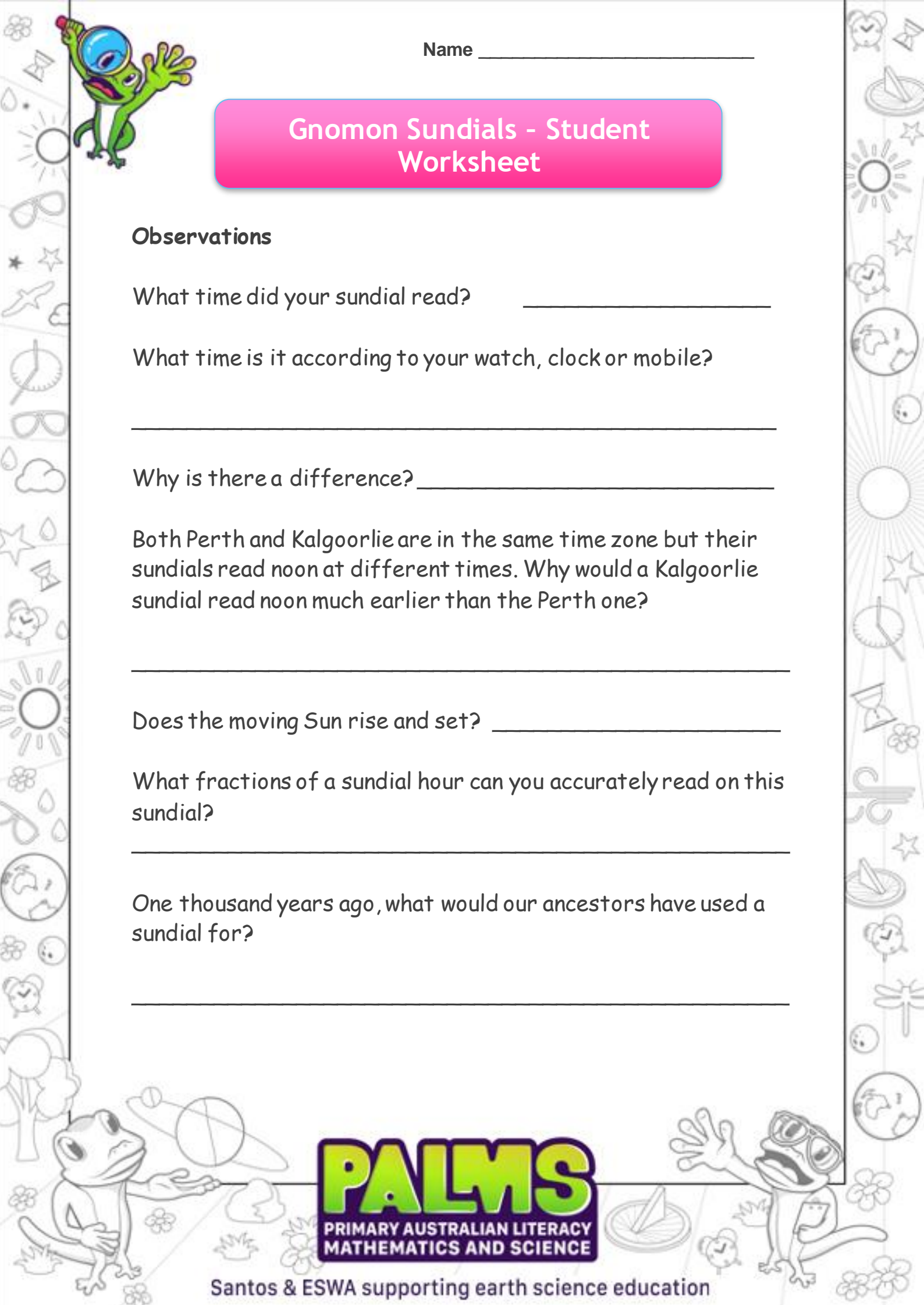
Why is there a difference? _____

Both Perth and Kalgoorlie are in the same time zone but their sundials read noon at different times. Why would a Kalgoorlie sundial read noon much earlier than the Perth one?

Does the moving Sun rise and set? _____

What fractions of a sundial hour can you accurately read on this sundial?

One thousand years ago, what would our ancestors have used a sundial for?



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Extension

Write a short letter to a friend organising a meeting using information from a sundial.

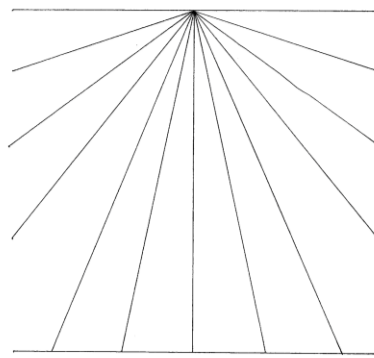
Dear _____

We must meet at _____ o'clock

to _____

because _____.

Look on the sundial. Set out when the shadow fall looks like this.



Your good friend _____

Name _____

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The Cottesloe Sundial

The Cottesloe sundial was built in 1993. It is based on 18th century sundials popular in Jaipur in India. The parallel triangular gnomons throw shadows onto engraved plates which curve on either side of them permitting accurate time to be read through the year. Curved lines are engraved on the plates to permit adjustment to WA standard time.

